



**Biodiversity
Support
Program**

**Mexico Ecodevelopment
Program**

Mid-term Evaluation Final Report

by:

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Andrea Kaus**

**Prepared for the Biodiversity Support Program
July 1995**

MEXICO ECODEVELOPMENT PROGRAM MID-TERM EVALUATION FINAL REPORT

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GLOSSARY

<i>Acuahual</i>	Fallowed secondary vegetation, part of traditional slash-and-burn crop rotation system
AID	U.S. Agency for International Development
<i>Amas de Casa</i>	Housewives (whether married, divorced, widowed or single)
A/V	Audio-visual
Biosphere Reserve	A designation assigned by UNESCO's Man and the Biosphere Program. Central to the concept of biosphere reserves is the conservation of large units of landscape containing both natural ecosystems, in which man has little impact, and managed ecosystems, in which man substantially controls or influences the processes. A biosphere reserve thus may contain many different kinds of land uses and human activities.
BSP	Biodiversity Support Program: a consortium of WWF, TNC and WRI
Buffer Zone	Areas that surround a core zone that are managed for agriculture, grazing, forest production, fisheries, intensive recreation or other economic uses of renewable resources. The emphasis here is on sustainable development of these natural resources in ways that minimize impacts on natural processes and genetic resources.
<i>Cacique</i>	Local political leader, usually of peasant or Indian background, who wields power abusively
Calakmul	Biosphere Reserve in Campeche state, site of one BSP project
<i>Campesino</i>	Rural dweller, peasant
CEQRODE	<i>Centro Quintanarroense para Desarrollo y Ecología</i>
Chiapas	Southern-most, poorest state in Mexico
Chimalapas	Remote, mountainous region of southern Oaxaca state and northern Chiapas in the Tehuantepec Isthmus
<i>Congregaciones</i>	Village or settlement within the Chimalapas indigenous <i>comunidades</i>
Consejo Regional Xpujil	Representative association of 33 <i>ejidos</i> which administers the Calakmul Reserve under guidance of the state governor, and which administers most government development assistance, social services and infrastructure in the region
Core Zone	Ideally, a primitive wilderness in the heart of the biosphere reserve, which is strictly protected and maintained free of human disruption to conserve a representative example of the ecosystems. It is a place where natural processes, including

	biological evolution, continue undisturbed and where as much of the region's biological diversity as possible is included.
COSECHA	Asociación de Consejeros para una Agricultura Sostenible, Ecológica y Humana (Association of Counsellors for a Sustainable, Ecological and Humane Agriculture); an off-shoot of World Neighbors - Honduras established by Roland Bunch and associates
EC	Environmental Communications
EE	Environmental Education
EE&C	Environmental Education and Communications
E/GCC	Environment and Global Climate Change Program of USAID
<i>Ejido</i>	Constitutionally established land cooperatives, planned and managed collectively and farmed individually by <i>campesinos</i>
<i>Ejidatario</i>	Head-of-family member of an <i>ejido</i>
El Ocote	Biosphere Reserve in central Chiapas state
El Triunfo	Biosphere Reserve in southern Chiapas
ENGO	Environmental NGO
Extensionist	Trained and/or skilled practical agricultural technician who provides technical assistance to farmers
<i>Frijol Abono</i>	Green manure technology (literally, fertilizer bean): family of multi-purpose nitrogen-fixing leguminous plants that serve as ground cover, mulch, fertilizer, natural herbicide and provide erosion control and high-protein animal feed and human food
GIS	Geographic Information System
<i>Guamíl</i>	Similar to <i>Acuabual</i>
ha	Hectare: 10,000 sq. meters, equal to 2.47 acres
<i>Hortaliza</i>	vegetables (literal) or gardens (vernacular)
ICDP	Integrated Conservation and Development Project
IHN	Instituto de Historia Natural: parastatal organization that manages El Ocote and El Triunfo Reserves
IPM	Integrated Pest Management: system of biological, non-chemical control of insects, vermin, weeds and diseases harmful to cultivated plants
<i>Labranza Mínima</i>	Minimal tillage: system of planting seeds in tilled rows with no soil tilled (turned, hoed or plowed) between the rows; in the MEP context, an entire system of soil preparation
<i>Latifundista</i>	Landowner, usually absentee, of very large rural holdings
<i>Línea Biósfera</i>	NGO formed from Barbasco producers association in Malpaso, Chiapas, within the El Ocote Reserve buffer zone; became member of BSP's MEP two years after the program's inception, and thus was not included in the mid-term evaluation

MAB	Man and the Biosphere Program of UNESCO, started in early 1970s
Maderas	Maderas del Pueblo del Sureste (Wood for the People of the Southeast)
MEP	Mexico Ecodevelopment Program: the BSP-supported sustainable development projects in four areas of southern Mexico, implemented by six Mexican NGOs, and the subject of this mid-term evaluation
<i>Milpa</i>	Fields or cultivation of basic grains, principally corn and beans
<i>Monte Alto</i>	High bush, land left fallow long enough to grow back into tall trees, but somewhat less than secondary forest
NGO	Non-Governmental Organization, sometimes known as "Private Voluntary Organization" (PVO)
NTFP	Non-Timber Forest Product
OD	Organizational Development
Parks in Peril	TNC-administered park protection program throughout Latin America
PPY	Pronatura, Península de Yucatán, AC: Mérida-based environmental NGO which implements the Calakmul ecodevelopment project
PRA	Participatory Rural Appraisal: a mechanism to employ a cross-section of community members in a rapid diagnosis of the community's conditions and opportunities
<i>Promoción</i>	"Promotion," or the introduction to local communities of simple, easily adaptable techniques, ideas or practices by a local person with external training or guidance
PROAFT	Programa de Acción Forestal Tropical, AC: A combined NGO and SARH-based agency that implements the Mexican government's Tropical Forest Action Plan (TFAP) by means of supporting ecological projects throughout rural Mexico
Promoter	Person from local community identified and recruited by the project to provide technical and organizational assistance to his/her neighbors
PRONASOL	Programa Nacional de Solidaridad: Federal government social service agency
Pronatura	Network of environmental NGOs in seven states
SARH	Secretaría de Agricultura y Recursos Hidráulicos (Ministry of Agriculture and Water Resources)
SEDESOL	Secretaría de Desarrollo Social (Ministry of Social Development); formerly SEDUE
<i>Solidaridad</i>	Social service and patronage system of ruling party (PRI) and federal government

SRA	Agrarian Reform Secretariat
<i>Tercios</i>	A volume measurement of firewood
TNC	The Nature Conservancy, a U.S.-based conservation organization, manages Parks in Peril program, among others
<i>Tzotzil</i>	Indigenous group and language prevalent in parts of Chiapas state; the majority population in much of the El Ocote region
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development
<i>Vigilancia</i>	Guarding, patrolling, providing surveillance
<i>Vigilantes</i>	Park guards or patrols
WHNP	Wildlands and Human Needs Program
Wildlands and Human Needs	Former cross-cutting program of WWF that integrated socio-economic needs with environmental strategies
WRI	World Resources Institute
WWF	World Wildlife Fund

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their projects, justifies our considerable confidence that the overall program, and this analytical process, has been worth the effort. We hope they agree.

Although many people provided invaluable assistance and input, the authors accept full responsibility for the opinions and conclusions expressed herein, and express sincere regret for any errors, omissions and oversights. The document is not intended to be the last word; indeed it will be most useful if it sparks discussion, controversy, introspection and communication.

EXECUTIVE SUMMARY

I. Background

A. Purpose and Scope

The Mexico Ecodevelopment Program (MEP) was developed in 1990 as a joint effort of USAID/Mexico, the Biodiversity Support Program (BSP) and WWF's Wildlands and Human Needs and Mexico Programs. It was designed as a five year effort, and receives funding from USAID's E/GCC Project through a buy-in to BSP. In November 1993, BSP commissioned a mid-term evaluation of the MEP to assess progress towards achievement of the program's goal and objectives, to identify relative strengths and weaknesses of the program's organization, implementation and methodological approaches, and to provide constructive feedback for future project implementation.

The overall goal of the MEP is to protect selected wildland areas in southern Mexico as healthy, diverse ecosystems by decreasing rates of deforestation in the surrounding areas through promotion and adoption of sustainable methods and levels of resource use. The four wildland areas selected for focus by the MEP are: El Triunfo Biosphere Reserve and El Ocote Ecological Reserve in Chiapas, Calakmul Biosphere Reserve in Campeche and the Chimalapas region of Oaxaca. The MEP is implemented by World Wildlife Fund, currently in collaboration with seven local Mexican partner NGOs.

B. Evaluation Methodology

The evaluation team consisted of two external consultants (Rusty Davenport and Andrea Kaus) with extensive experience in integrated conservation and development projects (ICDPs) and one staff member from each of the MEP sites. The team had only two to three days at each project site, with one day of travel in between. At every site, the team met with the project staff for a general orientation, followed by visits to as many local communities as possible. In the communities, the team met with ejidal councils and/or community leaders, interviewed project participants and nonparticipants, and went with the project staff, promoters and local participants to view the fields and discuss their progress.

As a result of the very limited time available at each site, not all of the communities involved in each project were visited, and some findings may be generalized from non-representative situations, especially since the sites visited were determined by project staff. The evaluators and BSP have attempted to reconcile differing interpretations and correct any inaccuracies in the original report through a series of individual consultations with the implementing groups, as well as the solicitation of formal written comments. Many of these comments have been incorporated into this final version of the report. Where disagreements between the evaluators and the project staff remain, the different interpretations are noted where appropriate.

II. Program-Wide Findings and Recommendations

A. Integration of Conservation and Development

Finding: The ICDP strategy is largely untested, few models exist, and there is little basis for comparisons.

Finding: Little experience, understanding or support for the strategy existed among Mexican environmental NGOs or government agencies engaged in natural resource or protected area management.

Recommendation: Continue to pursue the ICDP strategy and to learn from the MEP experience.

Recommendation: Seek new opportunities to broaden the work geographically and institutionally through greater collaboration with potential implementing partners, research agencies and international donors.

B. Linking Project Activities to Program Goals

Finding: In general, the rates and causes of deforestation in the project areas are not well understood, and, in particular, the relationship between introduction of agroecological techniques and the reduction of deforestation in the project areas is not clearly established.

Recommendation: Clarify hypotheses and assumptions of the MEP with regard to deforestation.

Recommendation: Develop and implement monitoring programs for measuring the impact of agroecological activities on rates of secondary forest (*acahual*) regrowth and deforestation.

Recommendation: Improve the quality and quantity of forest cover and land-use information available to the projects (both social and biological information is needed).

Finding: The conceptual framework of the MEP, as outlined in the original proposal, is not being followed rigorously, in the sense that by focusing almost exclusively on *campesino* agriculture, the program does not address other activities in the project areas that have equivalent or greater environmental impacts.

Recommendation: Broaden the scope of MEP activities to address environmental threats other than slash and burn agriculture. Potential foci include land tenure, social justice, illegal timber harvesting or poaching, and/or alternative production systems. The MEP should also develop strategies to increase project influence on national and state policy makers.

Recommendation: Identify additional project partners where current ones are self-limiting and unable to address policy or other broader issues.

Finding: The relationship between the MEP's work with local populations in the buffer zone and a broader conservation and land use strategy for the area (including the core zone) is poorly defined.

Recommendation: Improve communication and cooperation between groups working in the same wildland area (both implementing groups and international donors) to develop a strategy of land-use planning and management of which the MEP forms a key part.

C. Time Constraints

Finding: The MEP's first year was taken up with diagnostics, and the second year with the implementing project partners learning basic elements of community

work. Few advances, in terms of adoption of agroecological practices by project participants, were evident until well into the third year of the program.

Finding: Many significant, positive changes took place over the first three years of the MEP in terms of project management, selection of partners, project-level coordination, and quality of results.

Finding: A five-year time frame, which appeared realistic at the start, now appears inadequate to test hypotheses and achieve program objectives with this degree of social and ecological complexity.

Recommendation: Pending satisfactory adjustments made as a result of this mid-term evaluation, an extension of 3-5 years is warranted, and will likely lead to much broader impact than what is achievable in the first five years.

D. Community Involvement and Participation

Finding: In general, insufficient attention was paid to the participation of targeted communities during each project's initial diagnostic activities. The Participatory Rural Appraisal (PRA) technique used during the diagnostic phase of the MEP was either applied incorrectly and/or was inappropriate to the circumstances, and no alternative technique was attempted.

Recommendation: Evaluate why PRA failed. This information would be extremely useful to the conservation and development community.

Recommendation: In the future, prior to expansion to new communities, projects should develop an explicit entry methodology, clarify objectives, ensure adequate expertise and determine follow-up evaluation activities.

Finding: Broader, more informed, participation on the part of project beneficiaries is needed.

Recommendation: Use a variety of different techniques to improve and deepen communication between NGO staff and project participants/beneficiaries.

Recommendation: Better integrate the family unit (particularly women) into project activities.

Finding: Extension and promotion methodologies need improvement.

Recommendation: Review promoted techniques to ensure they are appropriate as well as appropriate.

Recommendation: Promote use of experimental and demonstration plots.

Recommendation: Increase number of promoters from the community and provide improved training for them.

Recommendation: Bring in additional outside technical assistance in sustainable agriculture and related topics where needed.

E. Environmental Education

- Finding:** Environmental education is currently not being effectively carried out within the MEP.
- Recommendation:** Integrate environmental education with project activities/technical extension.
- Recommendation:** Develop and implement an environmental education and communication strategy for the MEP that is relevant to and supportive of program goals and project objectives.

F. Institutional Constraints

- Finding:** Disparities between NGO staff and communities decrease project effectiveness.
- Recommendation:** Develop grassroots groups' capacity to implement the project themselves.
- Finding:** Intraorganizational problems (e.g., staffing, verticality, communication between field and headquarters, few women staff, weak program administration) negatively impact project implementation.
- Recommendation:** Provide targeted institutional strengthening assistance to implementing groups as needed.
- Finding:** Communication among different WWF offices (Washington, Mexico City, Oaxaca) and between WWF and the implementing groups could be improved.
- Recommendation:** Establish clear lines of communication and clear expectations for project implementation and administration, on all sides.
- Recommendation:** Enter into clear contractual relationships, with follow-up established to ensure compliance by all parties.
- Recommendation:** Financial management systems need to be improved, leading to prompt review of project technical and financial reports and timely financial disbursements.
- Finding:** Communication and collaboration among BSP consortium members concerning the MEP (especially between WWF and TNC) is weak.
- Recommendation:** Establish field-level collaboration by means of immediate and periodic meetings between Oaxaca - Mérida and Mexico City - Arizona staff.

G. Documentation and Monitoring

- Finding:** Collection and analysis of baseline data and information needed for project monitoring is weak overall and inconsistent between projects
- Recommendation:** Assist implementing groups to develop and implement comprehensive project monitoring plans.

III. Project-Specific Findings and Recommendations

A. Chimalapas

- Finding:** The successes of Maderas' land tenure-related work afforded them the needed credibility to begin introducing sustainable agriculture techniques that are now seen to fit within a larger strategy for environmental protection via natural resource management.
- Finding:** However, the agroecological program itself is disorganized, poorly managed and has technical flaws, although it is increasingly in demand by more communities.
- Recommendation:** An improved project management structure is needed.
- Finding:** Planning for the Campesino Reserve could be improved, in particular by increasing the participation of community leaders and members in the process.
- Finding:** Institutional problems exist that hamper Maderas' effectiveness.
- Recommendation:** Continue to support institutional strengthening strategy proposed by Maderas to attack its internal organizational problems.
- Finding:** Environmental education and women are poorly integrated into the project.
- Recommendation:** Further develop a strategy to incorporate environmental education into the overall program. Provide training to Maderas' staff, including promoters, in environmental education and communication (philosophy and methods).

B. El Triunfo

- Finding:** IHN is an inappropriate institution to implement the agroecology/community development project.
- Recommendation:** WWF should investigate possible additional implementation partners to work with (but not depend upon) IHN.
- Recommendation:** WWF should utilize IHN's biophysical monitoring expertise to monitor land-use changes in the reserve.
- Finding:** The project's complete focus on coffee is not wise given market volatility.
- Recommendation:** Investigate alternative productive activities, including the potential for silviculture in the context of coffee production.
- Finding:** Environmental education is not integrated structurally or programmatically with the agroecology project.
- Recommendation:** Initiate collaboration with TNC regarding joint support of an integrated project that includes environmental education, community development, and core zone protection.

C. El Ocote

- Finding:** There is a serious lack of coordination among the NGOs working in the area.
- Finding:** ECOSFERA/Pronatura-Chiapas' achievements with the communities are relatively meager.
- Finding:** ECOSFERA initiated a good use of experimental agricultural demonstration plots.
- Finding:** Environmental education efforts of Pronatura-Chiapas, although theoretically sound, have not been effective.
- Recommendation:** WWF should encourage collaborative planning for the region among the organizations working in the area.

D. Calakmul

- Finding:** The relationship between PRONATURA and the Consejo appears to be awkward but functional.
- Finding:** The integration of MEP activities with those of the many other actors in the Calakmul reserve is very limited (Bosque Modelo, EEC, GTZ, GEF, TNC).
- Recommendation:** Encourage meetings and other mechanisms to mediate differences and mitigate negative effects of uncoordinated activities.
- Recommendation:** Promote collaboration between TNC and WWF (not dependent on PPY) to ensure coordinated program planning for Calakmul and to avoid disjointed or conflicting strategies for core and buffer zone activities.
- Finding:** PRONATURA has done an exemplary job with project administration (exhibiting flexibility in the face of changing circumstances, recruitment and retention of excellent project personnel, and a good relationship between promoters and NGO staff).
- Recommendation:** Further improvement is needed in some project management and support areas, including better communication between Mérida and Zoh Laguna, better integration of biological research with agroecology program priorities, and more technical guidance to field staff in the areas of community development and environmental education.
- Finding:** The agroecological program could benefit from a more experimental approach.
- Recommendation:** Provide training and other support in developing field managers' skills in project conceptualization and experimental design.
- Finding:** The activities being carried out with women have been quite successful, thus far, and show great promise of serving as a model of successful integration of environmental education with field-level activities that promote production for commercial and subsistence use.
- Recommendation:** The environmental education subproject and its multi-sectoral approach should be better integrated, both geographically and programatically, with the project's sustainable agriculture activities.

I. BACKGROUND

A. Purpose and Scope of the Evaluation

The Mexico Ecodevelopment Program (MEP) was developed in 1990 as a joint effort of USAID/Mexico, the Biodiversity Support Program (BSP) and WWF's Wildlands and Human Needs and Mexico Programs. It was designed as a five year effort and receives funding from USAID's E/GCC Project through a buy-in to BSP. In November 1993, BSP commissioned a mid-term evaluation of the MEP to assess progress towards achievement of the program's goals and objectives, to identify relative strengths and weaknesses of the program's organization, implementation and methodological approaches, and to provide constructive feedback for future project implementation. It was also hoped that the mid-term evaluation would establish impact indicators to be used in the final program evaluation in 1996.

The overall goal of the MEP is to protect selected wildland areas in southern Mexico as healthy, diverse ecosystems by decreasing rates of deforestation in the surrounding areas through promotion and adoption of sustainable methods and levels of resource use. The four wildland areas selected for focus by the MEP are: El Triunfo Biosphere Reserve and El Ocote Ecological Reserve in Chiapas, Calakmul Biosphere Reserve in Campeche and the Chimalapas region of Oaxaca. The MEP is implemented by World Wildlife Fund, currently in collaboration with seven local Mexican partner NGOs. A complete Scope of Work for the evaluation can be found in Appendix A.

B. Evaluation Methodology

The evaluation took place from November 14 - December 15, 1993. The evaluation team consisted of two external consultants (Rusty Davenport and Andrea Kaus) with extensive experience in integrated conservation and development projects (ICDPs) and one staff member from each of the ecodevelopment projects evaluated: Juan Antonio Hernández from El Triunfo, Juana Cruz from El Ocote, Aurelio López from Calakmul, and Isaac Matus from Chimalapas. Each one of the project staff had experience at the field level and worked directly with the local communities at the project sites. Contact information for the evaluation team members can be found in Appendix F.

The evaluation team reviewed project documents (see Appendix E for a complete list) and visited each of the MEP project sites - Chimalapas, El Triunfo, El Ocote, and Calakmul - in order to gather information for this report (see Appendix B for itinerary). Interviews were conducted with MEP staff in Oaxaca and in each of the project areas (see Appendix C for interview list).

The external evaluators conducted some preliminary interviews in Mexico City before meeting with the project team members in Oaxaca. The team spent two days in Oaxaca to clarify the objectives of the evaluation and the criteria and methodologies to be used. The project members were to have a dual role in the team, as evaluators and presenters. It was decided that in each of their own project sites, they would have the responsibility of coordinating the group's visit, including providing the necessary documents and introductions for local interviews. However they would not have the responsibility of evaluating their own project, which might put them in a difficult position between their agencies, project funders, and the evaluation team itself. Instead each one would observe and facilitate the evaluation process and clarify any questions the team had.

The team had two to three days at each project site, with one day of travel in between. At every site, the team met with the project staff for a general orientation, followed by visits to as many local communities as possible (determined by the project staff). In the communities the team met with ejidal councils and/or community leaders, interviewed project participants and nonparticipants, and went with the project staff, promoters and local participants to view the fields and discuss their progress. When necessary, the team split up into separate groups in order to see as many project activities and meet as many project participants as possible. In addition, each team member was responsible for a

specific line of questioning at each site (eg., administrative capacity, technical capacity and relevancy, staff development, funding sources, positive and negative changes, external and internal organizational relations, environmental education, and the role of women), so as to not overwhelm project participants with lengthy interviews and to allow each team member to ask more specific questions.

Each day, and after viewing each project site, the team met to assess both the initial findings and impressions as well as the evaluation process itself. Because the project staff team members were not accustomed to this type of work, the external evaluators used these sessions to foster the team members' critical thinking abilities and train them in interview techniques, field notes and observation skills. The team members kept their own field notebooks, with their own personal observations, and the external evaluators later worked with them one-on-one to convert these field diaries and observations to field notes for the use of the evaluation.

At the end of the site visits and before the project staff members returned to their communities, the team stayed two days in Bakalar (Campeche) for an intensive debriefing and a final group assessment of each of the projects and the MEP as a whole. The external evaluators then returned to Oaxaca and Mexico City to begin writing the final report and for some final follow-up interviews and debriefing with MEP, WWF, and USAID.

Two months later, in January 1994, a preliminary draft of general findings regarding the overall program was reviewed at the WWF annual meeting at which representatives of all projects were present. The concerns and issues raised there were incorporated into a rewritten draft which was subsequently distributed and discussed internally among WWF and BSP staff, the USAID/Mexico Environment and Energy Advisor, the GCC Program Assistant and one of the external evaluators. Written responses were then provided to the external evaluators by WWF and USAID/Mexico. Another draft was developed, incorporating the new input. This was translated by a North American volunteer in Oaxaca, Mexico and sent to each of the projects. Meanwhile, a professional translation of the full document was made, to ensure more accurate reflection of nuances and concerns. This version was distributed just prior to the February, 1995 annual meeting of WWF projects. There, each organization had an opportunity to discuss its concerns with one of the external evaluators and the BSP representative, and to present a written summary of corrections, clarifications and recommended changes. These were incorporated into the final document. Among other things, the meeting provided an opportunity for considerable discussion of the strengths and weaknesses of the process. A few of the issues raised are summarized below.

The mixture of internal (project staff) and external evaluators resulted in a participatory diagnostic process in which each of the individual projects' staff simultaneously had to assess parallel projects and be assessed by members of those projects. BSP and WWF had jointly decided upon this participatory evaluation format in order to strengthen ecodevelopment project staff capacity in project evaluation and to enhance their self-evaluation skills. The participatory evaluation also was a logical extension of MEP's tradition of inter-project exchanges and project staff training. In particular, it was hoped that each project would view (and use) this process as a constructive tool for strengthening their activities rather than as a cold-eyed examination to determine the worth of their efforts.

The process had the unique benefit of providing the team with a constant "expert" for each project. Each staff member could provide the background context for his or her project and, as part of the team, was available for preliminary and follow-up questions before and after site visits. Team members also had direct experience working with the communities and were able to provide first-hand information about the obstacles encountered in trying to implement the project, both at the organizational and community level. Their familiarity with the communities and project participants greatly facilitated the interview process by providing an on-site, experienced liaison. In addition, the project staff members had the opportunity to observe and objectively assess the similarities and differences between their own projects and the other sites visited. Team members came away from the process with the knowledge that their difficulties were not unique and with the beginning tools for self-evaluation of their own projects and activities.

However, several difficulties with the participatory evaluation methodology need to be mentioned. The approach presents several logistical difficulties, and it also limits the process of information gathering. As a result, it may compromise somewhat the objectivity or scope of the data gathered and the conclusions drawn from these data. The team discussed many of the drawbacks during the process of this particular evaluation. However, both external evaluators agreed that the experiment was worth the extra effort and contributed a great deal to the project members collective understanding of the MEP.

One logistical cost that must be considered in planning future participatory evaluations is the difficulty of transporting such a large team between and within project sites. The more people, the more vehicles, hammocks, rooms, supplies, etc., needed, as well as increasing the number of individual needs and/or peculiarities and interpersonal relationships which must be dealt with at each step. One team member compared it to herding cats. Any impromptu changes in scheduling become major time-consuming issues, and in this particular evaluation, an entire afternoon and evening were spent arranging for last-minute transportation for the team and two additional consultants from Matías Romero to Tuxtla Gutierrez. The size of the group meant that, for purely logistical reasons, less site visits per project were possible, and the on-site adjustments for the group (transport, housing, food, community relations, etc.) did not allow for much flexibility between what the team wanted and what the projects were able to offer, often limiting the effective time spent in the field. In addition, such a large group was, at times, overwhelming for the small rural communities, again requiring time to allow some adjustment to the group's presence and to meet with appropriate community representatives.

The result for this particular evaluation was that not all the communities involved in each project were visited and some conclusions may be generalized from non-representative situations, especially since the sites visited were determined by the project staff. This difficulty was also related to the limited amount of time for the entire evaluation. The team usually met early to discuss the day's strategy for interviews and meetings and, after the day's activities, met again late at night to discuss any difficulties and plan the next day. The tight schedule often meant that debriefings took place on the road on the way from one project to another, and team members were exhausted. A suggestion for future such evaluations is to include an extra non-travel debriefing day per project where no interviews or meetings are scheduled.

Another cost of the participatory evaluation process, at least in this case, was the participants' initial lack of understanding of the exact role they were expected to play in the evaluation. Most of them had no experience or formal training in research techniques or analysis of human activities, social relations or organization. This situation required that the external consultants spend a large amount of their time on team building, instruction and on-site training, which took time away from actual evaluation. The team approach also meant that the external evaluators often were dealing with second or third hand information reported to them by the project staff members, especially when the team divided up to interview different people in each community. Because of the time restrictions, follow-up interviews or observations were not possible to corroborate individuals' statements, either by the community or team members, which may affect some of the generalizations made about the projects as a whole.

In addition, the "greenness" of the team members meant that their interview techniques were not consistent and their styles were a little overeager, at times even too aggressive for the community residents and/or other project staff. These difficulties were foreseen by the external evaluators who compensated by back-up questions, observations, continued team-training, and some impromptu diplomacy. The drawbacks were considered to be far outweighed by the freshness of the team members' perspective. Their first-hand experience with their own projects meant that they had unique insights and asked questions that the external evaluators would never have thought to ask. In the end, the process built a tight and coordinated group, and the connections made between the project staff members will outlast the evaluation itself.

In addition to the complexities of the participatory process must be added mention of the long period of 15 months between the initial field visits and the final draft being circulated and discussed in detail

with the organizations involved. Although they had had two previous opportunities to review, discuss and respond, it was only when the full and nearly final report was presented that many of their strongest reactions were aired. In part, their projects had changed in the intervening time, rendering some of the findings and recommendations either obsolete or less crucial. In addition, the time delay and geographic distance meant that the external evaluators tended, more than the project participants expected, to depart from or go beyond the issues raised by the team when it was in the field, without adequate mechanisms to bring them back into the process.

In hindsight the participants felt that the two day training at the beginning of the field work had been insufficient; a week would have enabled more complete team building and more objectivity. Second, although many of the report's findings regarding the overall MEP were accurate reflections of the participants' perceptions, each organization had objections, sometimes quite strong, to particular elements of the individual reports. These were due either to expressed or discerned disagreements within and/or between the organizations, or to syntheses developed later by the external evaluators based on the entirety of the information collected. There were also occasional disagreements among the participants and their organizations regarding a number of analytical interpretations in the evaluation, as should have been expected.

Concern was also expressed by many (but not all) organizations that the report offers inadequate recognition of how hard people and organizations have worked, how difficult the undertaking and how important the successes. The external evaluators acknowledged this, and realized that, on balance, the report expresses more negative than positive points. This is not because the program is more a failure than a success, but rather because the evaluation's charge was to point out the places where improvements could be made. Although the implementing organizations were quite sensitive to criticism, especially in public and particularly in writing, there was general agreement that there were changes to be made at all levels.

As a final caveat for the results of the evaluation, it should be mentioned that a USAID consultant (and a translator/colleague), who was assessing the project's potential environmental impacts (in accordance with AID's need to complete Initial Environmental Examinations or IEEs for each of the ecodevelopment subprojects), accompanied the group for the first three project visits (Chimalapas, El Triunfo, El Ocote). Apart from the logistical difficulty of adding two additional members to the group, the presence of non-team project evaluators created initial tension and suspicion within the group of project staff members (which was overcome at the very end). It also confused the interaction of the team with project participants in the communities as they were faced with two distinct styles of questions. At times, the questioning of the USAID evaluators compromised the rapport developed by the MEP evaluation team with the local residents, or even contradicted the line being taken in the interviews. This situation affected the quality and quantity of interviews possible per site, and in one case, the number of sites visited.

II. INTRODUCTION

A. General Context of Conservation in Mexico

The Mexico Ecodevelopment Program (MEP) is set within a wider context of national and international conservation issues, and in Mexico represents part of a wider conservation initiative to slow, halt, and even reverse the rate of tropical deforestation.

Mexico has long been recognized as a country of great biological richness but also as an area of increasing deforestation and resource degradation. With growing worldwide concern over greenhouse emissions, Mexico's rate of deforestation has attracted the attention of international environmental agencies seeking to reduce burning and conserve tropical forest areas. Although precise data are not available, in 1988, Toledo estimated a rate of tropical deforestation in Mexico of 1.1 to 1.5 million ha per year, or three percent of the total forested area.¹ The World Resources Institute estimated in 1990 a somewhat lower, but still alarming rate of 615,000 ha per year, or 1.3 percent of the country's total forested area. On the other hand, the average annual rate of reforestation in the 1980's was only 28,000 ha per year.²

Deforestation does not have an isolated impact and is only one indicator of environmental stress. It is often coupled with soil degradation and erosion, water and air contamination, species loss, declining agricultural productivity, disruption of local economies, human population displacement, and loss of cultural diversity and/or cultural continuity.

Shifting (slash-and-burn) agriculture and poverty are the most commonly cited causes of deforestation. However, shifting agriculture is a term which covers a wide set of agricultural practices, not all of which are environmentally unsustainable or responsible for impoverishment or clearing of mature tropical vegetation. There is mounting evidence that deforestation, interpreted as clearing of old growth forest, is the consequence of many diverse processes and actions, of which poverty is more often the result than the cause.

Indeed, the broader activities and interests which lead to tropical deforestation include: cattle ranching (either for market or land acquisition); large-scale commercial timber exploitation; large-scale agriculture; colonization projects and policies; agriculture practiced by inexperienced farmers; road construction or other engineering works (for oil exploration, lumber extraction, commercial exploitation, communication and transport, etc.); forest fires (natural and anthropogenic); conflicts over land tenure and tree ownership; and national security policies in borderland areas.³ Many of these factors can be combined sequentially to form a recurring process, for example, commercial lumber extraction followed by agricultural colonization (particularly along newly constructed roads), followed by land acquisition from *colonos* and the subsequent conversion to pasture for extensive cattle ranching.⁴

¹ Toledo, V. M. 1988. La Diversidad Biológica de México. *Ciencia y Desarrollo* 81:17-30.

² World Resources Institute (WRI). 1990. *World Resources 1990-91. A Guide to the Global Environment*. New York: Oxford University Press.

³ Gómez-Pompa, A., A. Kaus, J. Jiménez-Osornio, D. Bainbridge, and V. Rorive. 1993. Mexico [Case Study]. In: *Sustainable Agriculture and the Environment in the Humid Tropics*. Committee on Sustainable Agriculture and the Environment in the Humid Tropics. Board on Agriculture and Board on Science and Technology for International Development, and National Research Council, pp. 483-548. Washington, D.C.: National Academy Press.

⁴ Nations, J.D. and R.B. Nigh. 1978. Cattle, Cash, Food and Forest. *Bulletin of the Anthropological Study Group on Agrarian Systems* 6; and Partridge, W.D. 1984. The Humid Tropics Cattle Ranching Complex: Cases from Panama Reviewed. *Human Organization* 43(1):76-80; and Gómez-Pompa, A. 1987. Tropical Deforestation and Maya Silviculture. An Ecological Paradox. *Tulane Studies Zool. Bot.* 26(1):1-17.

In the past, recommendations for conservation in the Mexican tropics and elsewhere have followed the conventional models of US National Parks and US National Forests, where land is set aside for the "national interest" while resource use and land access are regulated through federal and state laws and managed by government agencies. Unfortunately but not surprisingly, this model -- not always successful in the US -- has proved to be even less effective in developing countries, which must balance their immediate needs for economic growth and land distribution against longer-term anticipated benefits of natural resource protection. More often than not, the local rural populations targeted by this program are blamed for environmental degradation. Yet they are omitted from the debates about conservation or development policies and too frequently are victims of decisions made at levels well beyond their reach.

In addition, countries such as Mexico contain diverse cultural groups with historic rights that transcend government boundaries and predate land-use regulations. Often their agro-economic systems include sustainable management practices, and their forms of socio-political organization for managing access to and use of natural resources differ from official government rules and regulations. Thus, external government regulation of access to needed land and other resources separates local people from the areas they perceive as necessary for their economic subsistence and cultural continuity. It fails to value their sense of responsibility for the surrounding natural environment. The resulting resentment of local inhabitants and their alienation from protected areas may provoke many of the very conflicts that conservation policies are intended to prevent, such as poaching, unsupervised or deliberate fires and illegal colonization.

Over the last two decades there has been a growing awareness on the part of many international environmental organizations of the negative social consequences of environmental protection and the need to ameliorate these impacts as much as possible. Simultaneously, there exists a growing recognition of long-term benefits to be derived from strengthening rural communities' existing capacities for stewardship of their natural resources. This gradual change has come from an acknowledgement that the costs of conservation neither could nor should be borne primarily by those populations which can least afford to limit their use of the land. Traditionally, these populations, mostly poor peasants, are the politically weakest sector of society and -- no matter how effective their stewardship -- are the least able to defend their rights to natural resources in the face of removal of land areas from actual and potential exploitation.

In what has become a major shift in strategic focus and conservation policy, the international conservation community has begun to integrate the needs and goals of rural development with the imperatives of biodiversity conservation, so that environmentally sound practices bring about local economic benefits as well. The underlying justification for this form of conservation is "sustainability," by which land use is gauged by its capacity to "meet the needs of the present without compromising the ability of future generations to meet their own needs."⁵

Historically, Mexico has been active and innovative in accepting alternatives for conservation and development. It has been an active participant in the UNESCO Man and the Biosphere Programme (MAB) since MAB's inception in the early 1970's. One of the original concepts of MAB was the formation of conservation sites, called biosphere reserves, which defined a "core zone" of restricted use and a buffer zone of multiple use. Together these two zones of a protected area would integrate the goals of conservation, development, research and education in a wider plan of regional resource management. Under MAB, a biosphere reserve network was developed in 1974 and the first reserves established in 1976. These reserves included the concept of "local participation" as an integral part of their management plans, although this was not accompanied by any defined methodology for converting the concept into practice.

⁵ World Commission on Environment and Development (WCED). 1987. *Our Common Future*. New York: Oxford University Press.

In 1977, Mexico was one of the first countries in the world to establish a system of biosphere reserves, most of which are under nongovernmental management.⁶ These sites actually augmented the amount of land under national and international protection, rather than bestowing a new designation on previously protected areas such as national parks. The MAB concept, at least in theory, has been retained and repeatedly brought into the planning process for many other national and international programs for management and protection of wildland areas in Mexico. The MEP, and possibly the TNC Parks in Peril and Bioreserve programs, which have increasing influence in southern Mexico, are inheritors of this history.

Mexico provides a prime example of a nation that is trying to meet concurrent challenges of rural development and conservation. The country's biological and cultural richness is coupled with interdependent threats of biodiversity loss, resource degradation and declining agricultural productivity. This has made Mexico the focus of many national and international conservation efforts, including the BSP Ecodevelopment Program. Past efforts have separated conservation from development and have been unsuccessful. The formation of a national park system, for example, led to the creation of "paper parks" with legal decrees but without effective mechanisms for land protection. International development programs have not fared much better. The Green Revolution in Mexico, ostensibly aimed at improving agricultural production to raise standards of living, only led to increased resource degradation along with the further marginalization of poor agriculturalists.

The difficulties of integrating conservation and development efforts in order to protect both the forest and its inhabitants are not unique to Mexico, much less to the MEP. This program is a socio-ecological experiment that faces the same difficulties and constraints as those encountered by other current and past conservation and development programs in the tropics throughout the world. The challenges faced by ICDPs range from ideological arguments about appropriate environmental policies to the social and ecological difficulties of implementing these policies.

One of the first difficulties encountered is that of conflicting fundamental philosophies of the various sectors of international organizations promoting development and conservation. Traditionally, conservationists have tended to focus on the requirements for sustaining natural resources and biodiversity, and have portrayed the development community as motivated principally by economic growth while using nature as a subsidy. Development advocates have viewed the conservation community as an international population of naive "tree-huggers" who protect natural resources at the expense of economic growth.⁷

Meanwhile, other sectors steeped in the philosophy of grass-roots advocacy, empowerment and human rights have pointed out that both development and conservation organizations value economics and natural resources over people and their social and cultural integrity. Policies derived from this deficient perspective, they believe, are removed from the needs, problems and aspirations of the human populations who depend on and care for the land and other resources.

While each viewpoint has validity, each also neglects to address the *interdependence* of natural resource availability, environmental conditions, local standards of living and macro-economics. The task for ecodevelopment is to cultivate strategies which simultaneously account for people, economy and the environment and their interdependent relationships.

⁶ Sierra de Manantlán, El Cielo, Sian Ka'an, Mapimi and La Michilia. Calakmul is not part of the MAB-Mexican system but is recognized at the international level by UNESCO-MAB. It is considered to be under the local management of a council of ejidal authorities. Although these sites are managed by research and conservation NGOs or local agencies at present, legal enforcement of environmental rules and regulations is under the authority of the governmental Ministry of Social Development, SEDESOL (formerly SEDUE).

⁷ This is not unique to the tropics or developing countries; witness the growing conflict over timber rights and endangered species in the US Pacific Northwest, or over the increasing of grazing fees in public lands in the western United States.

The challenge for ecodevelopment is that the number of success stories which can serve as models is small. Each organization and project must operate with little experience or knowledge of what approaches will be most appropriate, both for the people and the environment.

Another difficulty lies in the integration of the program's goals with the social and ecological realities of the chosen implementation site. Wildlands ("core zones") may not be wild; local governments and organizations may not be representative, consistent or stable; and local cooperation may not equate with local acceptance or participation. In addition, most programs must confront the myth of the "local people." The current convention in conservation is to speak of the local people, their needs, their impact on the environment and their participation in conservation programs, as if they were a single, homogeneous unit with a single collective opinion and a single set of actions and reactions. The reality is more often that several, diverse groups have laid claim to the areas targeted for conservation efforts. One can speak of "local communities" (with varying, sometimes conflicting, interests), "local residents" (whose experience and goals may differ), "local vested interests" (which range from subsistence farming to commercial extraction for an international market) or "local land-tenure claims" (which may be superimposed on each other). However, "local people" as a single or monolithic target population do not exist.

Unfortunately, the majority of conservation policies and programs are designed - often with great expertise, care and good intentions - outside of the intended project site(s). The resultant naiveté about the social environment makes it difficult for such programs to adjust to the social and political contexts in which they are to be implemented.

Thus, the second challenge for ecodevelopment is to take a variety of sectors of human society into consideration within the general program strategy, while allowing for program adjustments (based on continuous self-evaluation) to account for the varying and competing interests in the land and its resources. Ecodevelopment programs can and should be as much a learning process for the implementing organizations regarding appropriate methodologies and approaches as they are processes of change in environmental practices and attitudes at a given site.

B. Mexico Ecodevelopment Program History

1. USAID GCC Project Goals and Objectives

The source of BSP funds for the MEP is the U.S. Agency for International Development's (USAID) Environment and Global Climate Change Program (E/GCC). E/GCC is a five-year, approximately \$30 million effort of USAID's Latin American and Caribbean (LAC) Bureau. The Program responds directly to congressional mandates directing USAID to address the threat of global climate change in "key" developing countries. "Key" countries are those projected to contribute large amounts of greenhouse gases, especially CO₂, to the atmosphere. The emissions of greenhouse gases, produced mainly by the burning of forests and fossil fuels, is of concern because these gases trap heat in the Earth's atmosphere. Current scientific models predict that consequent increases in temperature could have globally catastrophic effects.

Three "key" countries have been selected for focus within the E/GCC Program. Brazil and Mexico are the two primary countries, and their country-specific projects have received most of the Program's funding to date. The Central American countries, considered collectively, are the third. E/GCC's goal is to help reduce greenhouse gas emissions in the LAC region. E/GCC's purpose is to assist in the development and adoption of policy reforms, technologies and practices that will result in the sustainable and efficient use of forest and energy resources. While directly reducing greenhouse gas emissions significantly is beyond the financial resources and time frames of E/GCC, the Program's strategy is to develop pilot demonstration activities and promote policy reforms and host-country capabilities, so that policies and technologies being fostered by E/GCC can be disseminated and have a significant impact beyond the specific sites, institutions and communities with which the Program is working.

E/GCC focuses primarily on the sustainable use of forest resources because the burning of tropical forests for conversion to agricultural lands is considered to be the primary source of gases in the region, and because forest resource management is the sector in which A.I.D. believes it can have the greatest impact. What is saddest about the forest destruction is that soil and climate characteristics make much of the land obtained through clearing unsuitable for agriculture. The soil is exhausted in a few years, and lost with the forest is the economic potential of many forest-based industries, not to mention its rich biodiversity and the ecosystem services formerly provided. Consequently, E/GCC's primary objective is promoting economically superior land-use alternatives that rely on the sustainable use of forest resources. The premise of this strategy is that only if such alternatives are available will there be the economic incentive necessary for people to conserve rather than destroy their forests.

2. BSP Goals and Objectives

Through a cooperative agreement with USAID's Global Bureau, which provides core funds, and additional support from other USAID bureaus and overseas missions, BSP works to maintain biological diversity in developing countries. BSP works with developing country governments and non-governmental organizations to design and implement innovative conservation and development projects and to strengthen local capacity for conservation efforts. BSP collaborates with conservation groups, development organizations, universities, botanical gardens, zoos, research institutes and government agencies. BSP's efforts focus on the following priority areas:

- Increasing the understanding and practice of successful and innovative conservation techniques and programs;
- Strengthening capacity of institutions, communities, and individuals to conserve biological diversity, while encouraging full participation of all people who have a stake in the conservation of that diversity;
- Supporting applied research and development of monitoring and assessment systems to improve implementation of conservation programs and assess their impact;
- Assessing and supporting economic and enterprise-based approaches to conservation to increase awareness of the linkages between conservation and development, while facilitating improved biodiversity conservation.

Since 1988, BSP has supported more than 100 activities in 60 countries, and, in the process, collaborated with over 80 developed and developing country organizations.

Beginning in July 1990, USAID/Mexico, BSP, and the Wildlands and Human Needs and Mexico Programs of WWF, in collaboration with several Mexican partner NGOs, designed the Mexico Ecodevelopment Program (MEP) to support environmentally-sound community development around key protected areas in southeastern Mexico. The program was designed to support the E/GCC goal of reducing greenhouse gas emissions in the LAC region by reducing emissions of CO₂ due to deforestation activities in southern Mexico while simultaneously conserving the region's rich biological diversity and improving the quality of life for the region's rural populations.

3. WWF Wildlands and Human Needs and Mexico Program Goals and Objectives

WWF established the Wildlands and Human Needs Program (WHN) in 1985 to integrate environmentally-sound economic development into its biological diversity and wildlands conservation work. The Wildlands and Human Needs approach seeks to balance human needs and environmental preservation and maintain the balance over the long term. The goal of the

program is to harmonize the economic and social development of communities with the maintenance of diverse, natural systems by promoting development based on sound environmental management and conservation principles. Underlying the WHN approach is a fundamental hypothesis: where communities and individuals are organized to take action, have control over access to the natural resource base, have the necessary information and knowledge, and believe that their social and economic well-being is dependent on sound resource management, they will act accordingly.

WHN projects work with local communities to help people better understand the ecosystem they live in and its relation to their quality of life, to define appropriate development efforts and new forms of resource use, and to organize to implement these efforts. The purpose of WHN projects is to create social, economic and environmental benefits, to ensure people's livelihoods over the long term and to conserve the resource base. Strengthening local skills, capacity and organization to manage development and the environment are primary objectives of these projects. The activities promoted by the Mexico Ecodevelopment Program are intended to be environmentally sustainable, socio-culturally sustainable, financially and economically sustainable, and institutionally sustainable.

The MEP's specific objectives, as outlined in the original proposal from WWF to BSP,⁸ are as follows:

1. To stabilize and make sustainable land and resource use around these wildland areas.
2. To improve the quality of life of the local populations in a way that is noticeable to them and compatible with the conservation of the resource base.
3. To implant a process of technological innovation and adaptation among area residents.
4. To foster environmental awareness and understanding on the part of local residents.
5. To ensure that the project's activities have a secure institutional or organizational base and can be technically and financially sustained through local and national resources.

In designing the on-farm interventions used in the MEP, the Wildlands and Human Needs Program drew heavily upon the methodology and techniques that World Neighbors had developed and used very successfully in their work with small farmers in Honduras. These techniques, which included minimal tillage, contour planting, and terraces, were designed to encourage intensive sedentary agriculture that would, theoretically, reduce clearing pressure on nearby mature forest.

WWF has been working in Mexico since 1968, and the program there is currently one of WWF's largest country programs worldwide. The WWF Mexico program had been funding conservation and protected area management work in three of the MEP's four sites (El Ocote, El Triunfo and Calakmul) prior to the development of the MEP and had also identified the Chimalapas as a conservation priority. Over the years of working in Mexico, WWF has accumulated valuable experience in working with Mexican NGOs and governmental agencies. Their partnership with the Wildlands and Human Needs Program to design and implement the MEP represented the Mexico Program's first entry into the integrated conservation and development field.

⁸ Ack. Bradley L. and Mario A. Ramos. 1991. *Environmentally-Sound Community Development Around Key Protected Areas of Southeastern Mexico*. A Proposal to the Biodiversity Support Program. Washington, DC: WWF.

III. PROJECT REPORTS

A. Chimalapas

1. Project Setting

Located in southeastern Oaxaca, the Chimalapas region encompasses some 600,000 hectares of tropical forest, making it one of the five largest forest tracts remaining in Mexico. The vegetation includes tropical dry forests, tropical humid forests, cloud forests, pine-oak forests, elfin forests and riparian ecosystems. The area is an important watershed for the Gulf of Mexico to the north and for the entire southern coast of Oaxaca, which is very dry. There are important undisturbed transects of vegetation ranging from 150 to 2,250 meters above sea level.

The area is high in species diversity with some endemic animal and plant species. Among the important wildlife are large cats, such as jaguar and ocelot, tapirs, monkeys, quetzals, harpy eagle and possibly horned guan, all of which are endangered in other regions. The Chimalapas area is large enough that genetically viable populations of these species may be able to survive. This area is one of the most biologically unexplored region in Mexico.

Outside human impact has been fairly limited to date by the historic presence of settled populations of Zoque Indians in the area. However, mounting threats in the area include: illegal lumber extraction, road building, uncontrolled hunting, proposed construction of a dam on the Rio Corte, unplanned development of human settlements by the government, poorly managed agriculture and cattle ranching activities.

At the time the WWF projects began, no legal protection existed for this site, although the Mexican government, several environmental and development groups and multinational agencies in Mexico all agreed that the area was a priority for ecosystem conservation. Some of those most active locally were the Pacto de Grupos Ecologistas and ANADEGES; foreign groups involved included the Synergos Institute, MacArthur Foundation and WWF; multilaterals included the World Bank.

The goal of the WWF project was to improve the quality of human life and increase effective environmental management through technological and social change that would be managed by local communities rather than outsiders. The project intended to focus on experimentation and adaptation of environmentally-sound production-related technologies, not only teaching certain techniques, but also teaching a process of innovation that people can utilize immediately and in the future.

2. Project Description

a. History

Maderas del Pueblo, A.C. is a Mexican non-governmental rural development organization specializing in agriculture and forestry. Before working in the Chimalapas region of southern Oaxaca state, it had conducted socio-economic studies and developed projects in the states of Guerrero, Chiapas and Oaxaca on social forestry, organic agriculture and peasant organization. Maderas began working in the Chimalapas region after the Pacto de Grupos Ecologistas in August, 1987 organized discussions and analysis of the situation there. Two

months later the Pacto held a first meeting with the Comunidad de Santa María de Chimalapa, a county-sized area of about 20 indigenous settlements.¹

By the time Maderas del Pueblo made contact with WWF and received approval for the ecodevelopment work, they had undertaken several initiatives during 1988 and 1989, including:

- applying political pressure on the government to stop giant development projects in the region;
- creating alternative, smaller-scale projects for submission to government agencies and international NGOs;
- publicizing, nationally and internationally, the social and ecological importance of the Chimalapas region and the dangers it faces;
- consolidating alliances with regional campesino organizations and non-governmental entities to increase local community awareness and organization and to improve Maderas' understanding of local concerns and proposals.

Maderas also elaborated and carried out a detailed survey of the 45 indigenous hamlets (*congregaciones*), 28 *ejidos* and 3 fishing villages in the entire Chimalapas region. The study, "Trends and Magnitude of the Destruction of the Tropical Forest of Chimalapas, Oaxaca," was implemented in coordination with the Institute of Economic Research in the National Autonomous University of Mexico. Together they developed a research instrument - a guide for structured observation and analysis - that was used in each of the 79 localities. They carried out more than 200 interviews with elders, natural leaders and chosen leaders, lumberjacks, cattle ranchers and state and federal public officials familiar with Los Chimalapas. Maderas staff reviewed over 100 newspaper articles about the region published between 1980 and 1990, along with over 50 related publications about Los Chimalapas and the Isthmus of Tehuantepec.

Working and living with people in the communities during the diagnostic, as well as the analytical process and the results of the study, combined to provide the basis for the ecodevelopment proposal Maderas submitted to WWF, as much in its overarching vision of what the Chimalapas communities needed as in its proposed objectives, course of action and dynamics.

Maderas determined that certain development premises should guide their program and provide a basis for an institutional framework to oversee project work. Specifically, they proposed that change be instituted from bottom to top, from the periphery to the center and from less to more. They also adopted the principle of "teaching how to fish rather than giving out fish." They agreed that development is most sustainable when it comes from and is for the benefit of the participants.

In May 1992, well into the ecodevelopment process, Maderas organized a campesino meeting attended by 50 campesinos from 17 communities in the Chimalapas region. Structured as a self-diagnostic workshop, the meeting provided a forum for the participants to discuss and analyze the ecological problems of the region and relate these to the problems they were confronting locally within their organizations and from external agents such as absentee ranchers, timber interests and government agencies.

¹ "Comunidad" in the Chimalapas region refers to a group of communities, hamlets and villages which have historic titles to land which they purchased from the Spanish Crown. Their communal land rights predate the Mexican Revolution and have precedence over the *ejido* system and other agrarian usufructure rights. These rights have not been honored with consistency by the Mexican government, and have been violated consistently by timber and mining interests, cattle ranchers and state and local governments. In the Chimalapas, there are two self-governing *comunidades*, Santa Maria and San Miguel, with a combined total of 45 settlements.

b. Goals & Objectives

The initial project envisioned by Maderas del Pueblo contemplated rather general goals that were based on the philosophy of the organization and its analysis of the needs expressed through the diagnostic process. These were:

- (1) to promote self-sufficiency in local communities;
- (2) to strengthen the processes of motivation and participation with campesinos;
- (3) to generate a permanent process of technical adoption and innovation that is appropriate for the ecological and socio-economic conditions of the region;
- (4) to reduce the negative ecological impact of traditional agricultural production (cattle, logging, hunting and gathering).

Specifically, Maderas del Pueblo proposed that it would carry out the following:

- (1) initiate communal land-use planning in each of the indigenous *congregaciones* (settlements) that would be self-regulating, and include a decision-making process for locating and apportioning areas for agricultural, fishing, forestry and conservation uses;
- (2) improve basic grains production by:
 - the use of *frijol abono* to improve fallow land;
 - enhancing planting systems;
 - instituting integrated pest management;
 - constructing terraces with barriers of shrubs, fodder and fruit trees and medicinal plants (year 2);
 - training teams to create and implement grain conservation and storage systems by using dryers, silos and aromatic plants as natural repellents (year 2);
- (3) initiate communal management and harvesting of forest lands by:
 - promoting agroforestry practices (year 3);
 - managing the harvest and direct marketing of timber wood (year 3);
 - managing the harvest and direct marketing of non-timber forest products (year 4);
 - managing and marketing of associated forest resources (wildlife, eco-tourism, cultivation of orchids, etc. (year 5);
- (4) initiate with women a process of improving nutrition and health (year 2), based on:
 - promoting bio-intensive household gardens for vegetables and fruits;
 - incorporating *frijol abono* in the diet;
 - introducing preventive health practices by selecting and training women as community promoters;
 - promoting the rediscovery of traditional uses of medicinal plants;
- (5) initiate a process of environmental education with children (year 4) by:
 - motivating and involving rural teachers;
 - creating a parent-teacher work program introducing children to both ecological theory and practice.

From the outset of the ecodevelopment project, Maderas del Pueblo believed that the level of social and political commitment of the communities of Los Chimalapas over the previous three years had been high and was a reflection of the serious socio-economic conditions confronting residents in general. As a result, Maderas hoped to emphasize two overarching activities throughout the five years of the project:

- (1) provide consulting and technical assistance in the areas of:
 - marketing;
 - traditional forest production;

- soliciting support from federal and state institutions and helping communities with government red-tape (*trámites*);
 - strengthening community organization;
 - defending human rights;
- (2) offer systematic, long-term and dependable assistance to the indigenous communal efforts to resolve agrarian problems, with special attention to the historical rights and jurisdictions of the two *comunidades*, San Miguel and Santa Maria Chimalapa. Maderas believed that this support would be an essential condition for social and ecological preservation in the region.

Maderas proposed to provide support to villages and the two *comunidades* by providing information on agrarian rights and legal issues and by generating publicity for political and other land-use issues at both national and international levels, using mass communication, denunciation tactics and grassroots organizing.

In order to work effectively in such ambitious and far-reaching fields, Maderas recognized the need to build its own institutional capacity. They proposed to:

- (1) form a technical team with a coordinator, agronomist, two extensionists and a support person and deploy 2 self-selected campesino promoters to work part time (year 1);
- (2) hire a forest specialist and a health/nutrition person and 2 new part-time campesino promoters (year 2);
- (3) develop the technical team's capacity to implement participatory methodologies and project technologies; upgrade 2 trained campesino promoters to full-time extensionists and select 2 campesina women to be trained as part-time health promoters (year 3);
- (4) hire an expert to teach biology (year 4);
- (5) replicate the activities in other zones of the Chimalapas (year 5).

c. Results

Maderas del Pueblo originally anticipated working with 48 campesinos in 6 *congregaciones* during the first year of the project; they later reported that 36 campesinos in 5 *congregaciones* actually participated. Among the outreach staff, 7 worked as health promoters, an area not mentioned in the initial proposal.

Internal WWF reports concurred that the projects initially would conduct sustainable agriculture extension and training activities with approximately 50 people in 5 *congregaciones*, and later expand to 3 others, reaching up to 120 participants. Maderas' activities included resolving territorial and land-use controversies; according to WWF, 80% of these disputes were resolved. Maderas organized a national committee to defend the resources and rights of people in Los Chimalapas (*Comité Nacional por la Defensa de los Chimalapas*). Their community organizing efforts also played a pivotal role in stopping the development of a federally declared and administered biosphere reserve, replacing it with the creation of a "campesino ecological reserve" (*Reserva Ecológica Campesina*).

By the beginning of the second year, work was extended to two more *congregaciones* for a total of seven, reaching approximately 100 campesinos. After two years the project included the following activities: 140 farmers in 8 *congregaciones* were experimenting with new agricultural techniques on 45 hectares; 6 women in one community were starting a pilot biointensive gardening effort; an experimental pilot nursery with 35,000 seedlings was established that in less than two years was producing 110,000 seedlings and aiding the promotion of agroforestry techniques.

Technical innovations in agriculture initially attracted a large number of imitators, some of whom dropped out little by little as practices did not show enough results or unexpected

problems arose, such as insect infestation. Nevertheless, the project developed a widespread reputation and many other communities that were only involved in land rights and campesino reserve organizing began to request technical assistance. In late 1993, two experienced agricultural extensionists were hired to work in the underserved eastern and southern parts of the region.

A woman extensionist was hired after the first year to work in the 7 *congregaciones* to train women in developing household gardens and learning about nutrition and health issues. Other promoters were to be added to the team later. By the end of 1993, however, only 3-4 communities had any significant or ongoing women's activities.

During the second year, project resources were weighted less on technical work in favor of more emphasis on promoting reconciliation of land conflicts (land use, traditional rights and ownership issues). Much effort went into forming the idea, promoting support for and refining the concept of the campesino reserve as a means of responding to the problems of competing priorities between land and resource use. This took attention and staff away from the agricultural dimensions of the project.

Given Maderas' limited financial and human resources, some of the anticipated technical activities were reduced to compensate for the additional community organization work in designing and securing community and governmental approval of the campesino reserve. Agrarian issues, both land-use conflicts and agricultural technology activities suffered as a result. Collaborative work with other organizations inevitably focused on political and organizational, not technical and economic, matters.

On the political and land tenure front, much progress has been achieved, probably as an indirect result of the development and training activities Maderas has carried out in the communities. This is demonstrated by the formation of two inter-institutional commissions with representation from community organizations, facilitated by Maderas, to improve living conditions and social inequalities. The Commission for Socioeconomic Improvement (*Comisión de Mejoramiento Socioeconómico*) was made up of an elected representative from San Miguel de Chimalapas, the officers of a local Trust Fund and a Pacto de Grupos Ecologistas representative. The Commission for Agrarian Conciliation (*Comisión de Conciliación Agraria*) was composed of representatives from the conflicted zones, three elected representatives from the two *comunidades* (Santa María and San Miguel), members of the Pacto de Grupos Ecologistas, and an observer from the State government. This commission was successful in resolving a long-standing land tenure dispute that had plagued the region.

In response to the concern that education and organizing were competing with (and dominating) the agricultural activities, Maderas believes that the two are mutually supportive, and that land security and local control are necessary for grassroots conservation to take hold. Maderas bases all of its work on a belief that education and promoting community organization will strengthen the local population's role in "determining the future of the region and its natural resources." Further, without that basic participation, little long-term change will be positive either for the residents or the environment. Therefore, the two main project components - environmentally-sound community development and the creation of a campesino reserve - are interdependent.

3. Findings

a. Political Conditions

- (1) Like many marginal and frontier areas in Mexico, the Chimalapas region has attracted a kind of violent, exploitative opportunism intent on rapid enrichment schemes. Faced with little federal government control, vast amounts of unpopulated territory and huge

sums of money in timber, land speculation and drug trafficking potential, business interests in the past have tended to view the peasant population that resides in the area as expendable. Without political power or outside advocates, peasants are victimized by social, political and economic forces well beyond their control. At times, environmental and social agencies seeking to work with this population have also become subject to abuse or attack.

- (2) Cattle ranchers in the northwestern part of the Chimalapas (most notably in and around the La Gringa community) have successfully used terrorist tactics to divide and manipulate agrarian peasants. In some cases, their actions have precipitated conflicts within and between communities and indigenous groups, thus weakening the potential for effective political opposition at the grassroots level. This strategy was undermined by the peace accords which Maderas del Pueblo facilitated between long-standing residents with *comunero* status and relative newcomers with *ejidatario* status of questionable legitimacy.
- (3) According to some project staff the incidence of drug traffic in the area makes it more difficult to work with the communities for two reasons: a) *hierba* (marijuana) offers a quick and lucrative source of income in comparison to the agricultural alternatives offered by the project, and b) peasant farmers are reluctant to take the promoters to their fields if they are growing marijuana, coca or other illegal drugs. Members of these communities may attend meetings with the Maderas del Pueblo promoters, but they are not motivated to resolve problems they are experiencing in their fields or to place themselves in conflict with the drug traffickers.
- (4) Maderas del Pueblo participated successfully with other conservation groups, such as Ecósfera and Pronatura-Chiapas, to block the construction of a highway which would have cut through a corner of the Chimalapas and directly through El Ocote Biosphere Reserve. In addition, since its inception, Maderas del Pueblo has collaborated with the Pacto Ecológico, Consejos Ejidales, the Comité Nacional para la Defensa de los Chimalapas and, from time to time, with governmental agencies such as SEDESOL and the Agrarian Reform Secretariat (SRA) to mobilize opposition to environmentally destructive government policies and actions. As a result, Maderas del Pueblo is seen in many circles as a "political" entity, causing some of its staff to face personal risk in the way of anonymous threats and hostile surveillance.
- (5) Some staff expressed the concern that Maderas del Pueblo, in its efforts to mediate disputes and advocate respect for peasant autonomy, had perhaps been too effective as an advocate, creating dependency on Maderas among the local communities. These concerns highlight the difficulty of playing an advocacy role while trying to serve as a facilitator for autonomous community development. This situation is complicated when the people involved are constantly confronting powerful political and economic forces and are badly in need of a champion.

b. Land

- (1) Land tenure is a key issue to many people in the area. Those who are relatively recent immigrants want to have secure tenure and also to be able to sell their rights. The 44 "indigenous" settlements (in the two *comunidades*) have secure tenure under the law, but residents mistrust the agrarian legal system because of a history of political manipulation and encroachment by powerful outside interests.
- (2) For many years, the states of Oaxaca and Chiapas have been engaged in a territorial dispute over a significant part of their border, which includes part of the Chimalapas traditionally thought to belong to Oaxaca. Successive Chiapaneco governors have attempted to stake claim and acquire loyalty among residents of the Chimalapas region.

They have provided concessions to timber and cattle interests, offered incentives for poor peasants from distant states to come as workers and colonists and declared *ejido* rights on what they claim is either national or state land. Much of this land belonged to the two indigenous *comunidades* of San Miguel Chimalapas and Santa María Chimalapas.

- (3) High-level political conflicts taking place over resource use and boundary line disputes severely affect the security of land tenure and, therefore, the livelihood of peasant communities. The resulting insecurity contributes to local inhabitants' indifference to natural resource protection, and makes it more difficult to find incentives for responsible stewardship.
- (4) According to some of the staff, land tenure continues to be the problem most commonly felt by the area's residents, yet they are not able to participate actively in solutions. In the Chimalapas, some political resolution is slowly taking place. However, few of the residents are aware of the complex nature of the discussions -- what the different positions are, what options are available, and what the implications and consequences of possible outcomes are. They are fairly dependent on Maderas del Pueblo to know the players, analyze the situation, develop the strategy and negotiate on their behalf.

c. Deforestation

- (1) In general, in low-lying, flat areas, the soil is usually rich and highly productive. Among the *ejidos* and traditional communal settlements, land is plentiful enough not to warrant old growth forest cutting for timber sale or agricultural expansion by local residents. The agriculturalists interviewed were clearing *acahual*, or fallow secondary vegetation, as part of their long-term rotation cycle, instead of cutting down and expanding into primary forest.
- (2) On the other hand, significant tracts of primary forest have been cut by timber companies and large-scale absentee ranchers. Both groups have a certain amount of official protection even for otherwise illegal land seizure and forest extraction. The long-standing territorial dispute between Oaxaca and Chiapas has been both the source of and a cover for some of the illegal exploitation of the area, and of some of the state-abetted colonization of the area. Clearing forest creates a physical impression of possession, thus forming part of the claiming process for each group.
- (3) Maderas' agroecology project, by promoting sustainable agricultural practices, probably will not have any measurable, direct effect in the short-term on the rate of deforestation, since it is targeting a group which is not primarily responsible for the deforestation in the region. However, organization around the Campesino Ecological Reserve is promising, and, if successful, should result in an effective buffer zone to prevent external exploitation of the core zone. It also is expected by the project implementers to stimulate greater understanding of sustainable natural resource management leading to stabilized agricultural plots, thus decreasing the likelihood that community members will encroach on their forest resources in the future.

d. Milpa

- (1) Corn is produced for family consumption first and then for market if there is enough left over. The average household economy requires substantial additional cash income for purchases of most staples which are not produced in the home.
- (2) The agroecology project considers *milpa* clearing to be one of the key environmentally degrading practices because it is done using migratory, slash-and-burn techniques.

- (3) All peasant agriculturalists in the area practice fallowing of farm plots once their productivity starts to drop. The *guamil*, or fallowed area, is usually left to grow into bush for two or more years. Some bottom land we observed had grown up 15-20 feet tall in what local farmers said was two years; other areas took twice that long, particularly steep slopes and rocky areas. Farmers judge how many seasons to cultivate and how many years to fallow by their experience of the soil's fertility (sometimes influenced by degree of need). Nobody with whom we spoke who used this method had experienced a degree of fertility loss that forced them permanently to abandon a plot or convert it to less intensive use such as cattle grazing.

e. Cash Income

- (1) Across the region, cash income is derived primarily from casual seasonal labor (*jornales*), selling livestock and small quantities of occasional cash crops, small-scale and irregular timber harvesting and wildlife poaching, and (increasingly) commercial production of tomatoes and *chiles* (aka "*picante*").
- (2) The primary commercial crop in the San Francisco La Paz area currently is chile. However, the great distance to market and the complete absence of feeder roads in the area is a serious market limitation, especially for highly perishable crops. Many farmers believe that cattle would be more profitable because the "product" can be driven to market without significant loss of value. They also believe they have enough land area to raise small herds. At present, the primary obstacle to a substantially higher livestock population among the peasant population seems to be lack of money to purchase the stock. Given additional cultural factors (see f(2) below), unless alternative cash crops can be developed, cattle may become an increasingly important and common commercial activity.
- (3) In other communities, primary cash crops appear to be corn (when harvest exceeds family requirements), corn-fattened swine, melons or chile peppers. A variety of fruits, tubers and vegetables are raised in quantities too small to meet even local demand, and thus do not represent significant cash crop commodities.

f. Cattle

- (1) According to Maderas del Pueblo, there are three basic types of ranchers: 1) large-scale *latifundistas* who live outside the zone and control extensive tracts of grazing land using hired labor; 2) local *caciques* with their own capital and/or bank loans; and 3) peasants who own or manage cattle, often under a share-cropping arrangement called *a tercios*, who are motivated by prosperity manifested by the wealthier ranchers.
- (2) Most peasants we spoke with in the Chimalapas want to raise cattle. Some see it as the way to escape poverty and marginalization, while others seem motivated by a vague "class" attraction (*ganaderos* in the region are both better off and of a higher social standing than the *campesinos*). Some, perhaps the majority, of the peasants aspiring to be ranchers use cattle as part of a diversified agricultural base which includes basic grains for subsistence, cash crops, domestic livestock and dooryard gardens. Cattle are generally thought to be an easier product to market from remote sites since buyers will sometimes come to the farms while other commodities must be transported.
- (3) The short-term incentives for cattle ranching in the region offered by NESTLÉ, PROCAMPO, Banrural and PRONASOL compete with and at times overshadow the medium to long-term incentives of sustainable resource management. Generous credit terms are offered to promote cattle production in the area by Banrural and NESTLÉ, including financing of N\$2,000 per cow-and-calf, with a maximum of N\$20,000 (10 cows) per loan. Monthly repayments are for interest only, with the principal to be paid back at

the end of 1-2 years. The most marginal farmers buy into limited financial packages from the government which are offered without any training or technical advice (such as solar-powered electric fences). The most common result is further indebtedness of the already impoverished rural population.

- (4) Despite substantial local interest in ranching opportunities, the project has yet to follow up on its plans to implement a sustainable livestock husbandry initiative. For the reasons cited above, it is not yet clear if campesinos will consider the agricultural alternatives offered by the project to be opportunities equivalent to cattle ranching.

g. Improved Agricultural Techniques

- (1) The project began its introduction of "sustainable agriculture" with a number of related techniques (*labranza mínima, abono verde, curvas a nivel, compostas, terrazas*, etc.). After receiving little acceptance in a number of communities, the project shifted in 1992 to "improvement of planting systems" (mostly *frijol abono*) and "natural" pest control.
- (2) By some accounts, the *frijol abono* promoted by the project is not new to some of the farmers involved with the project. Many farmers recognize, and some have had previous experience with, *canavalia* and *terciopelo*, the two varieties being introduced. However, few have used it for soil improvement purposes.
- (3) The project has had some success in explaining the bean's usefulness, although the degree of adoption and amount of yields have not been measured. Among participating members of the community visited during the assessment, there appeared to be a fairly high level of awareness that using *frijol abono* will provide some benefit for soil and productivity and fairly widespread interest in planting it. Some participants expressed hope, based on what they had been taught, that the bean will fertilize the soil, permitting more years' production in the same site. Although this has not yet been demonstrated, if it bears out in time it will serve as an important incentive to reduce annual land clearing and burning.
- (4) Peasant interest in the agroecology part of the project currently seems to be stimulated primarily by the labor-saving effect of *frijol abono*. It kills the hardy perennial *estrella* grass and other weeds which strangle the corn crop and necessitate several manual cultivations per season. Some farmers in San Francisco La Paz estimated an overall reduction from two weeks to four days to clear and plant one hectare of corn. This, they reasoned, would free them to plant more land in corn or chilis, provided they could gain access to more flat bottom-land.
- (5) Maderas del Pueblo agricultural promoters seeking to have a favorable impact on the area's ecology have lately begun discussing agrochemicals with community participants. The project believes that environmental damage is being caused by commercial herbicide and pesticide use, and that the *frijol abono* can alleviate much of the need for these chemicals. However, effective Integrated Pest Management (IPM) is highly complex and does not allow peasants to achieve enough early or easy success to justify their labor investment. Therefore, some selected techniques are occasionally promoted on an *ad hoc* basis, without sign yet of how widespread the acceptance will be, or how effective the techniques will be.

h. Conceptual Framework

- (1) Maderas del Pueblo learned from its original social diagnosis and subsequent observations that community residents practicing slash-and-burn agriculture tend to let fires get out of control and spread to nearby forest areas without stopping them. There is some speculation on the part of Maderas and associated environmentalists that this unplanned

forest burning causes more damage than deliberate tree cutting for agricultural, livestock or settlement expansion.

- (2) People who do not feel they own or have access to the forest, particularly if the government imposes sanctions on them for using its resources, begin to develop a hostile relationship with the forest, seeing it as an adversary or a resource to be exploited for short-term gain by clandestine means. In contrast, Maderas del Pueblo believes that peasant access to and control over land, including forest, will increase their motivation to protect it. Maderas commits the majority of its effort to supporting peasant community organization, legal protection to ensure land rights and development of local residents' organizational, political and technical capacity to manage their own resources.
- (3) In the communities where interviews were conducted, the evaluators found little obvious and direct relationship between the project-promoted agricultural and educational activities and the protection of old growth forest. Participants interviewed did not seem to have a general sense of the value of resources distant from themselves; their motivation for involvement - understandably - is to save labor and increase productivity where they are already farming.
- (4) However, Maderas del Pueblo articulates and manifests a clear understanding of the long-term relationship between land security, adoption and internalization of sustainable agricultural practices and protection of biological diversity and forest resources. Although in a given community, the agroecology and social organizing activities of the project may appear limited and without connection to the larger natural environment, Maderas del Pueblo's strategy is to connect immediate economic objectives with the long-term protection of resources through an involved peasant population.

i. Social/Promotional Techniques

- (1) Maderas del Pueblo participated in Participatory Rural Appraisal in training sessions with Grupo de Estudios Ambientales (GEA) and WRI, which was promoted by the MEP as a method to diagnose communities' felt needs and establish the basis for subsequent project activities. However, the technique was never applied by Maderas in a consistent manner and was soon dropped from use altogether, apparently without any evaluation of why or what alterations, if any, could have salvaged its usefulness.
- (2) Environmental education activities, carried out by the only female program staff member, are limited to five communities and to women in those communities. Neither the male agricultural promoters nor the land rights organizers seem involved in environmental education and do not appear to be proactively supportive of the project. Although some kinds of education are integrated into all other aspects of the Maderas del Pueblo program, environmental education *per se* is seen mostly as women's activity.
- (3) Gradual success over several years in social, legal and land tenure areas has given Maderas del Pueblo increasing credibility among residents of the area - *ejidatarios* and *comuneros* alike. This has stimulated a number of communities to request Maderas del Pueblo's assistance in agricultural extension. In response, the project recently hired two more trained and experienced extensionists from Guatemala who are responsible for large geographical areas previously not served by the agroecology part of the project.
- (4) Because the *canavalia* and *terciopelo* varieties of legume are not completely new to the region, some extensionists consider the promotion of the bean to be "recovery" of old techniques rather than "introduction" of new technology. Probably it is most accurate to say that the varieties are traditional while some of the uses are new.

- (5) Local traditional knowledge of conservation practices and principles has not been studied systematically by the project, in order that promoters might build on, enhance or modify existing beliefs, knowledge or practices (both their own and those of local inhabitants). Most promoters see their role as introducers of new ideas that will be useful to local people once the people accept the ideas. There has been no systematic monitoring of how effective this approach has been, even though some results were fairly disappointing after the first and second years. Popular demand for Maderas del Pueblo to expand its agricultural assistance has been due more to Maderas del Pueblo's effectiveness in other (legal and organizational) areas than to the success of promoted farming techniques or the methodology of promotion.
- (6) The project has not been able to ensure consistent, dependable or adequate access to *frijol abono* seeds. For the project participants to experiment with the *frijol abono* plants being promoted by the agricultural team of Maderas del Pueblo, the farmers need to plant seeds of the varieties being introduced. Although the promoted varieties are not altogether new to the region, there is currently no production or local supply, and no known commercial source. The technical coordinator obtained the first seed samples elsewhere, brought them to the communities and distributed them among some or all the farmers who participated in an orientation or training session. Unfortunately, a number of participating communities share the experience of receiving substantial promotion and then feeling disappointed when some or many members of the participant groups do not receive any or enough seeds.
- (7) Inequities in distribution exacerbate an already frustrating situation: in some communities some participants received one kilo, a few got two, and others none. In the worst cases some farmers believed favoritism played a part in who received how much seed. While there is no evidence of a consistent pattern of this, the project opens itself to innocent speculation, suspicion or hostile malignment by not having planned for adequate supplies.

j. Project Expansion

- (1) Extension of the agroecology program includes: a) recent expansion of work to the Uxpanapa region, where *ejidos* have asked for advice and assistance in agriculture; b) extending agricultural activities to the southwestern *comunidades* region with funds from Rockefeller Foundation and the British Council, where much of the organizational promotion has been carried out; 3) formation of a "co-investment fund" (*Fondo de Coinversión*) with government and international foundations to work in the remote mountainous east and southeast of the region; and 4) increasing coordination with the Unión de Ejidos in the northeastern extreme of the zone, near the Presa de Malpaso, in collaboration with Línea Biósfera, a new environmental NGO that was formed following ten years' experience working in agricultural extension and organizing.

k. Project Management

- (1) The project's first external funding came from WWF (and was Maderas del Pueblo's only source of support for two years) and included funding for three agroecology extensionists. Maderas del Pueblo hired six people with the money, in order to have three others continuing to work on the land conflict settlements, the community organizing and the ecological reserve idea. Maderas del Pueblo continues to express appreciation for WWF's flexibility and vision in recognizing the essential relationship between land security and long-term peasant conservation efforts.
- (2) The overall program, as well as its separate projects, depends heavily on the vision and guidance of the president/General Coordinator and founder of Maderas del Pueblo. He articulates the overall mission, its long-term goals and how these are strategically pursued

by the organization's activities. His continued leadership is fundamental to the success of the program. The project could benefit, however, from additional leaders with different experience and vision.

- (3) The promoters and other program staff seem to have a shared idea (or *línea*) of what the project is trying to accomplish: self-sufficiency, sustainable resource management and self-governance of a protected area. However, they each seem to work on their own agendas with little coordination. In staff interviews, all mentioned internal organizational difficulties - both personal and technical - in the project, mostly relating to communication, coordination and planning. Others mentioned the lack of technical and moral support among the project staff. This has gone on long enough that it has reached the point that almost all staff perceived that there was no longer a "team" working toward common goals, but a group of individuals working toward individual ends. One staff member said that it felt as though the team was disintegrating into a variety of dis-coordinated individuals acting without cohesion or cooperation.
- (4) Individual commitment to the overall program seems high. This is indicated by people's persistence and longevity with the project in spite of difficult working and living conditions in the region, both in Matías Romero and outlying areas. Indeed, the hiring of a social forestry specialist has been in process for many months; Maderas del Pueblo has been unable to find someone to take charge of a proposed community silviculture program. They attribute this situation to the lack of technically qualified and socially committed forestry people who are willing to live under the difficult physical conditions offered by the project.
- (5) Competent, experienced day-to-day management is lacking. For example, monthly staff meetings are postponed more often than held, which makes planning, coordination and communication between the staff and their widespread work areas unreasonably difficult. Coordination between and within the social and technical teams is lacking, and personal conflicts and mistrust are building.
- (6) There are no terms of reference or job descriptions for any of the positions. As a result, there is no concrete means or set of procedures to measure whether project staff are meeting their obligations to the project, or for staff members to know exactly what is expected of them.
- (7) Documentation of the project is poor to non-existent. No system or methodology exists which has been consistently followed for gathering baseline information to be used in monitoring, site comparisons, self-evaluation of the effects of the activities, or planning.
- (8) The project staff are spread very thin in a geographically vast region, confronting poor or no roads with insufficient and inadequate vehicles. They are having increasing difficulty meeting a growing demand for their assistance, which is a product, at least in part, of Maderas' success in resolving land disputes, obtaining governmental attention and recognition and developing the Campesino Ecological Reserve beyond the conceptual stage.
- (9) Project funds committed by WWF arrived late on several occasions, causing various administrative hardships and cash-flow problems.

4. Observations

a. Ideology

There is a considerable gap between the project's ideology and its practice. This is most evident in two areas. First, agroecology promoters, however good their educational pedagogy, tend to see themselves as importers of new and better techniques and low-level "appropriate" technology. The peasants they teach are - at their best - willing learners who will experiment with what the promoters introduce, selecting the most effective or most successful techniques, plant species and methods. Coincidentally, the agricultural techniques and promotional methodology that WWF had identified were the same ones, designed by World Neighbors in Honduras and elsewhere, that Maderas had independently discovered and considered appropriate.

Meanwhile, the conceptual framework promoted by WWF included being responsive to communities' felt needs and introducing new ideas based on existing local know-how and sensitivity to the socio-cultural context. In general, there are likely to be inherent tensions between the objectives of an external project and the priorities or aspirations expressed by a community. For example, communities will likely want things that the ecodevelopment project is unable to provide (e.g., a road to the community, a health post, recreation facility or a storage shed). This is common to nearly all rural development organizations which have a specific set of activities or areas of work. The program deliberately chose not to spread itself too thin by working in a wide range of activities or trying to be "all things to all people." The program's strategy included being proactive as well as responsive, in order to be effective and make the most efficient use of limited human and financial resources. However, it is difficult to earn the trust and full participation of local people if the project has an overly narrow range of activities it can carry out, is too dependent on a pre-determined package of activities, or is designed to be more proactive and directive than responsive.

The second area which points to the divergence of theory and implementation in the project lies in its inception. Some of the basic principles were: to be responsive; to identify natural leaders, felt needs and priorities through community assessments; to create a ranked list of economically important activities and another of environmentally degrading activities; and to stimulate interested, energetic participation in activities that would respond to local concerns and reduce environmental degradation.

Participatory Rural Appraisal was the methodology promoted by WWF to carry out community assessments, and it was to have been carried out in each community where project activities were contemplated. For reasons never analyzed by WWF and undetermined by the mid-term evaluation team, PRA was written off as inadequate fairly early, and no other techniques or practices to accomplish the same ends were applied. As a result, the purpose the PRA was to have served was abandoned based on the failure of a particular technique. This caused a general breakdown in the intended practice of establishing activities based on each community's expressed needs and subsequent desire to utilize the project team as a resource to solve its own problems. Had PRA's failures been analyzed, either modifications could have been made or more relevant techniques employed. Instead, the failure of the technique was allowed to undermine an important principle of the program. This made it difficult for the project planners to avoid predetermining the nature and content of their relationship with participating communities.

b. Strategy

This is a critical moment when Maderas del Pueblo needs to demonstrate its leadership in the conservation community by means of moral authority, sophisticated planning, a coherent strategy and clear plan of action. Mexico and the world are watching to see how - or whether - a campesino reserve in the Chimalapas will function. There are important

challenges, including how such a Reserve will integrate scientists, politicians, landowners, peasants and environmentalists, and how it will address larger political issues such as state power which usually demands hegemony over management and planning authority. Maderas del Pueblo will need a clear vision of how to modify its goals for the reserve to coincide with those of other institutions, and it will have to develop a cadre of local leaders capable of sophisticated negotiation. It will also have to advise the future managers of the Reserve - the local communities - while protecting and advancing their autonomy. Without a systematic organizational strategy and a clear leadership development approach, these challenges will be extremely difficult to meet.

c. Management

The major challenge facing Maderas del Pueblo is not its vision (more and more people are beginning to believe in it and collaborate with the Pacto Ecológico and the Friends of the Chimalapas), or its structurally and legally significant goals (it has already had early successes), or its extremely ambitious program (demand from the base has consistently grown). Instead, its major obstacle is its internal dysfunctionality, which it seems powerless to overcome on its own. Considerable help is needed to avert a tragic failure of a courageous and potentially historic undertaking due to avoidable, or treatable, internal illness.

d. The Campesino Ecological Reserve

Although the formation of a Campesino Ecological Reserve is not a specific objective of the agroecology project, it is perceived by Maderas del Pueblo as an essential foundation for long-term, self-sustaining grassroots conservation. Therefore, by the organization's own analysis, its effectiveness in bringing about the formation of such a reserve is important to assess.

According to Maderas del Pueblo, the peasants will develop and manage the reserve. Instead of professional conservationists, researchers and managers planning, establishing, managing and enforcing the reserve while taking the peasants' views and needs into consideration, the peasants (through representative organizations) should take into account the conservationists and technical advisors' viewpoints as they plan, implement and enforce the reserve. The management of the reserve should have a degree of autonomy in which the communities make the policy decisions and vote on conservation issues, while technical experts and government agencies serve in an advisory capacity, thus being prevented from forcing their views on community groups.

In order for any real autonomy to occur, the Reserve area (including all the territory belonging to the two *comunidades* and the 30 *ejidos*) must be managed collectively and rationally by its residents. This objective requires firm and lasting resolution of the land tenure situation. It will mean that any official decree establishing the Reserve will only legalize an arrangement and an agreement which was painstakingly achieved through organization, negotiation and education. The more traditional alternative would be for the Reserve to be officially decreed as a "protected area" by the government, without resolving the fundamental land tenure situation.

According to some project staff, the reserve will be managed in semi-autonomous fashion by the Council of Representatives which Maderas del Pueblo has worked for a long time to create. Some Maderas del Pueblo staff members point out that the Council has not been consolidated yet, adding that the goals for the reserve itself are not clear to the leaders, the residents, or even to some of the promoters.

The general population and many of the village-level leaders need more orientation about and involvement in the ongoing planning and negotiating regarding the Campesino Reserve. Their awareness is quite limited with respect to the goals of the Campesino Reserve project and the probable limitations, organizational requirements and related social changes faced if

the Reserve is established. There is also a substantial disparity in the levels of understanding of the agroecology project and its relationship to the future Reserve. It may be that the staff have been so involved for so long in so many intricate details of the organizing that they have difficulty seeing accurately how uninformed and underinformed many of the communities are.

e. Women's Activities

The perspective of men and of women may be somewhat different regarding the environment, what causes its destruction, and its relative importance. Based on a small sample, it appears that the women do not perceive the need for fertilizer, organic or chemical ("*La tierra aquí es muy fértil*"). Instead, they perceive one of their most serious problems to be the lack of availability of seeds, especially for gardens (*hortalizas*). In San Francisco La Paz currently all they plant for home consumption is calabasa and cilantro, but they would like to grow tomatoes, onion, garlic and several other well-known and frequently consumed vegetables.

The women with whom we spoke in San Francisco la Paz appeared to be aware of the potential benefits of the peasant reserve. They felt that it was important not to cut down trees because cleared land was susceptible to erosion ("*Se va la tierra con el agua*"). They did not think it would be necessary to cultivate as much land if the areas were better managed. They believed that it was important to reforest the *acahuales* and leave standing trees as live barriers on all boundaries of cleared land and noticed how the banks of the river were washed away, always on the edges of cattle pastures. The cattle ranchers are the cause, they said, of most of the soil erosion and tree cutting in the area.

Following its original plan to start working with community women, Maderas began in 1992 a Nutrition and Health sub-project coordinated by a female expatriate, the only woman in a program-related position on Maderas' staff. After more than a year, the sub-project was working on an ongoing basis in two communities, and had made contacts in several others. It is a modest beginning, and well below the initial projections in the Maderas del Pueblo proposal to WWF.

Among other things, the project sponsored cooking workshops in a number of communities where the agroecology promotion had begun, to teach women how to prepare the *terciopelo* bean for consumption. After creating the beginning of a demand, it turned out the project had not made plans for ensuring seed supply, and farmers are not harvesting even enough seed to meet their own demand for replanting, much less as a food supply. This is because the current crop is being used as ground cover and will produce large amounts of vegetable matter but not much bean seed. The women say they do not have enough money to buy seeds, but they would like to have some for cooking which they learned in the workshop that gave them recipes for *frijol abono*.

There is a relationship, at a theoretical level, between the Health and Nutrition education and the larger ecodevelopment program. A few people articulated that the "women's project" was a mechanism to involve the community at the family level (i.e., men, women and children). In practice, however, it is otherwise. The activities of the women's project are perceived by the male project staff as "work with women" and do not appear to be integrated in practice into the rest of the ecodevelopment project. The workshops and different foci of the project appear to be based on an individual's idea of what is needed, not on a cohesive strategy that all the Maderas staff have developed together. The coordinator has never received general affirmation for her program, and the male staff, despite denials, appear to be threatened by the concept and its implementation.

Project activities in this area are unfocused, often with inadequate follow-up (probably due to lack of institutional and logistical support as well as human resources) and do not account for

the different preferences of the various communities. For example, in San Francisco la Paz, the women expressed greatest interest in a workshop on medicinal plants, but were not sure how they would use the information in their daily lives. The coordinator was able to articulate a long-term view, but the participants were not. They asked for a more in-depth workshop which would include how to prepare the medicines, not just collect and recognize the plants. Their interest was in the practical aspects of the undertaking (i.e., improving local health care) and not the rescuing of local knowledge or traditional practices. For their part, the men of the community seemed content that the women had something to interest and occupy them but were not able to say what use it was to the community at large.

When Maderas del Pueblo staff were asked about environmental education, they invariably referred to the "women's project". There was no other activity or sub-project that was understood to fulfill this role.

f. Time Frame

Several project staff observed that the amount of time needed to develop and implement a project that works effectively with people is much longer than most planners and funders want to believe. At least five or six years are required for people to adopt and internalize (*enterrarse*) new ideas and practices. They cautioned that the evaluation team should not expect to see many changes after two years. This is a nearly universal concern and a cause of continuing tension between funders, program planners and implementers. It is also an important limitation which evaluators, technical specialists, donor agency staff and other external "experts" need to take into account.

g. Environmental Education and Attitudes

The evaluation team asked project staff if the attitudes of local residents seem to have changed as a result of the project, such that they are aware of and concerned about the relationship between their activities and the environment. There were few clear answers. Some said the project was a few grains of sand - the beginning of a long process that eventually would lead to land tenure security, which should indirectly increase environmental conservation.

The existence of a small cooperative in a village or *ejido*, or a group of corn farmers using *frijol abono*, did not seem to equate with changing people's attitudes towards natural resource management. The project hopes that over time, directly or indirectly, the activities of such groups may change people's environmental behavior. There seemed to be a hint that technical work was men's work, while changing attitudes was softer, and therefore women's work. Certainly that is how the staffing and focus of work with community people were divided.

It has not been proven that attitudes and behavior exist in a double cause-effect relationship such that "good" attitudes reflect or cause sustainable practices. Therefore, a project that intends to influence people's long-term practices, in part based on changing their attitudes, probably should more directly seek to involve the entire community in processes which affect their attitudes through a process of thought, reflection, action, evaluation and further action. This would include incorporating those people responsible for the communities' values and attitudes, which are generally the women, sometimes religious leaders, and often the natural leaders. The Chimalapas project is not currently doing that, but rather limits itself to teaching people more sustainable farming practices.

Also lacking in the project's efforts to influence attitudes is an emphasis on topics which relate land-use practices, not just to people's present livelihoods, but to forest conservation and people's long-term survival.

Some of the confusion seems to derive not from disagreement over goals but from disagreement over methods. Many of the technical promoters believe that they must first win people's trust by proving the project has something useful and concrete to offer, *then* work with them in non-technical areas ("*Ganar la gente primero y luego meterse en el rollo de educación ambiental*"). It may be a false dichotomy, in which case both should - and can - be done simultaneously.

5. Recommendations

a. Project Management

- (1) The Maderas del Pueblo office in Matías Romero requires a General Coordinator who can develop the moral authority to take over the planning and administration of the program. The Coordinator will have to earn the respect of the other staff, especially those who have been there longest, which will take time. However, s/he must be given at the outset enough managerial authority - commensurate with responsibility s/he will have - to manage the full range of operations of the projects. Maderas del Pueblo should avoid the common pitfall of assigning responsibility without authority, leaving real decision-making power in the hands of the absentee visionary.

Another common phenomenon should also be avoided: in organizations staffed by highly committed, underpaid people, longevity (or seniority) is the highest value; those who have been there longest have more moral authority, so their demands, proposals and activities are given more weight than those of other people. Early on, the Coordinator will need to develop a set of norms in which priority is put on overall experience (including that prior to joining Maderas del Pueblo) and performance according to established objectives and expectations.

- (2) The single most frequent concern expressed by staff, and the subject of the most frequent recommendation they made, concerned internal harmony, planning and management. Virtually all staff called for a retreat, or a series of workshops, using an outside facilitator. Its purpose would be to air and resolve problems and differences between members of the project personnel and to clearly delineate different roles, activities and their coordination. On various occasions, Maderas del Pueblo staff have requested assistance of WWF but remain substantially dissatisfied with the response. WWF staff, either from Oaxaca or Washington, should work with Maderas del Pueblo staff to undertake a needs assessment process that is practical, participatory and results directly in a plan of action created by and affirmed by all Maderas del Pueblo staff.
- (3) The overall project would benefit from a more carefully developed strategy towards one or more defined and common goals. The staff retreat mentioned above should also include discussion of and redefinition to a single mission so that all activities are strategic and prioritized accordingly.
- (4) It is imperative that Maderas del Pueblo overcome its internal organizational problems before the final design and initial start-up of the Campesino Reserve. Even small misunderstandings left unattended can grow into irreconcilable differences and unresolvable problems. And the current situation is more serious than that.

b. Strategic Focus of Activities

- (1) The various agricultural techniques and practices being introduced might need to be re-analyzed from the perspective of the long-term objectives related to land tenure and formation of a Campesino Reserve. The specific techniques may be useful, and indeed there has been an increase in demand, but too much emphasis on specific techniques inherited from World Neighbors/COSECHA may divert energy from the next higher level of organizing sustainable production. To the extent that new techniques are introduced, their intended benefits should be made more clear and promoters should take into account issues of excessive complexity, appropriate timing, adequate supply of inputs and what information should be provided regarding the techniques' relevance to environmental conservation.
- (2) Cattle ranchers are not a homogenous group, so their economic and political activities cannot all be addressed in the same way. Some are exploiters and/or open enemies of the peasant communities, others are equally victimized by external economic forces, and others fall somewhere between. The project's lack of follow-up to their plans to implement a sustainable livestock husbandry initiative is understandable given the many demands on staff time, but alienating to local peasants who aspire to be small-scale ranchers. The project still should investigate the potential of appropriate models of small-scale, intensive cattle raising that are more environmentally benign and economically accessible.
- (3) Small livestock (*ganadería menor*) might also prove to be a source of income and protein without causing as much environmental damage as cattle. Unfortunately, many development agencies have promoted this in many parts of the world, and there are not very many successful models. Cultural bias in favor of cattle, the comparatively greater experience and knowledge favoring cattle, and the low labor requirements all make it difficult to shift attention to smaller animals. Nonetheless, it might be worthwhile to work in targeted communities to develop selected people's interest in, and experimental intensive production of, certain animals which already form part of the community's diet and for which there is a potential market.

c. Promotion and Extension

- (1) The agricultural promoters have encountered problems that the technical staff of the project are unable to solve, such as the infestation of tomatoes by leaf-destroying pests. Before introducing varieties or practices, the technical staff should experiment for long enough periods to learn some of the negative side-effects of the activities they are promoting. A longer-range experiment, test, demonstration, organizing and promotional process would be very beneficial.
- (2) The project needs to place higher importance on, and develop a methodology for, the "recovery" of traditional local knowledge of conservation practices. The project might also experience increased adoption of techniques if it relates the value of these practices to the protection of local natural resources needed by the people rather than to the need to create or protect the Reserve. That longer-term objective need not change for the project personnel, but may be too abstract for most peasant families whose primary motivation is to increase their standard of living.
- (3) There is a need for more orientation and involvement of the general population, and of village-level leaders. Their awareness of the goals of the Campesino Reserve project and of the agroecology project is apparently still quite low and their participation seems to be as subjects of, rather than participants in, a long-term process.

d. Monitoring and Evaluation

- (1) Maderas del Pueblo needs to design, develop and implement an ongoing system of information management for use in planning and evaluation of each sub-project, as well as for training promoters and extensionists how to manage information for their own learning and for teaching their communities.
- (2) Maderas should require of itself, and WWF should consider making future funding conditional upon, consistent monitoring of project activities (comparing their results to pre-determined indicators) as well as regular, periodic self-evaluation exercises. Maderas del Pueblo staff have asked for help in developing the instruments and methodology; WWF should supply the necessary on-site assistance. Assuming it is successful, it will make a major difference in the potential of this project to realize many of its very ambitious objectives.

e. Environmental Education

- (1) Environmental education is not only for women and should not be relegated to second-level importance. Maderas would benefit from giving concentrated attention to a process that redefines the relationship between production techniques, incentives for conservationist behavior, methods to encourage ecologically sensitive attitudes, and the economic, social and political benefits of the Campesino Reserve. This may require additional training for Maderas del Pueblo staff in some of these areas.
- (2) A series of staff and participant exchanges would be useful between the organizations working in the Chimalapas (Maderas del Pueblo) and El Ocote (Pronatura-Chiapas and Línea Biósfera) to strengthen the process of environmental education in both regions.

B. El Triunfo Biosphere Reserve

1. Project Setting

The state of Chiapas contains more than 40% of Mexico's plant species, and 80% of its tropical trees are found there. Chiapas accounts for over 30% of the mammalian species, over 65% of the bird species and over 30% of the amphibians and reptiles in Mexico. El Triunfo Biosphere Reserve, located in the Sierra Madre del Sur, is 119,177 hectares of some of the richest tropical forest in Chiapas. Varying in altitude from 500-2800 meters, El Triunfo houses a wide variety of forest types, including pine-oak, riverine, tropical montane and evergreen forests. Importantly, the Reserve contains some of the last cloud forest area in Mexico.

The Reserve harbors a great diversity of life, with high endemism and many endangered species such as the horned guan, the resplendent quetzal, azure-rumped tanager, maroon-chested ground dove, the slaty finch, a number of snakes and amphibians, jaguars, monkeys and tapirs, to name a few. The area also includes a number of tree ferns and cycads some of which are threatened and/or in danger of extinction.

The area is very humid, receiving roughly 2,000 mm of rainfall yearly, and serves as an important watershed for the lowland regions. Hence, the Sierra and its cloud forests are of great economic importance because they provide water to Soconusco, the main coffee producing region in the state, and to the Frailesca, the state's primary agricultural region. Heavy deforestation, reportedly stemming primarily from cattle ranching and subsistence agriculture, and high amounts of rainfall combine to produce serious erosion problems in the area and siltation which clogs the dams of the Grijalva River. Water fluctuations due to siltation affect the economies of the lowlands of Tabasco, Campeche and northern Chiapas which all depend on the flow of the Grijalva.

2. Project Description

a. History

The Instituto de Historia Natural (IHN) was founded by the State of Chiapas in 1942, and became a "decentralized" parastatal organization in 1985. It is the only Mexican institution involved in managing the Reserve. WWF and TNC have each been collaborating in various aspects of research and management since 1985.

The Reserve was first established in 1972 as a "Natural and Typical Zone" of Chiapas State, with an estimated minimum area of 10,000 Hectares (ha). Then, in 1990, the area was declared a "Biosphere Reserve." As a result of IHN land tenure studies and a proposal to the government, the Reserve was expanded to 119,177 ha. This territory is divided into five core zones with a combined total of (approximately) 25,000 ha, and buffer zones of approximately 93,000 ha, of which 75% are occupied by 20 communities and *ejidos*. The remainder is divided between some 200 small property owners, large farms and national lands leaseholders.

The increase in size caused some confusion and controversy. A number of *ejidos* and communities discovered that some of their land was inside the buffer zones, and some believed that part of their territory overlapped core zones and thus was potentially off-limits altogether. Even by the end of 1994, IHN had not fully clarified the tenure situation for a number of *ejidos* and communities. Although IHN insisted that only buffer zones were involved (and therefore no land was being removed from *ejido* or community control), there appears to have been a failure to communicate the impact of the reserve expansion clearly to local residents.

Until relatively recently, much of the core zone has been protected by its natural inaccessibility and rugged topography, including impressive peaks and deep ravines. However, socio-economic studies carried out by IHN in 1987 found that human pressures have been increasing. According to IHN documents, the predominant environmentally degrading land uses are cattle ranching, plantation coffee production and shifting agriculture. Forests are cut by commercial extractors and by local residents for firewood and local construction. Due to the expansion of the Reserve and population pressures, an unknown number of *ejidos* and communities now located inside the buffer zones have had their use of federal lands now located in core zones regulated by decree, causing further uncertainty and insecurity.

Research and protection work in the area began in the 60's, becoming formalized in 1972 and consolidated in 1986. WWF supported theoretical and planning studies that led to the establishment of El Triunfo as a Biosphere Reserve and in 1987 IHN signed an agreement with SEDUE to take over management of the Reserve. The major socio-economic problems described by the initial studies included: extremely low agricultural production in subsistence crops and in small farmer coffee production; serious problems in storage and marketing of agricultural items, especially coffee; high population growth; very low living standards; minimal presence of institutions; and major gaps in basic infrastructure and services.

The El Triunfo ecodevelopment project was initiated in August of 1991. The first project year lasted through February 1993 (18 months). The program focus has been on training and extension with local farmers for improving soil and crop management, with an emphasis on coffee and basic grain production.

b. Goals & Objectives

For the first phase of the project, IHN's goals were to:

- (1) contribute to conservation efforts by carrying out community development activities in the buffer zone of the El Triunfo Biosphere Reserve;
- (2) promote and support participation of the local population in designing and implementing conservation/development actions and a strategy for sustainable use of natural resources;
- (3) encourage natural resource use that concurs with ecological and cultural principles of the area and contributes to the improvement of living conditions for the local population.

IHN's general objectives for the start-up phase were to utilize a participatory community process to:

- (1) analyze the state of rural communities' natural resources, problems of production, marketing and distribution, and the relationship between the community's survival and the socio-economic and environmental context;
- (2) design and implement community conservation/development activities to motivate campesinos to participate in natural resource management through social development and training in technical and organizing skills;
- (3) develop a strategy to govern the use of natural resources, territorial use and institutional coordination;
- (4) systematize and evaluate these processes to contribute to a conceptual body and methodological theory of community development that emphasizes conservation.

In order to accomplish these goals and ambitious objectives, IHN proposed a series of activities:

- (1) Carry out 4 community diagnostics using PRA methods, 4 community events to promote the project and conservation concepts and create 4 community monographs;
- (2) Implement 1 pilot project;

- (3) Conduct training courses for project participants, including a campesino training in accordance with the pilot project implemented;
- (4) Select promoters from each community to provide ongoing contact with local participants.

Regarding the implementation phase, IHN presented the following objectives:

- (1) Continue work in the original 3 communities and with the community promoters:
 - in the community of Toluca, carry out additional workshops in "Quality Control and Marketing" and "Integrated Pest Management;"
 - establish experimental plots and organize field trips from other communities to Toluca to demonstrate the advantages of the techniques being introduced;
 - carry out 3 training workshops in Toluca on sustainable agriculture techniques.
- (2) In order to multiply the benefits of the training:
 - select 2 community promoters from Toluca to extend the project within Toluca and to 3 neighboring communities;
 - conduct 9 workshops in the new areas.
- (3) Promote staff participation in training according to WWF's list of needs and training calendar; attend at least 3 courses.
- (4) Carry out 2 workshops in planning, development and natural resource use in 2 communities.
- (5) Implement 1 production diagnosis with at least 50 producers' participation, analyze the results and determine the viability of the agro-ecological techniques promoted by WWF.
- (6) Establish 2 experimental plots in Santa Rita and Tres de Mayo, one intercropping *frijol abono* with corn and the other cultivating organic coffee; also continue technical assistance on plots in other communities, spending at least 5 days per month in each community.
- (7) Positively affect agricultural production by:
 - making yearly calendars for organic coffee and corn with *frijol abono*;
 - evaluating 2 agro-ecological proposals for the zone;
 - increasing by 50% the amount of land in which new techniques are used, for a total of 15,000 square meters in organic coffee and 18,000 in corn/*frijol abono*.
- (8) Form 2 community-based coffee producer organizations with a minimum of 50 farmers.

c. Results

IHN reported that the general objectives of the start-up phase were realized. One negative conclusion was that the results of the PRAs were "less than satisfactory" due to a "lack of understanding about their purpose" and "gaps in communication" between the first and second steps of the process.

Regarding the implementation phase, a team of 4 young agronomists started working in four communities with groups of coffee farmers to develop and test chemical-free coffee farming and organic soil conservation techniques. There is some disagreement regarding the reasons that two of these original communities (Santa Rita and Tres de Mayo) did not accept the project. Some IHN staff and local people believe that IHN's identity as a government agency contributed to suspicion. It is also rumored that some community members were and may continue to be involved in illegal drug production. IHN's explanation is that the fault lay with corrupt local leadership (*caciquismo*) and the "bad impression" left by North Americans importing the PRA methodology without adequate explanation of the objectives. The third *ejido*, Monterrey, apparently rejected all government agencies (not IHN alone) due to (unconfirmed) marijuana production. Regardless of the specific reasons, only a few farmers continued to work with the IHN extensionists. IHN tenaciously maintained the hope that a combination of positive results in a few plots, plus a new way of working with these communities, would break down community resistance and permit the project to continue.

According to some staff, however, the lack of community participation in the project reflected, at least in part, a struggle going on within IHN over its proper role(s) as an environmental or as a community development organization. In its written reports, IHN claimed that various internal problems had been at the root of the disaffection. One apparent problem was that due to administrative problems (with WWF disbursements and IHN reporting), field staff were not paid for 4 months. Another problem, that IHN suggests was the perhaps the biggest, was the resignation of a highly popular Field Coordinator, due to frustration with unreasonably low pay. The project was almost completely paralyzed with his departure. IHN reported that the continuation of the project was in serious jeopardy because of the perception of low salary (and status) for project staff exacerbated by the failure of WWF to disburse funds in a timely manner.

Due to the problems between IHN and the communities, IHN did not evaluate whether agro-ecological techniques had increased production or yield.

IHN again reported on project progress in their November 1993 report. The two workshops in planning, development and natural resource use had not been held, but there was still the possibility that they would take place. The diagnostic study had progressed but was not completed. Two of the three workshops in Toluca and six in new communities took place.

A great deal of effort was put into organizing agro-ecology producer groups, resulting in 87 members in the three formed groups. Monthly meetings in each of the communities and 3 regional assemblies were held.

IHN's involvement in Toluca fared better than in Santa Rita and Tres de Mayo. There, IHN was working with 26 coffee growers to promote sustainable techniques, and with 13 of them on improving corn production with organic soil conservation techniques. Some of the Toluca participants formed an informal producers' organization to promote development and marketing activities. Three new *ejidos* were incorporated into the project in 1993 and motivation initially seemed higher than before. The IHN team discovered that marketing problems were a common concern as coffee prices had dropped below production costs. By working on concerns of highest priority to the local farmers, the project team began to reverse its earlier rejection by the communities.

3. Findings

- a. When WWF initiated the ecodevelopment project in El Triunfo, IHN, like other environmental NGOs, had had no experience with community development. A newly hired team of extensionists discovered the 1986 IHN socioeconomic diagnosis of the region, made before the expansion of the reserve in 1990. It was a start, but incomplete. The team had no trouble recognizing that coffee was the primary economic activity, although not necessarily the most environmentally degrading activity. The team began to promote more ecologically sensitive cultivation, including the reduction or elimination of agrochemicals. The peasants were motivated by the hope of higher prices from a "natural" coffee market and eventually from the "organic" label. The extensionists went on to promote soil conservation by means of terraces on the steep hillsides where coffee grows, and subsequently, with some farmers, *frijol abono* with corn. Subsequently, they began experimenting with soil fertilization with fermented coffee pulp, a waste product otherwise flushed into the nearest river. A few local young men have been identified and recruited as promoters who show technical and leadership promise.
- b. The team claims to have no illusions that they are having a significant impact on the ecology of the region. They are not reducing the degradation caused by forest cutting for coffee plantations by the wealthy farmers of the area, or the river pollution by those same farmers.

- c. The team believes it started in selected communities with whatever activity was most important to local peasant farmers, which in this area was coffee. Only then did they develop a questionnaire to obtain information about environmentally degrading practices and other economic problems. They hoped that with the credibility and trust earned from successes in improved coffee yields and higher prices, they would gain an accurate picture of people's other concerns on which they could base decisions of what to promote next.

The idea seems sound in theory and conforms to the methodology promoted by WWF, but the record of how well it worked appears mixed. Of the first four communities the project worked in, three were dropped after the first year. By the project's mid-point, the staff expected to be working in seven communities; they are working effectively in three. The reasons are complex and appear to be due as much to IHN's institutional weaknesses as anything else. Effort was made to engage the entire community in the two *ejidos* of Santa Rita and 21 de Mayo in a process of self-examination leading toward identification of priority needs, but the processes were ineffective; in the first instance due to a rejection of the foreigners who facilitated a process that people did not like, and in the second due to theoretical and methodological problems of some IHN staff members. No involvement of women had been made even after 2½ years, there was no integration of the family unit in project activities, and little integration of the project with existing community structures, decision-making or leadership processes.

- d. Land tenure: There is some controversy regarding the boundaries established for the core and buffer zones. Local people interviewed reported that there was overlap with already defined, *ejidal* boundaries. IHN says all core zones defined during the expansion of the reserve in 1990 were already federal government land, and that the farmers are mistaken. One family, according to IHN, was relocated (local people say the number is higher, IHN says they exaggerate) and some *ejidos* report that their land areas were redefined. The redrawing of boundaries, relocation of some residents and the reduction of land that local peasants believed was available to them (such as in Barrio Río Negro) has caused resentment on the part of residents of these *ejidos*.
- e. The area is populated primarily by farmers who originate from other places. Most have come here to grow coffee as a cash crop; many have even abandoned corn and other subsistence staple crops in order to apply all their efforts to market production.
- f. The coffee growers association formed with assistance from the IHN ecodevelopment team is a functioning organization, although it has not yet obtained legal status. Membership is steadily increasing. The association is organized at the community level within each of three participating *ejidos* and brings the three together for training and marketing purposes. It survives despite little community recognition and no official status within the *ejidos*. A growing number of farmers now invest a considerable amount of extra labor and some money in soil and plant management techniques to obtain eventual certification for organic coffee, which is purported to bring a 10-15% price advantage. Other people (notably 8-10 in Barrio Río Negro) are imitating association members by utilizing some of the techniques of organic coffee production.
- g. The evaluation team observed that the ecodevelopment project's extensionists are pursuing the methodology promoted by WWF's Wildlands and Human Needs program. Although still quite limited in scope (to three or four active communities), they work directly with the people, consult them in selecting the areas in which the project will help them, let them make their own mistakes, start working with a focused package of options and try to build plans to expand into the strategy.

- h. The project team hopes to expand its technical assistance to cover staple crops and other commodities and to relate these activities more closely to the goal of sustainable resource management.
- i. The participants in the community development project are primarily interested in the immediate economic benefit they hope is possible from marketing their coffee through a cooperative, thus avoiding intermediaries (*coyotes*). While they do not demonstrate complete knowledge of the full range of benefits conferred by organic methods, they do understand some of the more direct environmental and health benefits of organic production.
- j. The staff members appear to have gained the trust of people in at least some of the communities. In Nueva Colombia, people invite them to stay overnight in their homes to avoid having to drive the several hours back to town.
- k. There appeared to be some communication but inadequate collaboration between the headquarters in Tuxtla Gutierrez and the field office staff based several hours away in Jaltenango. According to Jaltenango-based staff, the Department heads who have administrative authority over the project seldom, if ever, visit the communities. In the evaluators' opinion, program policies and annual planning decisions affecting the project are made by people with little involvement in it, based on institutional criteria often quite different from those promoted by WWF.
- l. Environmental education is financed separately by TNC's Parks in Peril program, which, although also funded by USAID/Mexico, does not collaborate closely with the WWF ecodevelopment project in El Triunfo. The ecodevelopment staff have met with the environmental education staff informally to mutual advantage, but there had been very little collaborative design, planning or implementation between El Triunfo EE and ecodevelopment staff or management staff at the central office level.

The result has been an educational program which seems to have little relevance or connection to the ecodevelopment project. Preference has been given to producing and distributing didactic materials with an ecological focus and academic tone, and holding week-long public "events" in individual communities. The ecodevelopment staff have unsuccessfully requested that the environmental education staff work more closely and on an ongoing basis with local communities, to include them in establishing priorities and in planning and designing activities that will be relevant to the agricultural work and to people's primary economic and social needs. WWF has also sought to integrate the two projects.

- m. Communication and transportation are serious obstacles. The Jaltenango field office has only two vehicles which must serve several projects. Most communities are a half-day's drive to reach. There is no radio communication between the vehicles and the field office, or between Jaltenango and the central office in Tuxtla Gutierrez, several hours' away. One of the communities earlier targeted by the ecodevelopment team was dropped because it took 6-8 hours to get there.

4. Observations

a. Nature of Implementing Organization

- (1) IHN's previous experience, like its reputation, have been closely related to its founder's conservationist history and the organization's experience as an environmental organization. Like most conservation agencies, IHN has little background in socio-economic development. The agency has contracts with service, research and academic institutions, but is only recently developing collegial relationships in the area which

would be useful for learning more about applied research and community development issues. IHN also does not enjoy a consistently positive reputation among environmentally-sensitive development people in southern Mexico, with whom they could network and from whom they could learn. The current ecodevelopment field staff has cultivated contacts obtained through the WWF network, but some members of the managerial and policy-making staff demonstrate an inconsistent inclination to network and a fairly weak understanding of community development. As an agency primarily concerned with protecting the State's natural resources, IHN considers community development as "one tool" in a larger strategy, not an end in itself. The project staff agree with this principle, but question how compatible the IHN and WWF strategies are to achieve conservation. Overall, the institution as a whole does not appear adept at or structured to be effective at sustainable community-based socio-economic development.

- (2) Because of the Institute's official status and its self-determined role, it has been placed in charge of many of Chiapas state's protected areas. The singular political and moral influence of its still-active founder has created a degree of monopolization of control over conservation activities in several reserves in the state, including El Triunfo. Despite protestations to the contrary by management staff, but confirmed by many others who have left, IHN has fought successfully to preserve its hegemony; to date, no conservation, environment or rural development NGOs (other than its own subsidiary FUNDAMAT) have been able to work in El Triunfo.
- (3) As a parastatal organization, IHN has an identity problem. It is neither altogether an NGO, nor a government agency. Its representatives are unable to demonstrate convincingly that the organization maintains independence from partisan political imperatives, nor will they state unequivocally that they are government functionaries. IHN tries to "have it both ways" with the result of being caught somewhere in the middle.

Is its function to assist rural people to manage their resources, or to regulate local environmental behavior on behalf of the government? It is not clear if IHN is a technical and educational resource for local communities, or a government watchdog. It tries to do both and, by denying their incompatibility, risks losing the trust and collaboration of local residents and colleague NGOs.

- (4) There exists a potential conflict inherent in IHN's management of El Triunfo, between supporting community development (with WWF funds) and strengthening enforcement (*vigilancia*) in the core zone (with TNC funds as part of the Parks in Peril Program). On one hand, the community development project seeks to promote sustainable resource management by encouraging an institutional commitment to and developing the capacity for local control over natural resources. On the other hand, an enforcement strategy seeks to protect the resources from the people. As a result, the protected area becomes a restricted zone that keeps useful, renewable resources safely guarded, under a policy that fails to foster in local people a desire to care for an environment whose needed resources are placed out of reach. The protection may be said to benefit the "national patrimony," which, from the peasant perspective, too often is synonymous with protection of lands for "the wealthy" for their enjoyment or exploitation.

The IHN claims that it does not "guard" the Reserve, rather that its patrolling and surveillance are to "monitor changes." Even if that is technically true, local farmers do not make the distinction and are not convinced. They know that IHN personnel are state employees (even ecodevelopment project staff wear uniforms), and are required to uphold federal and state law. Although most IHN "park guards" (*vigilantes*) lack the power to arrest or detain, they do denounce and "turn in" trespassers and poachers, and are unavoidably viewed as property police. On the other hand, IHN officials point out, their "official" presence is sometimes appreciated by community members who welcome

the support in reducing illicit hunting, wood cutting and cultivation of illegal drugs, activities which bring undesirable influences and people to the area.

IHN's response to this conflict is inconsistent and vague. Department heads hope that eventually the environmental education program will serve as a liaison between the different emphases of conservation, protection and sustainable development. Other officials claim that IHN is the "conservation pioneer" and therefore immune to questioning, above reproach. The evaluation team concluded that the enforcement identity is difficult to balance with the role of supportive promoter of self-reliance and sustainable natural resource management; but IHN does not agree there is a problem.

- (5) IHN, like any other government agency, has a fixed structure, a set of established guidelines and a long-standing manual of functions that are "clear and defined." Its management believes it to be one of the most flexible and participatory in the entire state of Chiapas. This is very probable since IHN has gradually learned over time how to improve its community development and environmental education work and has worked with international NGOs for some time. From the perspective of organizational structures conducive to community organizing, participation, self-reliance and justice, the rigid hierarchy and considerable verticality of IHN's management and institutional structures makes mobility, flexibility and creativity quite difficult in the field. Community development is a dynamic process which adjusts to the needs and aspirations of its community participants. Inappropriate rigidity constrains the extensionists' ability to work effectively in the community. They must fit the project to a conservative and protectionist institution rather than adjusting the project and the institution's policies to meet the needs at the local level.

b. Institutional Commitment and Capability

- (1) Notwithstanding some exceptions in the Department of Natural Areas (*Departamento de Areas Naturales - DAN*), community development (and ecodevelopment) appear to be viewed by IHN primarily as improbable tools to convince farmers to protect the reserve, rather than as a process to develop farmers' capacity to sustainably manage resources. The project has had to adjust more to IHN than IHN has adapted to the exigencies of the project.
- (2) A commitment to protecting natural resources is not the same as a commitment to human involvement in natural resource management. Social and economic justice, which are fundamental to ensuring that peasant populations will manage resources in a socially responsible manner, are not necessarily of great concern to scientists seeking to protect flora and fauna. An organization such as IHN must therefore believe in and be committed to pursuing a people-centered conservation strategy. Otherwise, its civil service imperatives, legalistic-bureaucratic style and scientific blinders will inevitably overpower the community development requirement for responsiveness, flexibility and sensitivity. IHN does not consistently demonstrate that belief and commitment, and therefore will inevitably have fundamental internal conflicts about such a project.
- (3) Project implementation is hindered because the individual members of the team have little community development experience to draw on to accelerate their learning curve. Other than participating in the training offered by WWF, the institution has not taken much initiative in identifying opportunities in this area. This is in marked contrast to its demonstrated commitment to providing a wide range of technical training for many of its staff. IHN has many years' experience in protected areas management and informal public education, but too little of that is supportive of community and project promotion, or project implementation. Further, whatever institutional memory might exist is inaccessible given the high turnover rate of management staff, the current management structure and relationships between field and central office.

- (4) Unfortunately, IHN does not give evidence of understanding the need for, or having a commitment to, encouraging peasant communities' control over their resources, or stimulating an empowering educational process. The pattern that emerged was of a government agency that targeted a particular group of communities due to its proximity to a protected area (in contrast to other government service and economic development agencies that do not put priority on this geographic or demographic sector). IHN appears to view the members of this population as objects of a multi-faceted campaign to reduce their exploitation of the natural resources in the area. It is the evaluators' impression that if the entire population could be persuaded to abandon farming, if industry or tourism or *maquiladora* jobs could be found, or if the population could be moved, IHN would believe it had been successful. IHN officials deny this, and articulate for the record the position that community development is a useful part of IHN's larger strategy to protect natural areas from destruction. The evaluation concluded that institutional obstacles, more than methodological ones, most obstruct success in achieving this integration.
- (5) Currently, IHN, for ecodevelopment project staff continuity, depends on the personal dedication of skilled extensionists who are willing temporarily to work under difficult physical and social conditions and who receive little economic or moral support from the central office for their commitment to the project. According to IHN's management, government salary policies dictate IHN pay scales and prevent the institution from exercising any control. The nature of the ecodevelopment project requires people with advanced skills and/or training in several fields, thus requiring higher-level professionals than the physical and conditions and infrastructure of their work would indicate, especially compared to government standards. The result is low pay for skilled project staff (the project coordinator in El Triunfo earns less than new community promoters in some of the other WWF projects). IHN management staff, it should be added, also earn very low civil service salaries, although they receive job security in return.

IHN managers appeared unwilling to seek additional ways of compensating the project staff, defending the status quo by citing local government and AID regulations that forbid salary supplements. Instead of acknowledging the problem as perceived from the field, they express a concern over disparate or unjust salary discrepancies which would occur, they believe, if rural-based staff received higher pay than urban-based people. Since the state government cannot sustain "such high salaries" (as proposed by the ecodevelopment team) for everybody, frustration, discontent and competition would result if some were given supplements and others were not. USAID, they propose, should authorize compensation supplements for people in charge of AID-funded projects, since it is "competition for salaries, not the salaries themselves," that are the problem. If the Institute and the state government are not in the position of playing favorites, other staff would presumably have less room to complain.

Their lack of effort to find a limited but creative solution (such as augmenting travel reimbursement or per diem allowances) to a problem that long has been articulated betrays a lack of understanding of the problem, and has caused considerable loss of morale. Equally detrimental, it has contributed to a high turnover of competent and committed staff. With low salaries, low morale and questionable commitment to field personnel on the part of management, it had been difficult for IHN to attract and retain the experienced people it needs to maintain and galvanize the community development program.

- (6) The ecodevelopment project is the only field activity implemented by IHN which has no counterpart in the institutional structure at either the central office or program levels. IHN officials explained that because the institution is a conservation, not a development, organization, creating a structural niche for community development activities violates official government directives that define the Institute. Implementing community

development at all via the IHN is justified only because it is limited to small projects in the reserves of El Triunfo and El Ocote.

- (7) The successes the project has had have depended on capable field personnel who work with little technical or intellectual support from their sponsoring agency, which is full of experts in a broad array of fields. These resources are seldom accessed, it seems, because the project is a low priority for IHN, and most professional staff either do not understand or reject its relevance to conservation. The field personnel depend largely on WWF for guidance, technical and tactical advice and moral support.
- (8) Paradoxically, the lack of institutional support for the project may have had a positive side. The staff have had more freedom to be responsive, creative and culturally sensitive than in some of the other projects. They were less faithful in applying the package of agricultural techniques they had learned from WWF and COSECHA. Because of excellent relationships between the team and WWF staff, periodic visits from the Oaxaca office and occasional off-site training events, the team seemed to be unfazed by whatever bureaucratic, jealous or non-collaborative attitudes that characterize some of the managerial staff above them. Of the four BSP projects in southern Mexico, ironically, the IHN team may come closest to some of the WWF guidelines regarding methodology of integrating technical know-how with existing conditions and felt needs.

c. Administration

Delays in receiving WWF funds due to disbursement problems meant in one case that the project staff could not travel to the communities for several months or carry out any of their normal functions. The reduced field presence put community confidence in the extensionists at risk. Delays also meant that funds had to be borrowed from other projects, creating significant temporary restrictions across several projects, caused inter-project resentments, and resulted in loss of credibility for WWF.

d. Program Issues

- (1) The IHN ecodevelopment project has succeeded in contributing to community organization as much as to community development. Through the coffee association farmers are collaborating more, working with each other in ways they had not before. This may have longer-term effects than the extensionists anticipated, if it assists in generating a cooperative, entrepreneurial spirit of community self-reliance (*autogestión*).
- (2) Community development *per se* is focused on people and their relationships, and does not necessarily contribute to conservation. The motivation of the donors and the implementing NGO in this case is more environmental than social. In addition, resource management really can make a long-term difference in both the economic well-being of the inhabitants and the environmental protection of the resources. Community development without environmental education is a risk, especially from an environmentalist perspective. Economic improvement and/or greater social cohesion does not necessarily produce more sustainable resource management. There is a need to skillfully increase people's awareness of the relationship between their ability to earn a livelihood and the manner in which they treat the resources around them. There must be integration of education (for attitudinal change), extension of technical innovation (for behavioral change) and organizing (for empowerment to enable them to undergo change). The IHN structure has thus far made this integration unnecessarily difficult and rare.
- (3) Promoting economic benefits is different from promoting sound resource management using economic incentives. The former is close to traditional development which has not had a healthy environmental record (nor shown positive economic results for peasants).

The latter is a good tactic; for example, organic coffee promotion could have beneficial environmental effects. Improved yields and higher prices for coffee were the IHN ecodevelopment team's initial tools for entry into the communities; but what was initially a tactic for initiating the project may have become one of its objectives. The means are at risk of becoming the end.

- (4) There a number of reasons why a predominantly market-based strategy has possible negative consequences. It is possible that a successful harvest in a year of good prices would encourage the expansion of land area under coffee cultivation. In Río Negro, the participants said their goal was to convert all their land into coffee if they could get good enough prices. In Nueva Colombia, almost all *ejido* land is already in use or fallow, so their only expansion opportunity would depend on converting land from subsistence food crops to coffee. If the project does not soon diversify to other crops, it runs the risk either of losing its credibility (in the event of substantial price reductions) or inadvertently promoting monoculture and reduced food security (if prices rise substantially).
- (5) There is little or no integration of women in the project. There are plans to teach women to embroider and help them market the product; IHN has even contracted a woman promotor who specializes in embroidery. However, the relationship between an income producing activity entirely dependent on imported raw materials and sustainable management of local natural resources is rather vague. The project has not considered or analyzed women's roles in agricultural production, so any involvement they might have in the project would be completely divorced from family production unit.
- (6) Within the environmental education project there are also conflicts, reportedly because the EE field staff do not feel empowered to define their own program or activities based on their knowledge of the communities' needs. Instead, project focus, priorities and activities are developed and defined from "above," in a central office by academically trained project managers who have little or no contact with the field.

5. Recommendations

- a. The environmental education project should be integrated with the community development project to allow greater reach for the latter and to encourage community credibility and relevance for the former. This should be more than a *pro forma* bureaucratic reshuffling. The donor agencies - WWF and TNC - should coordinate their own planning and should provide the necessary institutional strengthening support to IHN to restructure the two projects into a single staff, with goal-setting, strategic planning, implementation, monitoring and reporting done by the same team.
- b. Decision-making in IHN and in the project mirrors that of most of the rural communities visited. The hierarchy is male dominated with a tendency to revert to non-participatory leadership styles, and the result excludes women from involvement. Yet women are also environmental stewards and have considerable influence over economic, production and resource-use decisions at the family level. They should be included in the project and their participation should not be limited to crafts, hygiene or nutrition. Dooryard gardens (*solares*), for example, could be a gender-integrated project in which men, women and youth participate. Ultimately, WWF may have to more vigorously promote gender concerns among the project staff and provide specialized training for the purpose.
- c. The potential of silviculture mixed with coffee production has not been investigated by the project, and should be. Little attention is traditionally paid to the shade trees beyond serving that function; some experimentation or survey of research and investigation

elsewhere might identify tree species that provide, in addition to shade, construction material, edible fruits and nuts or other non-timber products.

- d. The project would greatly benefit the participating farmers by identifying local sources of alternative organic fertilizer, especially if available within the community (such as livestock manure, green mulches, etc.) so that project participants do not have to send for or drive to Jaltenango to purchase fertilizer, at excessive cost. The use of coffee pulp - a waste byproduct - is a good example of using local resources and experimenting creatively. A project working with the Instituto de Ecología in Xalapa has experimented with the use of earthworms to break down the pulp more quickly and make higher grade organic fertilizer. The extensionists or technical specialists from IHN should research what other techniques or products have been tried elsewhere, with what results, and seek to adapt some of them for this area.
- e. Self-vigilance of the reserve area by local communities (such as via community-based *comités de vigilancia*) may be possible, and should be explored. The IHN could look for or design a different protection mechanism beyond the conventional "park guard" model. At the very least, the present guards need as much environmental education to understand local resource needs and rights as the local residents need to become aware of the importance of their actions on the quality and quantity of natural resources in their sphere of influence.
- f. In generating an increase of enthusiasm for organic techniques, the project is encouraging independence from traditional external markets. The extensionists hope this can be used as a base for promoting a more mixed agricultural strategy. The opinion of the evaluation team is that the coffee market is too volatile and uncertain to use for long as a springboard for promoting the benefits of a conservation strategy; the project needs to diversify quickly, identifying other areas and markets in which to work with peasant producers.
- g. More frequent and more effective involvement of IHN's management is needed at the field office and community level. Administrative requirements should be flexible enough to adjust to field limitations and project imperatives, rather than field staff always being required to conform to the bureaucratic needs and administrative prerogatives of headquarters. Either IHN will need assistance in institutional restructuring and decentralization at the departmental level, in participatory planning and in sensitivity to community perspectives, or the project will continue to suffer neglect.
- h. There was strong and widespread feeling among the evaluation team members, colleague environmental NGOs and even Institute staff that IHN is not the most appropriate organization to implement an ecodevelopment project. As a parastatal organization, its identity is confused at best, its history of collaboration with partner NGOs is not positive and its long-term commitment to the project is questionable. The team was dismayed that there are so few environmental organizations involved in the El Triunfo area which might establish a formal collaboration with IHN to remedy some of the problems that IHN's governmental status causes or exacerbates.

It is recommended that WWF hold discussions with IHN at the highest levels to clarify its institutional commitment to the project and determine to what extent it will guarantee a discontinuation of the structural and procedural impediments to effective project management. WWF should either encourage IHN to form a project-related partnership with an NGO, or decide to continue the project with another institution/organization.

C. El Ocote, Chiapas

1. Project Setting

El Ocote, from a political geography perspective, spreads across parts of the townships (*municipios*) of Tecpatán, Cintalapa and Ocozocuaula. Although there are difficulties with the precise delineation of state boundaries between Chiapas and Oaxaca (the two states have an ongoing, unresolved border dispute over this area), as well as the township lines, it appears the majority of the Reserve belongs to Ocozocuaula, Chiapas. This natural area, both in a regional context and combined with Los Chimalapas and Uxpanapa forests, has been considered one of the most important centers of biodiversity in Mexico and in the world. The El Ocote Ecological Reserve consists of approximately 30,000 hectares of humid tropical forest in the same mountain range as that running through the Chimalapas. Although the area was considered a priority for protection since the 1950s, it was not until 1982 that El Ocote was declared a forestry and wildlife reserve. The Reserve, with an area of 48,800 hectares, was established to promote conservation and wise use of natural resources. The Reserve is connected to the outside world via limited rural roads and water routes through the reservoir of the Netzahualcoyotl Dam.

Until recently, very little was known about the biology or socioeconomics of El Ocote. In 1986, WWF supported the Instituto de Historia Natural (IHN) of Chiapas to evaluate conservation needs for both El Ocote and El Triunfo. WWF then funded Ecósfera, A.C. to conduct a further diagnostic study of El Ocote in 1989. Ecósfera described the area as being comprised of tall and medium humid tropical forest, dry tropical forest, pine-oak forest and elfin forest, with man-made savannahs in the surrounding areas. Due to the unique geomorphology of the area, during the dry season there is a lack of surface running water that places limits on possible economically productive activities.

Most of the region's wildlife belongs to the Neotropical genera and species with fewer numbers of Nearctic species. Endangered species include the river crocodile, the harpy eagle, two monkey species (*Alouatta palliata* and *Ateles geoffroyi*), the white-lipped peccary, the tapir, the jaguar, and other undocumented or recently documented species such as Sumichrast's wren. El Ocote, contiguous with the Chimalapas and Uxpanapa forest areas to the west, occupies a strategic geographical corridor which makes the Reserve critical to the survival of a number of endemic species.

2. Project Description

a. History

Historically, the area has been occupied by the indigenous Zoque group. However, planned and unplanned colonization have occurred over the last 20 years, and the Reserve's legal boundaries have not always been respected. Presently, there are some 11 communities of varied ethnic background partially or completely inside the Reserve. Land tenure in the Reserve is mixed between national, private and *ejido* lands; land-titling is incomplete due to conflicts, making delineation of the Reserve more difficult.

Results from Ecósfera's studies showed major deterioration from increased land use in El Ocote's surrounding areas, with deforestation, unplanned and inappropriate land use, and expansion of human settlements among the environmentally degrading practices identified. Cattle ranching, stimulated by the provision of government loans, illegal lumber extraction by timber companies attracted by new construction, and the Malpaso dam were identified as the three most important causes of deforestation. Increased human settlement followed, bringing an expansion of slash-and-burn agriculture which was also considered a major environmental threat by project designers.

Studies carried out by Ecósfera (1991, 1992) and Pronatura-Chiapas (1992) indicated that the key area of deforestation and human impact on the area was in the northern portion, where 13 communities were concentrated and where the economic influence of the town of Malpaso was greatest. Therefore, Ecósfera and Pronatura began their work in that area with the communities of Velasco Suárez and Alvaro Obregón.

The need for a management system, which includes the promotion of environmentally-sound development activities that reduce pressure on the resources in the area, was critical. The El Ocote Ecodevelopment Project was designed to support the creation of a community-based extension system in the area, with emphasis on developing and promoting technical innovations that address the environmental and economic challenges associated with increasing agricultural production.

Beginning with the WWF-funded diagnostic study, Ecósfera initiated a process that would link the research, protection and management activities of various groups working in the area including governmental agencies such as SEDESOL, the state government and the Instituto de Historia Natural, as well as private organizations (NGOs) such as Ecósfera, Pronatura-Chiapas and Biogenesis. The goal was to discover a viable model of inter-institutional collaboration that would maximize the conservation impact on El Ocote.

The Pronatura-Chiapas environmental education project in El Ocote began as an independent project, parallel and complementary to the Ecósfera sustainable agriculture project. From the start, the two organizations worked in the same communities and depended heavily on each other to carry out their respective activities. Part way through the second year, the two merged their activities, and at the start of the third year they combined their proposals and received parallel funding for a single project. For the purposes of this evaluation, they are treated as a single project with two dimensions (sustainable agriculture and environmental education) and two implementing organizations.

b. Goals & Objectives

The original goal of Ecósfera's ecodevelopment project in El Ocote was to improve local agricultural productive systems and experiment with techniques and models of alternative production to preserve ecological systems, through a process of community research, organizing, participation, technical assistance, training, extension and environmental education.

The ecodevelopment project's first (start-up) phase included the following objectives and activities:

- (1) form and train a project team;
- (2) conduct a 6 month diagnostic (its focus was largely on basic demographics and production with few social indicators);
- (3) determine a second-phase (implementation) strategy for the project, including plans for community extension, training of rural promoters and technical assistance.

The first phase focused on field design of a long-term project for natural resource management after the team concluded that the peasant agricultural sector and its relation to deforestation was the key area to address. Replacing shifting agriculture with intensive, organic techniques was chosen as the method and 2 communities were selected for the extension and training efforts. The agronomist on the team presented a demonstration at the regional meeting center for the Council of Ejidos to generate interest in the project.

Pronatura described the environmental education project as a method to design and test environmental education strategies in indigenous rural regions.

Pronatura's initial strategy was to:

- (1) Approach the communities and initiate an ongoing process of research to learn about how to structure effective methods of communication given existing levels of education and language comprehension;
- (2) Select themes based on local problems and appropriate to the selected target audiences;
- (3) Design activities and support materials;
- (4) Train local people to be environmental education promoters and begin implementation of educational activities.

For the second implementation phase, Ecósfera proposed these objectives and activities:

- (1) Establish demonstration plots using organic agricultural techniques (contouring, in-row tillage, *frijol abono* with corn) to be managed by the work team in Alvaro Obregón and Velasco Suárez;
- (2) Experiment with human waste and various species of green manure to identify beneficial organic fertilizers;
- (3) Compare different ground preparations for garden plots;
- (4) Develop homemade insecticides for corn;
- (5) Promote and coordinate the processes of organization, community participation, technical assistance, training and extension.

Pronatura had its own objectives for the implementation phase, including:

- (1) Produce a series of at least 6 support pamphlets describing various agricultural technologies;
- (2) Carry out monthly or bi-monthly analysis workshops with participants in each community on selected topics;
- (3) Realize practical demonstrations (about types of soil, erosion, biological diversity, etc) led by campesinos and teachers;
- (4) Hire and incorporate a bilingual technician;
- (5) Produce a series of 4 audio cassettes, in Tzotzil and Spanish, design and test audio-visual materials to use in the workshops;
- (6) Expand the project to at least 3 new communities and select 2-4 campesino promoters;
- (7) Support the training of teachers through a workshop and monthly work meetings in the communities;
- (8) Integrate women into the educative process by providing training about home gardens, vegetables, rural stoves and food preparation techniques;
- (9) Continue training the work team by attending several training conferences.

For the third phase of the project, Pronatura and Ecósfera jointly proposed the overall goal of fostering a self-managing process of sustainable development in communities that impact the El Ocote Reserve, to reduce deforestation and pressures on the Reserve.

They outlined the following objectives, some of which were carried over from the second phase, to achieve the goal.

- (1) Work with the residents of the El Ocote area: a) to increase understanding of the relationship between humans and nature; b) to make sure they are included in critical decisions regarding environmental protection and conservation; and c) to strengthen the local capacity to implement socially-just alternatives that contribute to social welfare and environmental conservation.
- (2) Increase women's participation in: a) decisions on child bearing; b) management and control of resources; and c) the ecodevelopment process through alternative projects such as vegetable gardens and improved wood-burning stoves.
- (3) Conduct participatory diagnostics in the communities and form work groups.

- (4) Expand agricultural work into 4 more communities and train 2 community promoters.
- (5) Improve soil use by introducing techniques that increase productivity and make forest clearing for farming unnecessary.

c. Results

Ecósfera reported the following conclusions in their September 1992 final report.

- (1) It has been difficult for community residents to understand Ecósfera's presence, at least partly due to the local people's limited Spanish and Ecósfera's ignorance of the local language. Also, extensionists were not able to reach the entire population in the communities. Ecósfera hoped that Pronatura's educational work would help overcome its difficulties communicating with community residents by teaching people the technologies being promoted.
- (2) The institutional culture to which people have become accustomed - that treats campesinos like children and does everything for them - made it difficult to promote participation and community self-reliance.
- (3) Great distances and weak communications thwarted efforts to be present in the communities; in the second phase, by having an office in Malpaso and introducing pack animals, Ecósfera hoped to overcome these problems. They acknowledged that progress had been slow in getting the project team together and in establishing an office in the area.
- (4) The campesinos had limited time and patience to listen to and try new options.
- (5) Conflict with IHN, the agency officially responsible for management of the Reserve, exacerbated other problems. Ecósfera's collaboration with SEDESOL, IHN and Pronatura to manage the area progressed slowly.

Notwithstanding some of the difficulties experienced, Ecósfera believed in the efficacy of starting small, while maintaining perspective of the medium- and long-term objectives that would allow them to manage and conserve a protected, natural area.

WWF reported that shortly after initiating agricultural extension work, the Ecósfera team was absent from the communities for two months at a key period during which the participants needed regular attention. Most of the farmers abandoned the experiment and weeds and pests took over. Fortunately, one farmer from each of the communities continued the techniques and achieved adequate success. The incident resulted in a complete field staff turnover, and Ecósfera committed to spending more staff time in the communities. At that point, WWF began questioning whether to continue working with Ecósfera.

Despite these problems, Ecósfera was able to recruit 23 farmers to attempt a second cycle of corn production in the later part of 1992 using the newly introduced "sustainable techniques." Results were reported as positive and Ecósfera stated that farmer motivation was high and indicated probable expansion to five more communities.

In August 1993, Ecósfera reported additional conclusions:

- (1) They continued to face extremely different cultural, socio-economic, environmental and agricultural situations in participating communities: the people's religious beliefs; a lack of desire to work collectively; drug and alcohol consumption; apathy towards any new technique that would not show immediate benefits; attractive, competing incentives offered by other institutions and governmental groups; growing other, more profitable cash crops besides corn such as chili peppers; and a high incidence of pest infestation at various stages of plant growth.
- (2) While not spectacular or rapid, their success in agricultural production served to perpetuate interest in alternative techniques. Ecósfera promoted contour plowing, in-row

tillage and the use of leguminous cover crops with 10 campesinos in each of 2 communities.

- (3) An indication of the positive effects of Ecósfera's activities is Línea Biósfera's interest in proposing a similar project to WWF.
- (4) The team should continue their social and pedagogical training given their inability to generate sufficient participation and motivation in the communities.
- (5) Selection and training of campesino promoters was not carried out due to communities' resistance.

Conclusions by Pronatura and WWF regarding the project's third phase follow.

- (1) Pronatura's project complemented Ecósfera's work by reaching other sectors in the communities including women. Pronatura worked with women on vegetable gardens, nutrition and pilot-stage work on fuel- and labor-saving stoves. The scope of working with women was evaluated and a plan also was designed to provide training and materials about reproductive health.
- (2) Pronatura developed a series of educational materials and program activities focused on indigenous people in the two communities where Ecósfera was working. The environmental education program attempted to use multimedia techniques to reach housewives, farmers and school teachers. Information was given to local school teachers so that they could introduce environmental issues to children.
- (3) An evaluation of the usefulness of project materials was completed and decisions were made about producing materials for expanding the project. Specifically, the team was strengthened by hiring an assistant to coordinate activities (such as theater, translating AV materials) and the work of the teachers during the third year.

Overall, Pronatura may have played a key role in helping Ecósfera recover its work in the zone following the crisis; development of the extension program was co-managed since that time. Regarding the agriculture project, Pronatura strengthened Ecósfera's agricultural work by contributing explicit ecological information and lessons for the promoters and participating *campesinos*.

3. Findings

a. Environmentally Degrading Practices

- (1) In the buffer zone, the major degrading practice appears to be cattle ranching, in which forest areas are opened first for corn production (interplanted with pasture grasses) and then turned into pasture for cattle.
- (2) In the core zone, the major threats to date have been illegal poaching of wildlife, and the government's efforts to (a) construct a major highway through the zone, disregarding the ecological integrity of the area, and (b) develop a new management plan for the area to be implemented by the federal agency SARH with funding from the US Forest Service, with little or no involvement by the groups currently most interested in protecting and managing the area.

b. Primary Production

The main income producers are chile and coffee; corn is a subsistence product with little marketing. According to Ecósfera, the income generated from the sale of chile and coffee is used to buy staples such as cooking oil, salt, sugar, soap and other similar products. The ecodevelopment project concentrates on soil improvement in conjunction with corn production even though corn is not the primary cash crop in the communities: "*el picante vale más que el maíz.*"

c. Sociocultural Considerations

Due to the prevalent religion in the region, which honors Saturday as a day of rest, and the market ties, which places Sunday as a day of business in Malpaso, the project staff does not try to work with community members on the weekends.

d. Promotion

There are no local promoters because the project did not identify, recruit or train appropriate local people.

4. Observations

a. Lack of Inter-Agency Collaboration

Collaboration among the many organizations with interests in El Ocote was found to be very weak. Each NGO claims to have been working in the area longer than others, while several government ministries and agencies claim rights to manage certain aspects of the area. A consortium exists of Ecósfera, Pronatura-Chiapas, CIES (Centro de Investigaciones Ecológicas del Sureste), CISC (Centro de Investigaciones en Salud Comunitaria), and PROCOMITH (Programa Comunitario de Medicina Indígena Tradicional y Herbolar). Other agencies with interest in the area include Línea Biósfera, Instituto de Historia Natural (in the south of the Reserve), INI (Instituto Nacional Indigenista, SDRyE (Sec. de Desarrollo Rural y Ecología, Edo. de Chiapas), SARH (Secretaría de Agricultura y Recursos Hidráulicos), Procuraduría Agraria, SEDESOL (Secretaría de Desarrollo Social), IMSS (Instituto Mexicano de Seguridad Social), and SEP (Secretaría de Educación Pública).

b. Coordination with Other NGOs

Little on-the-ground coordination exists between the Ecósfera/Pronatura team and Línea Biósfera (LB), even though all three organizations are working with the same objectives, using the same techniques in the same types of communities, in adjacent areas. The LB approach is one of organizing locally around forms of production or commodities (such as *barbasco*). Into this they insert or integrate an ecological approach. In contrast, the Ecósfera-Pronatura approach is an academic ecological approach which has attempted to integrate social and organizational dimensions and local production into an ecological framework.

Each is approaching the challenge of ecodevelopment and bottom-up resource management from opposite sides (one socio-economic and the other ecological), and presumably each has something to offer the other. The conflicts appear to be more a product of jealousy over the distribution of external funds and community bases, although different methodologies and organizational philosophies also contribute. Misunderstandings about territorial distribution of the projects seem to be an unnecessary distraction that places institutions over and above the supposed purposes for which they exist. There did not seem to be any fundamental disagreement about the importance of the area or the needs of the local people.

The MEP project in El Ocote can cover a wider area more effectively if the three groups coordinate their activities and learn from each other, leaving behind the fear of one being absorbed by the other or of having to compete for limited funds.

c. Consortium

The recently formed consortium of CIES, Pronatura-Chiapas and Ecósfera raised questions about the capability of NGOs to maintain their credibility after becoming parastatal. Are they seen as representing government interests to the communities, or representing the

communities' interests by serving as independent watchdogs over government policies? From interviews with staff and directors of the two organizations, it does not appear that they have resolved the inherent conflict of being identified with a state government organization while ostensibly opposing some of its policies. The officials see it as a convenient method of liaison and source of infrastructure and funding. They do not perceive any possible loss of legitimacy with community groups. Other organizations disagree, believing the consortium may serve as an effective muzzle (via economic disincentives) for future opposition to the government.

At the level of these organizations' relations with rural communities, Ecósfera and Pronatura are perceived as academic and technical institutions with little understanding of the realities of community development, as having a scientific approach to fundamentally human, social, cultural, and religious problems. Despite the best of intentions, their ability to integrate conservation and people has been limited.

d. Strategic Impact on Deforestation

The core zone of the Reserve does not appear to be threatened specifically by the activities of the local residents because it is not productive land for agriculture ("*Se cuida solo porque es pura piedra*") or cattle. The valuable wood has already been harvested by timber companies in the area where Ecósfera and Pronatura are working. *Ejidatarios* have an average of 20 hectares each, of which they use approximately 2 ha for agriculture (corn, beans and chile) at any one time, cutting down *acabual* (secondary or fallow vegetation) for their new fields using traditional slash and burn techniques.

The local peasants, as shifting agriculturalists, are probably not the primary causes of deforestation of old growth forest in either the core or buffer zone since they are not opening up new land, and given the combination of environmental constraints on production and the cultivation methods practiced in the area, which are predominantly for subsistence (commercial production is primarily chile, mostly planted in the same areas as corn).

The major impact on the core zone appears to be from hunting, illegal traffic of wildlife, accidental fires and perhaps the extraction of wood for construction and/or firewood. The relatively light pressure for land also means that there is not a perceived need by the *campesinos* for intensive agriculture or soil improvement. However, even if the *campesinos* are not motivated to improve their soils, there is evidence that the region's soils have undergone significant erosion, putting at risk their areas of cultivation and leading to sedimentation of the Nezahualcoyotl dam, a primary source of electricity for southern Mexico.

e. Participation

One of the strengths of the project has been Pronatura's commitment to work with all sectors of the population, including children and women. The integration of these populations was initiated by focusing on one or two themes at a time and connecting these to the activities of Ecósfera. They have begun to expand project activities to some surrounding communities, with the added potential benefit of increasing regional acceptance of local community cooperation with local NGOs.

f. Project Acceptance and Technique Appropriation

- (1) The project activities that have been developed within the community of Nueva Alianza show the potential effectiveness of the MEP in El Ocote. Similar successes in other communities have not been achieved, however.

- (2) Staff assured us that they felt that local people accepted the promoted techniques more as a result of their acceptance of the project personnel as individuals than because of an understanding of what the techniques were intended to improve. In discussing how they perceive development of projects which require community involvement, they describe a three or four phased process: The first phase is the "*entrada*," a slow process of learning about the community, identifying its problems and adjusting whatever proposed techniques there might be. It involves the community becoming accustomed to the project staff's presence.
- (3) The second phase is one of "*convivencia*," in which project staff adjust to the pace and customs of the community, learn to take part in community and family activities and adjust their work pace and habits to those of the local residents. This is also a slow process at first, but integration accelerates after the first few individuals and families accept the staff's participation in daily community life. This should facilitate integration into wider social networks via family, community and business ties, and other families and communities should then be willing to accept them after observing the results of the initial "experiment" with the first few families and settlements. At this point, techniques are accepted/adopted/trusted because of personal friendships that have developed between the extensionists and the community members.
- (4) The third phase is seen by staff as the slowest and most difficult: the understanding and acceptance of introduced techniques for their intrinsic value to the community, followed by (or demonstrated by) their adoption, use and management, independent of external extensionists and/or local promoters.
- (5) A fourth "adjustment" phase should follow, which includes a combination of distancing from the community by the NGO while maintaining enough contact for follow-up advice during a period of assimilation and incorporation of the technique(s) into local resource management regimes. All of this takes much more time than most project planners anticipate, but the effects are deeper and more durable. The project staff attempted to get through the second phase by midpoint in the five year project; the evaluation concluded that real acceptance and integration took place in very few people in a minority of communities visited.
- (6) Community Acceptance: The native Tzotzil-speaking woman promoter might have served as an invaluable *entré* ("*punta de lanza*") for approaching new communities; but some initiative also needs to come from community members themselves, and there was little in evidence. And, shortly after the evaluation team visited, this promoter resigned from the project and was not replaced.
- (7) Security: According to some staff, the incidence of drug traffic and robbery in the area made it necessary for the field staff to always travel in pairs, limiting their ability to cover a larger area. A widespread perception that strangers coming into the area are likely seeking to exploit people's land was also expressed by community members. Both these characteristics may have slowed the project's acceptance by the communities. Project officials insisted, however, that the need for translators was the primary reason for paired visits to communities (not fear of narcotraffic), and that this was part of a communications strategy.
- (8) The role of *machismo* (sexism and male domination) cannot be discounted in identifying sources of rejection or obstacles to acceptance. Local male leadership of the communities, not unexpectedly, tended to identify with and value more highly the information and suggestions coming from the male members of the Pronatura-Ecósfera team. *Machismo* apparently was also a problem within the team itself; Pronatura-Chiapas staff were nearly all women, and Ecósfera's were all men. This became a factor in the team's approach to the communities and a limitation in the work with women.

g. Sociocultural Considerations

- (1) **Cultural Obstacles:** According to Ecósfera and Pronatura, part of the source of diminished local acceptance of the techniques is that the local people in the targeted communities are not accustomed to meeting, working in a group, or having any "say" independent of their religious/community leaders. Second, the prevalent religion (Seventh Day Adventist) is credited with fostering a belief in the imminent end of the world and thereby hindering the development of a long-term perspective or receptivity to incentives for resource management. The negative influence of religion could not be independently verified by the evaluation team, but it seemed logical and consistent with other experiences. However, other NGOs in the area have been working in adjacent *ejidos* of identical sociocultural configuration and have been able to motivate and achieve group formation and action around issues of resource use. This indicates that these religious and cultural characteristics are not insurmountable obstacles if addressed in ways different than these two organizations have done.
- (2) **Language:** Over the course of the project, individual staff have acquired a working knowledge of *Tzotzil*. The coordinator gained some acceptance in many local households and is now struggling with the next step of local participation, where the projects start to take on a life of their own as they leave the hands and control of the technical group. It would have helped had there been a promoter in each community who was from the community.

Language differences (related to both dialects and educational levels) between the project promoters and participants create a cultural barrier to the transfer of techniques and the exchange of information and inhibits trust and openness by community members in communicating their needs and aspirations. To some extent, this barrier has been ameliorated by the two Tzotzil-speaking promoters in both NGOs.

- (3) **Communication skills:** Ecósfera has strong technical experience but requires improvement in the areas of social and communication skills. The staff eventually realized that *labranza minima* involved too many interdependent and new techniques at one time. It took them a long time to realize that participants were dissatisfied, and longer still to make modifications. Eventually, promotional methods were altered to encourage participants to try one new technique at a time in order that the project could assess its value to and acceptance by local communities and their "saturation level."
- (4) **Relationship to the Reserve:** Local people refer to the Reserve as "The Zoo" ("*El Zoológico*"), perhaps because it is managed by the governmental IHN or perhaps because it keeps resources behind a barrier. Their perception generally is that the area is owned and guarded by the government, which is, therefore, responsible for the area ("We leave them alone, and they leave us alone"). They say they have been told (by IHN) that if they use the area, they will be fined. However, they insist, this doesn't frighten or deter them from entering the area: ("*Miedo, ¿qué miedo?*"). The people interviewed in the communities visited also believed that there were still people living in the core zone, and that most of the potentially arable lands had already been cultivated and were now *acahual*. Pronatura and Ecósfera, who have studied the area, dispute this and put little weight on the perception.

h. Relationship between Ecodevelopment Goal and Project Activities

Some activities showed early signs of taking root, such as the improved stoves which experienced some voluntary replication (with no promotion) in Velasco Suarez, and some group gardens. Activities such as these were seen by project planners primarily as a didactic tool to involve the people in thinking about conservation of forest resources, and to enable the formation of closer relationships between the project's field staff and the community. In

other words, the activities were seen as means, not ends in themselves. However, the relationship between this kind of very specific activity and reducing deforestation or planning for sustainable resource utilization is rather vague to the local residents and a bit theoretical to project promoters. Pronatura-Chiapas pointed out that mid-term evaluation took place at a fairly early stage of an experimental process, so it would not be reasonable to expect widespread behavioral changes at this stage. It might be reasonable, however, to see some indication that the practices being introduced would have potential educational and ecological effects later if they were continued long enough. Indications of this connection were mostly absent.

i. Environmental Education

El Ocote is the only one of the four project sites in which a coherent plan was made to engage in systematic environmental education (EE). Pronatura-Chiapas specializes in EE and has gathered considerable information, developed a methodology, and written impressive reports. Indeed, Pronatura-Chiapas set out to establish an environmental education strategy for one part of the El Ocote reserve. Unfortunately, it was not adequately coordinated with the agroecology team at the conceptual-strategic level, even though field-level collaboration appeared to improve throughout the course of the project. The work seen by the evaluation team was not as much environmental education as work with women. There were some minor exceptions of note: instructional brochures (*folletos*) on agricultural techniques were designed with input from men in the communities, and women had been organized into small groups to discuss social, economic and health problems leading (according to the extensionists) toward a better understanding of the environment in which they lived. Men also provided support in small ways; they were asked to help the women prepare the group gardens and build the improved stoves (*fogones*).

j. Technical Considerations

- (1) **Site Selection:** The communities for the project were selected according to proximity to the core zone and accessibility. They began to form a semi-circle that was intended to permit second-stage expansion into the rest of the northern part of the buffer zone.
- (2) **Frijol Abono:** Acceptance of the *frijol abono* also has been slow, partly because of the labor-intensive techniques with which it was introduced to the communities, and perhaps partly because of the lack of interest in soil improvement for permanent or stable agriculture. In Alvaro Obregón, for example, of the 13 people who received the seeds of *frijol abono*, 7 actually planted. Those who dropped out cited various reasons, such as lack of time or other community commitments. In Velasco Suárez, the men said that it was better to cut down *acabual* than practice permanent agriculture, because they could open more land in an *acabual* in less time than it takes to plant *frijol abono* with some of the techniques of *labranza mínima*. One man said that the *frijol abono* "*conserva el suelo...pués, así se dijeron* [conserves soil...well, that's what they say]." However, they have between 13-20 hectares, he said, and working a system of *milpa* and *acabual* with 2-3 years of fallow, the soil is fine: "*¿Porqué mejorarlo si está bueno?* [Why improve it if it's good?]."
- (3) **Recovery of Traditional Knowledge:** In all three of the communities visited, Pronatura had begun a project of group gardens (*hortalizas*), primarily to engage the women although men were also involved in the work, to help prepare the seed beds and build fences. Pronatura asserts that this is a form of recovery of traditional knowledge for the indigenous colonizers from the highlands of Chiapas, who remember techniques and seeds they had used before. Although the climate and soil is very different in El Ocote, and the "traditional" seeds and techniques from other regions are not necessarily appropriate, all of the vegetables promoted by Pronatura were known to the local people.

- (4) Gardens: The vegetables grown are intended for household consumption or local sale, not for commercialization, and the project has had some difficulty finding seeds that can take the cyclical conditions of extreme wet and dry found here. Another constraint on gardening is the scarcity of water for irrigation in the dry season. A human impediment, particularly in Alvaro Obregón, was found to be a lack of interest by the men, who say that they do not have time to bring the posts, build the fences or beds, and that it is more work. One project person mentioned the potential problem of *machismo*, that the gardens represented a certain amount of freedom for the women. No study has been undertaken (in any of the ecodevelopment projects) to assess the influence of the gardens on household management, women's organization, family nutrition, or possible income generation.
- (5) Improved Cook Stoves: The introduction of the energy efficient stoves appears to be taking hold in a small sector of the community of Velasco Suárez. There are 7 stoves in the community and five more people have signed up for new stoves (they had to wait another five months until April, when the adobe bricks could dry). The promoters confront the preferred traditional use of "tres piedras," which also serves as the hearth for the family. The principal benefits of the closed stoves is that they use less firewood and they vent the smoke to outside the house.

Some of the reasons given for not adopting the stove were that it does not cook rapidly enough to make *tostadas*, and that the smoke from the traditional stove was good to keep away the insects. It is not clear yet whether the decision to have a closed stove is made by the men or the women.

The evaluation team conducted interviews with many of the households that have adopted the improved stoves. Interviews were either with the man, or the man and wife together, but almost never the woman alone. The men take the initiative to build the stove after it has been promoted to the woman. It was not clear if a decreased consumption of firewood was a criterion for adoption. One of three women interviewed did not search for firewood; her husband brought it. The other two couples brought the wood in together. One couple said that they did not really measure the amount of wood they had used before or after. They estimated that with the traditional three-stone stove, two *tércios* of wood lasted a week; with the closed stove, two *tércios* last a week and a half (a 33% savings). Most of the stoves are also on platforms, the result of hygiene promotion by the Social Security Ministry (*Instituto Mexicano para Seguridad Social - IMSS*), and the elevated aspect of the stoves was also cited as a criteria for their adoption: it is cleaner, the chickens and dogs don't run by the cooking area, and there is less risk of children getting burned.

There was some evidence of the multiplier effect beginning to take place. Two of the stoves had been built independently of the project. When asked why more people did not copy the stoves, one man said that other people were "not interested."

- (6) Experimental Plot: A simple scientific experiment was begun by the staff in Velasco Suárez, with four randomly located test parcels each of *nescafé* and *canavalia* (the introduced varieties), *frijol arroz* (a native species) and *frijol de castilla* (as a control). They are measuring the amount of biomass produced by the four different beans. This is a unique development among all of the MEP projects. It could be expanded to measure and compare herbicide and soil improvement capabilities, and it could serve as a demonstration as well as experimental plot. It could also benefit from more local participation and greater integration with Pronatura's educational activities. As currently constituted, as good as it is, it represents a missed opportunity for promotion of soil improvement techniques, as well as a possible means for increased credibility with local community leaders, for if the plots were located on their farms, neighbors and

extensionists could work together to overcome or solve *in-situ* technical, economic, and cultural problems faced by the farmers.

The plot so impressed the experienced project managers from the other MEP projects at the time of the mid-term evaluation that each mentioned their desire to start a similar plot in their own projects.

- (7) Livestock: Cattle ranching does not represent as big an economic attraction to the campesinos as in the other projects visited. Local peasants do not raise (or purchase) cattle for the meat or milk, but as a reserve to sell in case someone in the family gets sick - a bank account on the hoof. The men of Alvaro Obregón said that *picante* is better than cattle because it takes a lot of money to buy and maintain the cattle, including purchase price and cost of infrastructure such as wire and posts for fencing, pasture improvement, etc.

During the evaluation field trip, we did not visit Ejido Salina Cruz located to the north of the Velasco Suárez community, where, according to project personnel, the primary productive activity is cattle which is affecting the core zone of the Reserve. Here, too, illegal hunting is having an impact on wildlife biodiversity. Further, accidental fires in the entire area have created a situation in which lands otherwise destined for agriculture have become transformed into cattle range such that the resulting soil fertility and loss of natural resources within *ejido* territory are underutilized.

- (8) Tree Planting: There was considerable difference in the communities' understanding and enthusiasm for the tree nurseries. In both Alvaro Obregón and in Velasco Suárez, no comments were made about the use of the trees by the next generation. They were seen as potential future construction materials in the "medium" term. However, in Nueva Alianza, the vision was much more long-term: one man said that the trees would be used for house construction: "*para nuestros hijos, para que nuestros nietos tengan madera: árboles* [for our children, so that our grandchildren may have wood: trees]".

k. Appropriate vs. Appropriable

- (1) Selection of Activities: Some officials of Ecósfera felt pressured by WWF's project management style. They perceive that their project has been more closely managed, directed and pressured ("*sobredirigido y sobre-evaluado*") than any of the other MEP projects, and that some of the techniques (e.g., PRA, *frijol abono*, *labranza mínima*) were forced on them. Ecósfera believes that the methodology of COSECHA does not transfer well to the modality and politics of Mexico, although the package of techniques, by itself, is valid. They would have preferred, for example, to focus on agroforestry rather than basic grains.
- (2) Rejection of Techniques: By the time of the evaluation, the project had dropped the promotion of *labranza mínima* because it was not accepted by the local communities. From the local viewpoint, "*labranza mínima*" is more work than cutting down second growth forest (*acahual*) because it requires more initial labor than shifting agriculture and requires a series of unfamiliar techniques for soil improvement that are not perceived as necessary. Second, at least one community (composed of Seventh Day Adventists) believes that the world will come to an end soon, leaving little reason to invest in long-term strategies of land use or resource management. As a result, activities which are considered ecologically appropriate by the project staff may not be accepted (appropriable) by the local residents for reasons specific to their experience, knowledge or ideologies.
- (3) Local Understanding: The concepts behind the use of *frijol abono* for soil improvement have not yet been appropriated. The men in Alvaro Obregón said that they had not seen

results yet and asked about using urea for fertilizer. They said that the corn did not grow well and the gophers (*tuzos*) ate whatever did grow. There are several problems which the Ecósfera team must confront in promoting *frijol abono* in the area: 1) the need to coordinate the planting times so that the *frijol abono* does not impede the development of the corn stalks; 2) the lack of interest in soil improvement since landholders have sufficient land to rotate with long fallow periods; and 3) the group of men with no land security (e.g., those who are renting lands) and therefore little incentive to invest time and labor in land improvements.

I. Administration

Financing: The funds from WWF arrived late (both last year and this year), which has put the project at risk. They were loaned money from other projects in CIES to keep working but were being pressured to return the loan at the time of the evaluation.

5. Recommendations

a. Coordination

- (1) Work with Línea Biósfera. A collaborative effort will be much more effective than a fragmented one, especially since the goals of each group overlap greatly.
- (2) Work with small landholders, including *ejidatarios*, who are cattlemen. By not including this sector of the local population in project activities, the MEP is neglecting a primary cause of deforestation and resource degradation in the buffer zone of El Ocote. The project runs the risk of creating an adversary or enemy of a group that has more potential political weight than the slash-and-burn agriculturalists, more social standing and more disposable resources with which to experiment with more sustainable practices.

b. Strategic Focus

Orient the communities to the concepts (and reality) of core and buffer zones. They should be encouraged by the idea of a buffer zone in which the local populations are part of the reserve and the local residents are active participants in efforts to conserve their own natural resources and lands, as part of a wider conservation strategy.

c. Promotion and Extension

- (1) Determine the causes of what the project staff called "excuses" by the local people for not adopting the techniques or continuing participating in the project. In other words, the project is in need of an assessment of the perceived needs, constraints, and aspirations of each of the individual communities in which the project is active. In turn, the project staff needs to take a long hard look at its own assumptions about how it has determined which techniques, strategies and communities are appropriate for ecodevelopment in buffer zones. They perhaps have selected the techniques and communities on the basis of ecological criteria (appropriate for the type of soil, degree of slope, type of climate, use with corn, proximity to the core zone, etc.) and have neglected the sociocultural criteria (degree of trust, interest in the particular crop, interest in long-term use of the land, perception of an environmental problem, degree of risk, availability of materials, continuity and access to advice, etc.) that can only come from working *with* (not just in) the communities.
- (2) Second, they seem to have chosen their strategy based exclusively on their own view of the integration of conservation and people. Therefore, the focus is on how to include people in conservation policies and resource management and neglects the reverse

viewpoint of how to include conservation practices and philosophy in the local way of life and plans for the future.

- (3) Return to the "drawing board" to explore simpler agricultural and agroforestry techniques that respond to perceived needs. To some extent, the project has realized its mistakes (exemplified by dropping the *labranza mínima*). The field coordinator noted that they were trying now to avoid saturating the communities with too many activities, instead limiting themselves to 1-3 techniques at a time, such as *frijol abono*, cedar and *siempre viva* nurseries, and vegetable gardens.
- (4) Determine the basis of success in Nueva Alianza, adapt from and repeat it.
- (5) Phase out the work in Alvaro Obregón and redirect efforts to more receptive communities.
- (6) Increase the project profile at the local level; identify, recruit and train local promoters, and spend more time in the communities.
- (7) Develop the existing experimental plot into a participatory experimental and demonstration plot in which community members (participants and others) can see and use the techniques with little personal risk and can contribute to the on-site modification of techniques to local social and natural conditions. This may mean a longer introductory time for a given technique, but known and successful techniques will be adopted more easily, and become more widespread, and experience less abandonment. The result should be long-term, committed, informed adoption in which the innovation process is built in.

D. Calakmul, Campeche

1. Project Setting

The Calakmul Biosphere Reserve, with 723,000 hectares, is one of the five largest tracts of humid tropical forest remaining in Mexico. Located in Campeche, the reserve borders Guatemala and the one million hectare Maya Biosphere Reserve. The Calakmul Reserve is considered to be one of the most important sites for biodiversity conservation in Mexico. If the adjacent regions of Guatemala and Belize can be protected, the result would be a vast, connected protected area of more than two million hectares.

The climate of the area is moist and warm with huge variation in rainfall between the annual 800 mm in the north to as much as 2,000 mm near the Guatemala border. The typical forest is medium seasonal evergreen forest with some stands of tall forests. In addition to precious hardwoods, other forest resources with commercial value exist, such as allspice, palms, *chicle* zapote, and over 30 species of orchids.

Even based on incomplete inventories, the fauna is considered of particular importance for conservation. About 250 species of birds (out of an expected 450 species) have been recorded, including a high proportion of raptors, at least 18 species of wood warblers, ornate hawk eagles, king vultures, two species of toucans, several parrots, and the endangered ocellated turkey and the great curassow. The reserve serves as a sanctuary for other important animals including five of the six Mexican cats, threatened species such as howler and spider monkeys, anteaters, tapirs, white-lipped peccaries and two species of deer, as well as over 45 species of butterflies.

The region has severe water scarcity problems during the dry season from April to June. However, an ancient Maya population thrived here by creating elaborate hydrological works and raised fields with intensive agriculture, and by using the resources in diversified ways. The reserve contains dozens of archeological sites, some of which are among the most important in the Mayan world.

In 1990-91, Pronatura Península de Yucatán A.C. (PPY) coordinated a multi-institutional effort to gather physical, biotic and social data in the Calakmul area. The pressures from human populations were analyzed as threats to the long-term viability of Calakmul's ecosystems and the preservation of its important natural and cultural resources. According to PPY, major degradation in the area derived from uncontrolled and unsound lumber extraction, unproductive agricultural practices, excessive commercial hunting, road construction in sensitive areas, and looting of archeological sites.

2. Project Description

a. History

WWF began to work with Pronatura Península de Yucatán (PPY), an autonomous Mexican NGO headquartered in Mérida, Yucatán, in April, 1991. Under the direction of Joann Andrews, a well-known American-born Mexican environmentalist, PPY served as an umbrella organization bringing together a team of biologists and social scientists from multiple research and education institutions to gather baseline physical, biotic and social data in the Calakmul area. With support from WWF and other institutions, the study served - among other things - as the foundation for the ecodevelopment project.

The project was conceived with the intent of addressing the most pressing and widespread of the identified threats in the most critical areas. The integrated conservation/development effort was focused on the communities along reserve borders that practice slash-and-burn agriculture and the zones designated as "*ejido* forestry expansions." The project sought to

improve the environmental and economic performance of both the small-scale subsistence agriculture sector and commercial forestry in the *ejido* lands contiguous to the Reserve.

PPY's strength was seen by WWF as being in the areas of sustainable agriculture and agroforestry. However, WWF concluded that, in order to move forward with an effective and comprehensive ecodevelopment program in the region, it would need to develop additional partnerships with local NGOs, such as Plan Piloto Forestal and the Consejo Regional Xpujil (CRX), given the strength of these organizations and the number of initiatives ongoing in forestry and rural development in the area.

b. Objectives

The original goal of PPY's "Managed Sustainable Agriculture Program and Forestry Project" was to establish specific projects for the sustainable management and use of the natural resources in selected communities and to develop a long-term development strategy for the Calakmul buffer zone, based on information gathered in selected communities through PRA techniques and a focus on the critical economic/environmental nexus.

Objectives for the first year primarily involved project start-up. PPY planned to:

- (1) recruit and train a multidisciplinary staff;
- (2) initiate contacts with communities and organizations in the area;
- (3) research existing local experiences and useful alternative technologies appropriate to the area;
- (4) develop ways to incorporate indigenous knowledge and practices that preserve biodiversity;
- (5) select several communities and conduct participatory assessments to understand current conditions, limitations and possible alternatives for more sustainable use of resources;
- (6) conduct workshops to investigate the viability of several sustainable production alternatives in forestry, cattle ranching, and grain, vegetable and fruit production;
- (7) analyze the Alvaro Obregón *ejido* and the process by which they formed an *ejido* forestry enterprise.

PPY discovered that the area had a well-organized union of 22 *ejidos*, officially called the Consejo Regional de Solidaridad de la Zona de Xpujil, which already was working on a number of development programs in collaboration with other Mexican NGOs and a large-scale, government-sponsored rural development program. PPY acknowledged the importance of including the participation of *ejido* members in the various phases of the project as the only way of ensuring the projects' continuation after PPY's involvement eventually ended.

The pace of progress during the first year was slower than expected, and some objectives were not met due to personnel problems and weaknesses in PPY's abilities to design and implement a community development program. Energies too often went toward responding to demands placed on project staff by the communities, which diverted PPY from its goals.

The integrated project that was developed out of the first year's study and exploration had three main components: sustainable agriculture, beekeeping and environmental education. Forestry was a fourth component, funded by WWF through PPY, but implemented exclusively by the Consejo Regional de Xpujil. Three communities with at least 12 campesinos each were meant to participate in the first phase of the project. The proposed focus was on the training and extension of sustainable agriculture techniques to curb and reverse the process of forest destruction resulting from clearing for farm land.

Beekeeping

The Calakmul area has a history of producing some of the country's most desirable honey, but by the time WWF became interested in the region, its commercial production had dropped to almost nothing. PPY hoped to revive honey production both as a secondary source of income and as an incentive to protect forest resources, since old growth forest stands produce the best product. PPY proposed that the project develop and teach a method of harvesting honey and its derivatives from semi-domesticated forest bees, and to market the products exclusively for a "Green Seal" designation through a regional producers organization.

With support from WWF funding, PPY proposed to assist the best beekeepers, especially interested young people and women from the *ejido* San Antonio Soda, to apply efficient techniques to halt the "*africanización*" of the bees and diversify their end products. In addition, PPY planned to explore the market possibilities for diversified bee and honey products. They also planned to work with the Consejo to find a well-respected beekeeper to train as an organizer-technician for organizing honey producers in the area.

Educational activities were designed to cover life-cycles and social behavior of Italian domesticated and African bees; the relationship between bees and the forest; life cycles of native bees and the medicinal use of honey.

Environmental Education

The environmental education project program had originally been funded directly by USAID to PPY. The PPY environmental education specialist at the time designed curricula for extension work in all three projects and worked with schools on formal environmental education for children.

In August 1993, it was incorporated into the BSP budget and program, and presented as part of the general PPY ecodevelopment strategy for Calakmul. It was redesigned to support the agriculture, forestry and beekeeping projects. As a result, curricula relating to each of the project areas were developed. The proposal described specific activities in detail and elaborated the linkages between environmental education and all of the other project components.

Forestry

WWf and PPY agreed that there should be a forestry component within the Calakmul Ecodevelopment Project that would focus on the sustainable management of existing *ejido* forests. The forestry component was designed by WWF in collaboration with the Plan Estatal Forestal of Quintana Roo and the Consejo Regional de Xpujil, each of which contributed unique resources. For the first two years, the forestry component was implemented by CRX, but funded by WWF through PPY, without PPY having programmatic responsibility. Since PPY was not the project implementer, the forestry component was not evaluated by the team. After a year and a half of an ambiguous relationship with the rest of the ecodevelopment project, it was taken over entirely by the CRX without further involvement by PPY. However, due to its initial funding through PPY, it figured heavily in early PPY proposals and reports, and appears to have been a key part of the WWF-PPY ecodevelopment strategy for Calakmul.

At the start, the forestry project began working in 5 *ejidos*. A project director was to be selected, followed by training of 3 existing forestry technicians in silvicultural management techniques for tropical forests and inventory techniques. Activities related to forest management included inventory work, developing 25-year rotation management and harvesting plans, improving silvicultural techniques, experimenting with reforestation and

promotion of fallow cycles; establishing tree nurseries; making charcoal as a byproduct of forest clearing; training local foresters in simple, improved harvesting techniques; developing a monitoring and evaluation schedule, and teaching of techniques to local participants to carry forward the process.

For the agroforestry activities, forest plots and nurseries were used to demonstrate the concept of watersheds and the cycles of forest water, the precarious equilibrium of forest vegetation, useful forest products and by-products, sustainable forest production and conservation, including forest management and conservation philosophy.

PPY's primary contribution to meeting these objectives was funding the salary of a second forester to work with the Consejo Regional.

Agriculture

The purpose of the agricultural project - the centerpiece of the Calakmul ecodevelopment project - was to develop and test a series of techniques in sustainable agriculture adapted to and effective in the zone. If viable, they would be extended to other communities through promoters and with the help of the Consejo. A regional training center for sustainable agriculture in Oxcutzcab, Yucatán, sponsored by *Arboles para el Pueblo*, would also assist in reaching the majority of communities in the area.

Before fully consolidating its work in the initial communities, PPY came under pressure from the Consejo to expand from 3 to 30 *ejidos*. The Consejo had received money from the Mexican government to support the broadening of the sustainable agriculture program. The expansion included the mechanical cultivation of 150 ha using some PPY techniques, principally cover cropping. After negotiations and compromise, PPY agreed to extend its technical and methodological guidelines to 17 new communities and over 200 new farmers. PPY made plans to provide five new promoters to work in these communities, with the PPY coordinator providing overall technical assistance.

The second year of the Ecological Agriculture Project was designed in response to what had been learned in the first communities they assisted, and was based on agricultural techniques used in Guatemala, Honduras, Oxcutzcab (Yucatán) and elsewhere. WWF and PPY sought to design agricultural systems with minimum impact on the environment, principally by using green manure and soil conservation in order to transform shifting agricultural patterns to stable agriculture. The idea was to promote poly-culture to people increasingly attracted to monoculture's economic incentives and to promote agroforestry by intercropping annual crops with local shrub species and trees with commercial value.

Specifically, Pronatura proposed the following:

- (1) develop high-yielding agricultural techniques for campesinos that required few external inputs, such as application of soil improvement techniques, by using organic matter, reducing direct sunlight, and in-row tillage techniques,
- (2) reduce, as much as possible, the shifting agricultural practice of slash and burn forest clearing by introducing agricultural practices that allow campesinos to use one piece of land more permanently;
- (3) experiment with and develop integrated pest control systems to limit weed growth by using leguminous ground cover, crop diversification and rotation;
- (4) develop techniques to control the degradation of land, including damage caused by traditional uses of fire;
- (5) train two promoters to extend these techniques to other communities;
- (6) develop two regional courses in biological pest control, and train promoters in empirical knowledge and promotion skills;

- (7) sponsor regional and inter-regional educational field trips for neophyte promoters and non-participant campesinos to stimulate enthusiasm for ecological agriculture;
- (8) obtain technical assistance from COSECHA and others to help answer the many questions about sustainable agriculture techniques.

For the sustainable agriculture project, demonstration plots were to be used to teach participating farmers and promoters about: soil conservation; the value of nutrients (green manure, IPM, poly-culture, leguminous plants, cover crops and agroforestry systems; the ecology of soils; and the role of fire in tropical ecosystems.

c. Results

Specifically, the PPY technical report for the period 7/92-6/93 concluded that:

- (1) integration and coordination was achieved between PPY's technical staff and the Consejo Regional de Xpujil, Campeche, regarding the design and implementation of regional agro-ecology policies, beekeeping and environmental education;
- (2) through working with 44 campesinos in 3 communities, an ecological agriculture program was created using in-row tillage, no-tillage and horse traction - good results were noted in both yields and in terms of promoting the techniques to campesinos; 7 campesino promoters from the region were instrumental in carrying out the project;
- (3) the agricultural project was expanded to 17 communities, beekeeping to 10, forestry/agroforestry to 4 and environmental education to 4 (many communities had more than one project);
- (4) (according to SARH) forest clearing and burning were drastically reduced by 30% during the year;
- (5) environmental projects with children were conducted in 4 communities and small demonstration plots were created to teach agro-ecological principles;
- (6) it was noted that daily discussions among campesinos took place concerning the protection of the reserve and alternative production techniques;
- (7) a level of collaboration and coordination was achieved with the Consejo.

Some problems included:

- (1) differences in approaches between PPY and the Consejo, especially regarding mechanized farming;
- (2) high demand for the implementation of ecological agriculture among campesinos undermined PPY's desire to go slow enough to establish comprehension among participants;
- (3) although participants gained valuable experience through environmental education, the theoretical material was not balanced with nor conducive to practical applications. The staff person did not easily adapt to peasant educational needs nor was he successful in resolving problems that surfaced with the Consejo.

Concrete achievements in environmental education included:

- (1) 30 kilograms of *canavalia* seed were harvested from the experimental plot at the Nueva Vida School that were used for the next agricultural cycle;
- (2) a family gardens management project was conducted in 4 communities;
- (3) 2 gardens were established in the El Refugio *ejido*;
- (4) 30% of the plants found in the area were identified and recorded with the scientific and common names;
- (5) 14 ha of land were cleared for demonstration plots with the help of the 4 environmental promoters (the plan was to apply organic agriculture).

3. Findings

a. Geography and Boundaries

- (1) The biosphere reserve has two separate core zones which are divided by a highway. The boundaries of the cores zones were arbitrarily drawn in 1989 by decree, at a time that Mexico was renegotiating its national debt and was experiencing international pressure to establish forest reserves. Some communities formerly inside core zones "voluntarily" relocated due to a total lack of access to government services. Some private landowners have property (legal or otherwise) inside core zone areas, and are trying to clear forest for cattle ranching.
- (2) The original boundaries of the reserve are now obsolete relative to current land use and resource distribution, and are supposed to be redrawn. The affect of this change on ecodevelopment, resource management, education and social programs is quite unpredictable, and uncertainty is felt in many places.
- (3) There are unresolved border territory disputes between the states of Quintana Roo and Campeche which reportedly will have further unpredictable and complicating influence on the question of reserve borders.

b. Land Use and Distribution

- (1) Buffer zones consist primarily of forestry *ejidos*, comprised predominantly of recent property extensions (*ampliaciones*) as concessions to chicle harvesters. Few people live there. A few of the *ejidos* have well-preserved forest holdings of 50,000 hectares or more.
- (2) Land holdings and tenure situations by *ejidos* and private landholders are relatively well defined and established, and are not as controversial or problematic as in Chiapas.
- (3) 72 *ejidos* are located in or nearby (within the "zones of influence") of the reserve. Distribution of land to individual *ejidatarios* ranges from 30 to 100 hectares, much of it forested. These 72 *ejidos* contain approximately 138,000 hectares of primary forest and 157,000 ha of secondary forest.
- (4) Almost the entire area of the Reserve is *acahual*, or regrowth of previously old forest that was cut at various times for agriculture, cattle, timber or other purposes. Some parts (called "*monte alto*") are considerably older than others, up to 20-50 years old. The southern part of the reserve area is now devoid ("*descremada*") of hardwoods, but there is still quite a bit of contraband of hardwood from Guatemala that moves through the region, which tends to obscure whatever illegal logging still occurs in the Calakmul area.

c. Reserve Management

- (1) The Consejo Regional Xpujil is a representative body of 33 *ejidos* (of the 72 total in the reserve area). The Consejo has a relatively democratic structure, with two delegates from each member *ejido* attending monthly meetings. The full group selects a six-member Board (*Directiva*) which serves for three years. The six members become full-time, paid directors for the duration of their terms.
- (2) Virtually all projects related to the reserve, including all natural resource management activities, are managed by the Consejo, and all government services to the population in the reserve area pass through this body, including the BSP/WWF ecodevelopment project administered by Pronatura Península de Yucatán (PPY).

d. Project Management

- (1) The Consejo has an extensive group of specialists on staff implementing a variety of government-funded and private projects with relatively large budgets. These range from forest harvesting to reforestation, from "productive ecology" to mechanized commercial agriculture, from a sawmill to soil testing to botanical research. Until the arrival of the WWF-supported ecodevelopment project the Consejo had no activities in organic agriculture, environmental education or apiculture. These three PPY sub-projects, part of the MEP, are considered by the Consejo to be part of its overall program.
- (2) PPY administers the project from its base in Mérida, Yucatán, six hours away. None of its professional staff are located in the Zoh Laguna *ejido* (site of CRX headquarters and the project) or the town of Xpujil. However, it maintains a field station in Zoh Laguna, which serves as a project base and where PPY staff and researchers can stay during their visits.
- (3) Funds from WWF reportedly arrived substantially late on several occasions. In 1992, there was an adjustment of the final budget and the funds arrived 3-4 months late. In 1993, the funds due in July were received a month late. Pronatura had to loan the project funds from other projects, causing cash-flow problems and unnecessary tensions.

e. Causes of Degradation

The primary environmentally degrading activities, based on interviews and observation, appear to be:

- (1) The cutting of *monte alto* for commercial chile cultivation, combined with the use of agrochemicals. To a considerable extent, this activity is the result of incentives offered by the governmental Instituto Nacional Indigenista (INI). Chilies are a fragile crop which require highly fertile soil, intensive cultivation to limit weeds, and low pest levels. Only two to three years of newly cleared forest provide these conditions, after which most farmers move into newly cut forest. Figures reported varied widely, but according to PPY, 1,500 hectares in the Calakmul region are cleared annually for chile cultivation. Most peasants point to large, wealthy absentee landholders with friends in high places who gain extra-legal access to core zone old growth forest with impunity. However, the practice probably is also common on a smaller scale by individual peasants gaining access to forest areas within their *ejidos*;
- (2) Encroachment of small property holders for cattle ranching in the northern zone;
- (3) Increased colonization in the area, to some extent due to government incentives designed to take pressure off other regions where peasant population demands are colliding with land accumulation by cattle ranchers and speculators. In addition, some cyclical colonization has been related to severe water shortages throughout the region. Project staff described a repetitive cycle of encouraged colonization followed by abandonment after periods of water scarcity. This has given intermittent impulse to the government to develop short-term water resources in the area (such as pumping water from the spring in *Ejido 20 de noviembre* for use elsewhere);
- (4) Fires set for brush and crop residue clearing by inexperienced agriculturalists which burn out of control;
- (5) Mechanized farming of the area, especially the Consejo-promoted and financed practices of destumping and deep tillage with large bulldozers, plows and disc-harrows;

In addition, it is feared that the planned construction of a new highway through the two core zones will open access to land and natural resources for colonization and unsustainable extraction.

f. Sub-projects

The organic agriculture sub-project works currently in 14 *ejidos* with 5 full-time promoters; the apiculture sub-project is working in 10 *ejidos* (only six of which are active) with up to 25 participants and two staff, and the environmental education sub-project has ongoing activities in 2 *ejidos* with one promoter.

g. Communication

The project has two vehicles and a vast area to cover. Some of the promoters have bought bicycles with money loaned from PPY, although a few people pointed out that the bicycles wear out faster than they can be paid off.

h. Environmental Education

- (1) The environmental education sub-project that began simultaneously with the organic agriculture was initially designed for school-aged children and was generally criticized as too sophisticated, urban oriented and irrelevant to the campesino reality. In its new form, "environmental education" (EE) is aimed primarily at peasant women, to counterbalance what a few PPY staff see as a heavy male bias: "*el uso sostenible diseñado por machos para machos.*" EE now primarily promotes new varieties and techniques for homegardens, which are recognized by the project to be sites where household activities are integrated with production activities, thereby combining the interests of men and women.
- (2) In the communities of Nueva Vida and El Refugio, the project includes tree planting, vegetable gardens, composting, sparing of useful tree species such as palms for thatch, use of *frijol abono* and *canavalia* with tree seedlings, water capture for use in the dry season, and introduction of basic vegetables (*hortalizas*) and food plants, such as *nopal*, that will do well in the area.

i. Women's Project

- (1) The environmental education sub-project is primarily a women's project. At the time of the evaluation it had been functioning for five months, and was active in the two communities of Nueva Vida and El Refugio, which were also the first two to begin organic agriculture activities with men two years earlier. The women expressed considerable enthusiasm and had begun to adjust the introduced techniques to their own perceived needs (for example, one woman raises mostly flowers rather than vegetables in her garden). The major problems encountered are lack of water, shortage of labor (and man-power) to construct the fences, and pests.
- (2) In Nueva Vida, where the women were the most enthusiastic, participants said they did not remember the work of the previous person who coordinated environmental education. In El Refugio, the women remembered him, and one of the current group gardens is the result of his early work. The present project includes all the women of El Refugio and eight in Nueva Vida. Although other women "do not have enough time to participate," they say, some now want to join, and at least one is duplicating their techniques.
- (3) They commented that their work in the gardens was similar to the men's work in their fields: both would clear land for productive use and later reforest, the men with cedar

and other useful species, and the women with fruit and other trees in their gardens. Women observed that their project involves the men to a certain extent, for the construction of fences and water catchment systems and the planting of trees. In addition, one of the organic agriculture promoters lives in Nueva Vida and uses his homegarden as an experimental plot for *frijol abono* and *canavalia* in conjunction with tree planting.

j. Beekeeping

- (1) The apiculture sub-project represents the recovery of a previously unsuccessful effort. The current coordinator was originally an apprentice to the former coordinator, a professionally trained apiculturalist, whose educational and personal style created serious conflicts and provoked rejection of his activities. PPY decided there was enough interest and ecological justification to revive the project. According to the new coordinator, apiculture is an ideal conservation activity because it links the protection of old growth forest (which alone produces the high quality honey the region is known for) with an economic base for market production of honey and secondary products. In addition, organic honey can bring a better price than more common commercial products, and can, therefore, offer peasants an economic incentive to seek alternatives to chemical agriculture.
- (2) The new apiculture team of two people has developed a small cadre of unpaid young men who function as para-promoters, working with both experienced traditional and inexperienced beekeepers interested in supplementing their farming income. They have encountered a) immigration of the african bee and resultant "africanization" and disappearance by swarming of native colonies; b) SARH's gradual abandonment of the area's farmers, ostensibly due to the region's geographic isolation; c) a traditional competitive relationship between apiculture and agriculture ("*falta de cariño por su trabajo porque es trabajo secundario*"); and d) a general antipathy toward apiculture or fear of bees and beekeeping by most peasants. This contrasts with the area's history as a producer of some of Mexico's finest honey.

4. Observations

a. Reserve Management

The Consejo Regional Xpujil was formed some time after the first area diagnosis that identified organized groups in the region. It administers the reserve and serves as an overarching organization through which services are provided to meet many of the region's needs.

All activities related to the Calakmul reserve are administered by the Consejo, although this body represents a minority of the surrounding *ejidos*. The reserve is statutorily under the direct authority of the state governor, who appoints his personal representative to the position of director of the reserve. This person also serves as the chief Advisor to the Consejo. The majority of the 72 *ejidos* in the area of influence of the reserve are not members of the Consejo and therefore do not have a voice in its management. According to interviews, they also are reported to receive significantly fewer services and less general assistance from the federal and state governments due to their decision to remain independent of the CRX.

According to PPY officials, the natural resources in the core and buffer zones and the zones of influence do not differ much, especially in the western fringe of the Reserve, where chicle-producing *ejidos* have uninhabited forest expansion areas (*ampliaciones*). Sustainable resource management is the theoretical principle underlying development schemes for the region,

although there is controversy regarding some of the approaches taken by the Consejo. The "reach" of the reserve management (and of the ecodevelopment project) includes selected communities in core and buffer zones as well as the zones of influence. There is less distinction between these communities (irrespective of their location in relation to the reserve) than there is between communities which are members of the Consejo and those communities which are located in similar geographic relation to the reserve, but are not members of the Consejo.

The reserve management carried out by the Consejo (which includes the Pronatura-sponsored ecodevelopment project), therefore, is not so much management of the reserve itself but of the general region. The reserve serves to attract government and other external resources to develop the region economically for the benefit of local residents through the Consejo.

b. Alternative Management

According to PPY staff, conventional reserve management under Mexican law has failed to provide adequate protection to resources and people. According to their analysis, the only way to protect the natural resources of an area is through "moral authority from below" ("*autoridad moral de abajo*"). Only a reserve that is "socially occupied" can be conserved, as opposed to the conventional wisdom that a reserve can be protected only if it is *not* "socially occupied," except of course by official managers, researchers and guards. This philosophy is consistent with WWF's desire to include the primary resource users in an area in the planning and management of the area. It remains to be seen if this "bottom-up" principle can be successfully integrated with the institutionalized authority structure currently in place in Calakmul.

c. Project Management

The relationship between PPY and the Consejo is ambiguous but functional. The official position of the Consejo is that the entire ecodevelopment project supported by PPY is only a small part of its own larger program, that implementation is carried out by the Consejo, that the ecodevelopment staff (even though on PPY payroll) are really staff of the Consejo, and that PPY is simply one donor among many.

For its part, PPY collaborates with the Consejo as the local entity with overall planning and management authority, but along with WWF, considers itself the implementing agency of the ecodevelopment project. PPY officials speak and act in a manner consistent with their having full institutional responsibility for the projects and research activities they administer and implement. However, they say they perceive no structural conflict and are not disturbed by the apparently fundamental difference in perception. A letter of understanding between the two agencies confirms that a formal relationship exists, but does not clarify which entity has ultimate responsibility for what.

The ecodevelopment Field Coordinator is also coordinator of the organic agriculture sub-project and the key liaison between the sponsoring external agency (PPY) and the local authority (CRX). On his shoulders has fallen the day-to-day responsibility of contact and collaboration between the project and the Consejo. The part-time Coordinator of Community Development (CCD) is based many hours from the project site, but by virtue of frequent visits and skilled diplomacy shares the responsibility for developing a successful collaborative relationship.

d. Representation

The Consejo Regional is responsible for the overall management of the Reserve, but the member *ejidos* in the Consejo are located primarily in the north-south axis of *ejidos* near Xpujil, and are not necessarily representative of the entire population with interests or land

in the Reserve area. There are many other players in the reserve, such as: the group of *ejidos* from the north of Campeche with *ampliaciones forestales ejidales* in the southwestern part of the buffer and core zones; the group of *ejidos* to the west of Xpujil where INIFAP has been working; the poorer area around Chenes to the north of the core zone; and the northern and western *ejidos* which are participants in another ecodevelopment project administered by PRAXIS and PROAFT, funded by the EEC and Oxfam Belgium.

e. Internal Change

In spite of the geographic distance between central office and field project, PPY seems to have accomplished what other implementing NGOs involved in the ecodevelopment program have not: to take the home office management and administrative staff to the field to assess administrative needs and performance limitations and to make adjustments to fit the project, rather than making field changes to fit administrative requirements.

PPY has also done an excellent job of collaborating successfully with the sometimes touchy Consejo Regional, something which is only possible because the project coordinator is diplomatic, professional and secure enough to place a higher importance on the goals of the project than on who gets credit for the success.

Geographic isolation has been a serious obstacle in obtaining capable technical people to work with the project. It has been hard to find well-trained, subject-appropriate personnel who are both available and willing to work under difficult, stressful and remote conditions. The project earlier experienced a high rate of personnel turnover and faced serious internal conflicts and external loss of confidence. A major change was necessary. This was managed successfully, averting either an even larger crisis or cancellation of the project altogether. These challenges were compounded by the complexity of an environmental organization administering over great distance, collaborating with a politically motivated local management authority with hegemonistic tendencies, funded by an international NGO with an extreme hands-on approach to project design and management.

Adjustments included changes in field staff, project coordinators and central office management, new systems of coordination and communication between the field and central offices, renovated administrative mechanisms and an adjustment at all levels to the demands of a field-oriented, hands-on project.

The major "turnaround" took well over a year to accomplish. Key staff members from the central office in Mérida now visit Zoh Laguna frequently and have adjusted many of their administrative systems and management policies to fit the needs of field personnel. Project staff are learning the reasons behind, and how to comply with, many of the administrative requirements imposed by the Mérida office. No single individual any longer is the only link between field and central offices because a number of management staff have direct relationships with a number of field staff.

f. Project Expansion

A period of very rapid expansion for the ecodevelopment project, from four to 30 communities, was requested by the Consejo after a year of resistance. The Consejo was finally convinced of the potential benefits of ecodevelopment by a field trip to the four then-active projects and several communities where demand for assistance was being expressed.

The expansion was well beyond a "natural growth" rate and required the existing staff to spread itself too thin or experience overly rapid staff increases. PPY negotiated a reduction to 17 communities, of which 14 materialized, and of which eventually only 10 continued to participate in the project.

Nevertheless, the sudden expansion forced the project to identify promising local people for full-time work with participating community members more quickly than was optimal. The agricultural project decided to bypass the phase of developing local volunteer contacts who demonstrate by their unpaid participation both aptitude for new techniques and vocation for promoting them among their neighbors. It hired for the organic agriculture sub-project those youth who previously had been promoters with the now-defunct environmental education project, and added several others from key participating communities.

While some expansion did result, no attempt has been made to measure the negative effects on communities where inadequate or inappropriate attention caused them to drop out. The project is aware that it bypassed an important building and consolidation phase but has not sought a way to retrieve some of the valuable benefits (in community cohesion, identification of local resources, local leadership development, or acquisition of voluntary community support) of that approach. Some of the effects of this are visible in unconsolidated technical advances, limited integration of new and traditional techniques, failure on most participants' part to understand the wider goals of the project and lack of cohesive groups with which to work in each *ejido*.

g. Environmental Education

The environmental education sub-project has made significant progress in a relatively short time. The women participants demonstrated motivation, enthusiasm, inventiveness, friendly competition and an understanding of the conservation goals of the project. The entire project staff should be credited to some degree for its acceptance. However, these activities would have greater potential if they were integrated with the other sub-projects and with other household members. Further, it is currently more of a homegarden project than an environmental education program.

h. Integration of Women

One of the primary challenges facing the women's sub-project is its integration into the rest of the ecodevelopment project. Currently its activities are separate from the other sub-projects, so that it remains "work with women" rather than environmental education. Although some community men and male promoters are involved in the construction and maintenance of the home gardens, the reverse is not true: women and/or homegardens are not integrated into the organic agriculture or apiculture projects. The woman promoter does not work with the agricultural promoters, nor do they work with women. One idea proposed, which should be further explored in strategy sessions by PPY at field, strategy and policy levels, is to geographically expand the work of the woman promoter and to integrate it with the agriculture and apiculture so that in 3-5 years the sub-projects will work together in each *ejido* on a diversity of resource management activities covering the entire *ejidal* parcel (the 30-100 hectares per family that include garden, field crops, fallowed areas and forest) and across an entire *ejido* with both women and men.

i. Personnel

The project is a good example of the effect of having excellent personnel along with a good package of techniques. Much of the social and technical success realized by the program can be attributed to the Field Coordinator's (FC) technical knowledge and natural ability as a promoter, combined with long-term vision and diplomacy on the part of his supervisor, the Community Development Coordinator (CDC). It is an unusual and successful combination, which had to overcome numerous and serious early difficulties. The FC hired by PPY after a particularly difficult period took the time to earn the respect and acceptance of the local population and of the new Director of the reserve. The CDC succeeded in creating a significant shift in perception of PPY from its earlier reputation as overly academic, theoretical and urbanist, to earning the respect of the Consejo as well as of the conservation,

research and academic communities. Both demonstrate solid professionalism by being willing to coordinate their activities without interfering in each other's respective fields of expertise.

j. Team Building

The group of paid promoters and coordinators gives every evidence of having formed a real team. Much of this traces back to some relatively minor crises which were resolved in open team discussions, some of which included participation by staff at all levels of the organization. There seems to be trust, respect and a healthy sense of humor among promoters, and between them and the coordinators, administrators and executive staff.

k. Project Results

No impact evaluation has yet been carried out, and it may be too early in the life of the project for such an effort to be of much value. One possible indicator of a change in farmers' land clearing practices, the number of fires in the region, shows improvement. Data from the SARH indicate that there has been a 40% reduction, but while this may be partly due to the ecodevelopment project's efforts to replace slash-and-burn with sedentary agriculture, it may be as much a result of the increasing use of mechanization to clear areas destined for chile cultivation.

Success of *frijol abono* in bringing about sedentary agriculture may not have the (desired) effect of decreasing forest clearing (either of *monte alto* or of *acahual*). Many local residents are dissatisfied with the limits of subsistence agriculture. One campesino said he had immigrated specifically to have a ranch and he thought that using *frijol abono* would enable him to open up land for cattle which would otherwise have been used as agricultural land under a shifting agriculture regime. He planned to start with 20 hectares and in 5-7 years, when his cattle population increased, he would cut down another section of trees for a cultivated pasture.

l. Mechanization

In the eyes of PPY officials, mechanized agriculture (which has been promoted by the Consejo Regional) represents a double threat to the ecodevelopment project. Most important, it has potential long-term negative environmental impacts (soil compaction, moisture loss and erosion, leading to lowered productivity). Second, it creates conflict between the Consejo and PPY and difficulties for the project staff who must work with both organizations. At the time of the evaluation (apparently an unusually difficult period), the two perceptions of the role of mechanization in organic agriculture showed little or no room for middle ground or compromise. Evidently this distance narrowed later on.

The Consejo believed that the use of machinery, while not ideal for the ecology of the area, is necessary to keep enough land in cultivation to qualify for funds from PRONASOL and SOLIDARIDAD and will allow for quicker and more cost-efficient results in organic agriculture. After a while, speculates the Consejo, the heavier machinery might be phased out in favor of zero tillage techniques.

Pronatura is deeply opposed to mechanization but cannot prevent its use and worries about jeopardizing the fragile relationship its staff have built with the Consejo. The project staff, therefore, maintain a tactical approach in which hand labor and zero tillage are vigorously promoted as the preferred techniques for organic agriculture cultivation, with a plan being developed to test the results of hand labor against those of mechanized agriculture to combat the mystique and false promise of capital-intensive technology ("*el espejismo de la tecnología*"). PPY hopes that if productivity in the mechanized fields decreases as expected, productivity in the hand labor plots will remain the same or increase, so that local people will make the obvious choice between machinery and hand or zero tillage. The project will also include soil

improvement techniques, crop diversification, leguminous ground cover and a search for alternative methods of natural resource management.

m. Monitoring, Reporting and Feedback

Technical reports are sent by PPY each half-year and year-end to WWF. Although PPY generally receives verbal feedback on the reports, either from Oaxaca or Washington, some feedback in writing would be welcome and useful. For its part, the central office of PPY in Mérida requires that field staff submit three reports per year per sub-project, which are then used for the semester report to WWF. The field reports are written by the coordinators of each sub-project and submitted to the CDC, who refines and forwards them to the Mérida-based administrator, where they may be refined further and are then sent to WWF. Some training in report writing has been given the field staff, but Mérida staff worry about what they see to be low quality and limited usefulness of the reports. It seems that the deficiency is primarily in field staff's limited commitment and PPY's insufficient processes, procedures and instruments to carry out periodic and regular monitoring, self-evaluation and re-planning exercises. These are still needed; PPY might discuss with WWF the means to obtain the needed human and financial resources.

5. Recommendations

a. Broader Strategy

The project should discontinue *de facto* placing almost all the responsibility for sustainable resource management on subsistence-level peasants. Much of the resource destruction in the area is not caused by their slash-and-burn practices, so other strategies are needed to control and reverse the increasing degradation of the area. These will likely include such things as a) developing and promulgating new resource management policies for environmental NGOs to push with policy-makers; b) designing enforcement guidelines and empowering local community groups to play an active role in pursuing their interests in resource protection; and c) facilitating local groups to engage in organizing to obtain political influence.

b. Land Use Planning

If the problem of water shortage should be resolved (and some hydro-geologists say it cannot be), further land exploitation and new population pressures may result. Already *Ejido 123* is accepting 49 new families. Some *ejidos* are encouraging mechanized land clearing for commercial crops, and are making older *monte alto* available. For their part, the state and federal governments have shown themselves to be short-sighted, opportunistic and self-contradicting. The project cannot depend on consistent policies from any source that will protect the area from further encroachment, and will need to develop visibly effective resource management policies that will convince local leaders and influence the seats of decision-making, from the Consejo upward.

According to PPY, several hotel chains are scouting Chetumal with ideas of ecotourism in the Calakmul area. Pronatura is not interested in promoting or managing ecotourism but would like to be involved as advisors to mitigate any possible negative impacts of the influx of tourism. Equal to the environmental threat of uncontrolled ecotourism is the threat of outside business interests using the area essentially as a playground without any positive net return - economic, ecological, social or otherwise - to the area. It would behoove PPY to develop a strategic response *in advance* to potential encroachment of outside financial interests that may have destructive environmental or disintegrative social effects.

c. Strategic Program Planning

There is need for a series of workshops, internal within PPY and with individual *ejidos*, leading to the reestablishment of ecodevelopment project goals, objectives, monitoring indicators and strategically defined and prioritized project activities.

d. Comparative Investigation

Various members of Pronatura-Yucatan's staff, from top-level officials to promoters, mentioned the possibility of comparing: (a) the techniques being promoted by PPY; (b) those of the Consejo Regional; and (c) the techniques that people would use if left alone. It would be quite useful for BSP and WWF, as well as PPY, to develop research assessments and experimentation in this area. It might best be carried out through a combination of one or more external researchers with the full involvement of the promoters. Most other research currently sponsored by PPY in the area has little relationship with the ecodevelopment project or its staff, and some tensions exist when the researchers arrive with resources such as vehicles that the project badly needs. In this case, the research could and should be integrated into the ecodevelopment project.

PPY could set up a monitoring project to measure extensions of land, crops raised and productivity rates on different kinds of traditional, organic and mechanized tillage systems currently in use. A related effort could be to compare the effects of hand and mechanized tillage systems by comparing a Mennonite-sponsored intensive zero-till project with mechanized agriculture and techniques currently being promoted by the PPY project. A demonstration tour series also could be organized to take key representatives from each participating *ejido* to see different models of tillage where they have been working for longer periods.

Also useful would be systematically establishing a number of technical assessments of the techniques promoted by the projects, including studies of soil quality, climate, productivity caused by nitrogen fixing, and comparisons with other sites and techniques.

e. Experimentation

A group of experimental plots should be established by the project in several locations around the Calakmul area that would scientifically compare the techniques being promoted by the project with traditional slash-and-burn, field rotation, *guamil* and mechanized cultivation methods. The series of plots should be set up with as much objectivity as possible, and with a genuine desire to discover the best combination of activities for different crops and soil conditions. They should also be designed to serve, at the appropriate time, as demonstration plots, to teach promoters to replicate some of the models in each community and to bring representatives of each *ejido* to discuss the different alternatives.

f. Base-Line Data

Without accurate information about agricultural practices and conditions at or near the start of the project, there will be no way to measure the project's effects. PPY did carry out a socioeconomic diagnosis before the ecodevelopment project was conceived or funded, but it is not considered by any of the staff as providing adequate information to guide their work. Before any further changes take place due to the project's presence, it would be seem important for WWF and PPY to identify the key areas where they expect positive and negative changes, develop indicators and carry out the necessary measurements to establish a basis for later comparison.

g. Promoters

Like many projects, Calakmul employs a cadre of men - mostly young - as village-level promoters. Some of these young men have already become trained, effective promoters; working with and through them enables the project activities to reach diverse sectors of the population through their familial ties and friendships, and leads to members of the community assuming responsibility for the project. Nevertheless, the projects would be strengthened by adding to this group more mature men and women village-level agriculturalists and horticulturalists who can bring more social credibility, technical experience and skill in community organization.

Similarly, the project should return to the approach of identifying volunteer promoters who show natural leadership in how they work with their neighbors on behalf of the project, without expecting remuneration. This phase was skipped in the rush to expand the organic agriculture activities, although the apiculture and women's activities seemed to be making an effort.

h. Work with Youth

It might be worthwhile to resuscitate some of the project's earlier educational work with children. Even though much of it was generally considered to be too urban and "high-brow," some elements could be adapted and succeed in involving young people in activities leading to changing resource and environment-related behavior and attitudes in practical ways.

i. Internal Coordinated Planning

Coordination by PPY of different projects it implements in the reserve area needs to be increased. It does not appear that PPY has developed a unified strategy for all its activities. Further, there is some risk of ceding too much leeway to funders to determine PPY's priorities.

PPY subscribes to the ICDP philosophy of including the rights and needs of local people in designing conservation approaches but at the same time is concerned with how to restrict and monitor resource use and land occupation in the area. The ecodevelopment staff promote the idea of facilitating access to and managing the reserve from below, while negating the idea of separating "core zone" from "buffer zone" for the purpose of sustainable management at a regional level by the local residents.

Simultaneously, PPY staff view TNC's Parks in Peril program as benignly providing material support for such things as vehicles, radios and other equipment for reserve management. The PPY coordinator for the TNC project has strong and defined ideas about how the funds should be used, including posting signs and other information conveyances, hiring of community members as park guards and other creative possibilities. It has not been noticed, however, that the communities where the ecodevelopment project has established activities and good relationships will also be targets for enforcement activities, which may run counter to resource management methods and environmental education approaches emerging from the ecodevelopment project. It was not apparent that the coordinators of these two projects collaborate closely in their planning or have explicitly confronted the potential conflicts between the separate approaches of these two projects.

PPY therefore should develop a plan for incorporating TNC-funded core zone management within a regional strategy for local resource management that includes the local population as primary participants. Otherwise, the TNC and WWF projects may well clash.

j. Funding Source Collaboration

Any success experienced by the WWF/PPY ecodevelopment project will likely encounter considerable obstacles in spreading due to exceptionally large amounts of uncoordinated financing by different donor organizations and government agencies in the area. These include: salary support from the German agency GTZ for the Advisor to the Consejo, financing by the Canadian government (three million dollars over three years) for "Model Forest" (*Bosque Modelo*) projects, funding from the EEC for another ecodevelopment project in the north similar to this one, funding from The Nature Conservancy for building up the infrastructure in the core zones, and millions more projected by the Global Environmental Facility (GEF).

Coordination of donors working through the Consejo should not be left up to that body, which has its own agenda. It is not clear that WWF's bottom-up resource management strategy coincides with the strategy of the Consejo; if the TNC park protection activities conflict with the ecodevelopment project's work with communities there could be further tensions. The Consejo seems to consider the organic agriculture, apiculture and environmental education activities to be auxiliary efforts from minor funding sources, not necessarily central to their long-term plans for the development of the region. And since management of the core zones is the responsibility of the Consejo, TNC's funding of PPY for core zone management may create conflict with the objectives of the WWF ecodevelopment project. Collaboration between TNC and WWF, including joint strategic planning with PPY, would be highly recommended to avert later conflicts.

k. Mid-course Structural Modifications

WWF should promote in its orientation and training of implementing organizations (such as PPY) the importance of being responsive to field problems and requirements. PPY's experience is a case study exemplifying how important flexibility and mid-course structural modifications can be. Ecodevelopment work requires good planning and repeated modifications; WWF has not given enough attention to these dynamics in its guidance of its local partners. One of the avoidable results is the misperception that organizational difficulties are exceptions or failures on the part of implementing organizations. WWF needs to focus on helping conservation organizations learn from the diverse experiences of other partners so that the same mistakes are not made over and over.

IV. OVERARCHING FINDINGS AND RECOMMENDATIONS

A. Constraints

A number of limitations were found to be common to all of the projects, some of which are beyond the capacity of the individual projects to correct, and some of which are endemic to the program. These constraints limit the ability of project activities to realize their stated objectives. The constraints fell into five general categories: 1) socio-cultural context, 2) institutions, 3) access to field sites, 4) project staffing, and 5) program administration.

1. Socio-Cultural Context in Southern Mexico

a. Social Environment

The social environment surrounding southern Mexico's protected areas where the Ecodevelopment Program has been implemented is substantially different from the environment where many of the techniques utilized in the Mexico Ecodevelopment Program (MEP) have had their greatest success. The program has not identified other projects where conditions are similar to those at these sites, or where ecodevelopment projects have been effective over time. Indeed, there are few if any successful models to draw upon anywhere in Latin America.

However, the areas serving as primary models for this program in Guatemala and Honduras are characterized by *campesino* populations which have lived for many generations in the same area and who hold a deep, almost spiritual, connection both to the soil and the specific plot of land which they farm. The prevalent land tenure situation in these areas eliminates any hope for the expansion of plot sizes, while the income and market price situations often require a constant increase in productivity just to break even financially. These circumstances create a socio-economic environment in which there is high motivation and high acceptability for techniques which help conserve and improve soil quality on the same site, even if they require more labor. They also favor social forces that contribute to the acceptance of successful activities, and to collective learning processes.

In most of the southern Mexico project areas, targeted communities, especially *ejidos*, are characterized more typically by quite different conditions (with significant exceptions in the case of the indigenous communities of Los Chimalapas). Based on the evaluators' findings in the field, the following generalizations seem to be relevant:

- most residents are relatively recent immigrants to their current sites (7-20 years);
- they have resettled from a wide diversity of locations;
- their cultural backgrounds are heterogeneous and economic levels vary greatly within the peasant socio-economic context;
- they have a significantly low level of social organization and community cohesion;
- the majority of residents in most of the project sites (except for the long-standing indigenous communities of Chimalapas) have come to these areas for economic betterment, rather than for subsistence alone. Their primary interest in the land is to use it as one among several resources to advance economically, and they do not view it as part of their heritage or future patrimony;

- most *campesinos* have relatively large land holdings divided into cleared and fallow (*acabual*) areas, that permit a ratio of from 4:1 to 8:1 of fallow to crop. They have not begun to subdivide for the second generation or for new community members; and, since February 1993, no community members can become new *ejidatarios* (see IV.B.1.d. for more on this).

These characteristics may have served as important obstacles to acceptance of both the methodology of promotion (in some cases), and some of the techniques of intensive cultivation that were promoted by the ecodevelopment projects (more on this in IV.C.).

b. Political Nature of Resource Management

Management of natural resources in southern Mexico (as elsewhere) is fundamentally political. The underlying issues range from how evenly or unevenly the government and environmental NGOs enforce laws and regulations, to how ownership and control of resources is believed to be tilted in favor of those sectors with influence in government circles, to how the least powerful groups are the first to be blamed and first to be told they must manage resources in a sustainable manner.

The ecodevelopment projects evaluated in this report lack the broad political support that might assist successful activities to become widely known and to be replicated outside of the project's direct zone of influence. The general socio-political context for land management in southern Mexico is one of widespread structural dysfunction, due to bitter competition between and within political parties, great disparities between the rich and the poor, endemic patronage and bossism, opportunism and corruption. Although some project implementers have become quite effective at establishing their own means of dealing with local or even national political powers, others have tried to ignore altogether the highly political nature of their work, frequently to the project's detriment. As a program, the MEP has not determined if it should play a role in this situation, has not found a way to address the problem and has not been able to assist the local projects in their efforts or to encourage them to engage in such efforts.

c. Social Justice

"Community participation" and "economic development" are terms that are frequently used in project discussions and documents. For many communities, however, financial equity, social development, legal rights and economic fairness are of far greater concern. On the other hand, "social justice" and "economic justice" are concepts which have not been well developed in project implementation and possibly in program design. The MEP conceptualizers believed that the agroecological techniques being taught would get people involved in a process that would eventually increase people's organizational capacity, economic well-being, self-confidence and prestige, all important ingredients in achieving empowerment.

However, the inclination of some of the environmental NGOs is to avoid discussions or consideration of justice and rights, although these are precisely some of the underlying concerns of any peasant group organized enough to respond effectively to the introduction of sustainable methods of resource use. Some of the MEP project implementers did not appear to make the connection between technological innovation and the social process that is supposed to be created by that innovation.

2. Institutional Constraints

a. Staff-Community Differences

In most cases, extensionists working with the projects come from different geographic, economic, social and intellectual backgrounds compared to the people with whom they work, and the disparity in the level of cultural development between project personnel and community members is substantial. This situation makes acceptance of new ideas more difficult, trust harder to gain and genuine partnership relationships elusive.

b. Internal Staff Disparities

Within some of the implementing agencies, there are significant and detrimental socio-economic differences and professional status disparities between project field staff and upper-level managerial staff (including project directors). Although the mere existence of hierarchy is not dysfunctional, some structures and procedures have been established that make initiatives from and responsiveness to the field a virtual impossibility. The evaluation team noted in some projects disturbing and consistent patterns of lack of trust, mutual understanding, common objectives and shared criteria for success up and down the hierarchy.

c. NGO-Community Relations

At the start, most of the WWF-supported implementing environmental NGOs had limited capacity to strengthen local community organizations; their founding principles and purposes until recently discouraged being involved in community concerns. ENGOs are primarily concerned about the biological environment, in which humans are frequently considered as an afterthought. Those ENGOs which did seek to involve local communities or residents in conservation activities generally invested little effort in determining how these activities would be incorporated into the local way of life. Considerable improvements in this area were made in a few cases, but not in all.

For their part, local leaders tend to be either resentful of outside agencies that might represent hostile interests, or opportunistic toward institutions which appear to have financial resources that could be tapped. It is hard for groups of poor peasants to believe that they share common interests with urban-based institutions which exist to protect wildlife and wildlands. It is also generally outside their experience that external institutions which promote change will still be present to advocate for and defend them when their organized activities start to challenge economic and social inequities.

The absence of visible local development organizations with good community relationships seems to have made the choice of partners a fairly simple one. WWF believed that there were few if any other project partners with which to work. It was outside the scope of this study to determine if this was true, or if insufficient effort was made to identify them.

3. Access to Field Sites

a. Physical Isolation

The physical isolation of almost all of the project sites makes accessibility very difficult, and their infrastructural limitations make ongoing physical presence in the communities a severe hardship for project personnel. Field offices become havens of relative comfort, distant from the communities where the "real" work is taking place, creating a lack of continuity with project activities and participants.

b. Lack of Transport

Geographic isolation and great distances between project sites served by a single team make the need for adequate vehicles more important than in many other programs and geographical areas. None of the projects has sufficient number or high enough quality of vehicles to provide access to communities for the number of people available to do the work.

c. Illicit Activity

There is a significant incidence of production and trafficking of illegal drugs (marijuana, opium and coca) in project areas. This makes community residents, in general, guarded around and suspicious of outsiders and makes peasant producers of small quantities of illegal drugs unwilling to cooperate with the project. The situation also increases the physical dangers for project personnel who need to travel frequently throughout the area. The destabilizing effects are many: conflicts created between those community members dependent on and those opposed to participation, entry and influence of outsiders with heavy financial backing and no positive social or economic interest in the community, the creation of a clandestine subculture and the introduction of violence and threats as a final arbiter of disputes.

d. Mistrust of Outsiders

Some communities exhibited a substantial amount of suspicion of people who represent institutions with financial relationships with North Americans. This apprehension has generated additional resistance to project extensionists and the techniques they introduce. Project personnel have not identified the source of the anxiety nor discovered how to allay it. Faced with community residents who are desperate about their conditions and believe that strangers neither understand or support change, it is not surprising that some of the projects' staff experience resistance and distrust.

4. Finding and Retaining Qualified Field Staff

a. Remuneration

The level of remuneration of most project field staff is too low to attract and retain experienced community development workers. The most effective and qualified personnel are those with substantial technical, promotional and educational competence, and with enough professional sophistication to maintain political equity with staff at management and executive levels within their institutions.

b. Lack of Appropriate People

Very few people are available who have the technical competency in both environmental and agricultural fields, with adequate skill and sensitivity for effective work with rural communities and enough social commitment to work under difficult conditions with limited institutional, logistical and moral support.

c. Male Domination of the Field

Most people identified for this work are men, and most of the key NGO management and program staff are men. Development work in communities is traditionally male oriented, as is environmental work. However, integrated community work must involve collaboration between men and women. Finding skilled, trained women to work in rural communities with women is difficult enough, and finding women to work with entire communities is even more difficult. If this weren't challenging enough, it is the rare NGO that is willing to accept and adjust to independent, creative, skilled women - the kind needed for this work -

becoming full partner-participants within the traditionally male structure and culture of the organization.

5. Program Administration

When a donor organization has an active, "hands-on" relationship with field projects (as WWF does in this case), fulfillment of commitments to recipients is especially crucial. Loss of trust or respect on the part of the intended "beneficiaries" is nearly inevitable if they are required to manage their administrative and financial affairs responsibly and they see the donor as unable to do the same.

a. Financial Management

There have been major problems with receipt of money from WWF. Every project experienced significant delays at different times of year, with varying explanations given, from major personnel changes, to new financial systems being developed, to not having received complete reports. Delays of four to five months in receipt of funds each year, after sending in annual financial reports, have become "standard." As of the date of this evaluation, new financial reports had been sent to WWF several months before, and no responses had been received. Projects were two to four months behind in funding again.

In a number of cases, project staff stated these delays came at crucial times for the projects' organizing activities. Two or three projects paid salaries of the extensionists by borrowing from other accounts; one could not disburse enough to pay travel costs and per diem, causing the work in the field to halt for four months. Another project experienced debilitating institutional conflicts due to resentment from the agency-wide, across-the-board belt-tightening required in order to compensate for the WWF delays.

b. Hidden Costs

The undermining effects of these financial problems on the projects cannot be measured easily. Community people just beginning to gain confidence in the project may lose trust; if so, the promoted activities lose momentum. When travel resumes to communities which have been neglected, project staff may have to start over again. Substantial (and unnecessary) time and money may be expended to restart and regain the interest and involvement of community residents. The projects may realize a significantly lower return on the money invested by WWF, and the experiment is severely weakened overall.

B. Conceptual Framework

1. Findings & Observations

The integration of conservation and development is still in its infancy and represents a concept that is almost universally difficult to practice successfully. While the MEP has promoted major change, it should be considered experimental, and, not unexpectedly, the results to date have been limited.

The four BSP-funded projects in Mexico were developed by WWF in cooperation with a number of Mexican organizations. Internally they are called "ecodevelopment" projects, similar to the more widely used "integrated conservation and development projects" (ICDPs). They have some important common characteristics as well as history. They were planned together by WWF's Wildlands and Human Needs program, with a considerable effort to be strategic and farsighted and to bring about structural change. Part of the task of this diagnostic evaluation was to develop some initial ideas as to how effective and relevant the strategy has been. The following points

summarize some of the evaluators' observations related to the program's fundamental hypothesis, the methodologies utilized, and the program's overall design.

a. Land Issues Not Addressed

Biosphere reserves, the conceptual parent of this program, were initially intended to complement more traditional forms of environmental protection by recognizing the human element in the ecological setting. The Man and the Biosphere (MAB) program of UNESCO established that humans and human activities should be perceived within their social and ecological settings. Further, any ICDP program was supposed to recognize the necessity and equity of honoring prior usufruct rights, current needs and future goals of local landholders and inhabitants.¹

To date, the MEP has only addressed land rights, land use or land disputes in an unsystematic fashion, and some of the implementing organizations show little inclination to move in this direction. Little attention has been given to land use surveys or maps, and base-line data has been collected in an unsystematic manner. Land-use planning has been a very limited part of the program, and there have been no reviews of how land use decisions are now being made. An exception and important model is the case of Los Chimalapas, where the cooperating Mexican NGO, Maderas del Pueblo, began this process before its relationship with WWF and has increased its effective role in this area as a result of that relationship.

b. Projects' Relationship to Deforestation Not Clear

The MEP hoped to reverse the trend of tropical deforestation through the introduction to and adoption of sustainable agricultural techniques by residents of rural communities surrounding the core zones of selected wildland areas. The overall goal was "to protect these wildland areas as healthy, diverse ecosystems, *in part* through achievement of sustainable methods and levels of resource use around them."² [italics added] The ecodevelopment projects also were intended to "decrease the rate of deforestation in these areas... while achieving environmentally-sound resource uses for the local people living around these wildlands."³

Notwithstanding this articulation of principles and theory, the intended relationship between buffer zone management and core zone protection was found by the evaluators to be nebulous or imprecise. This makes it either very difficult or perhaps unjustified to measure individual project success by the increase in protection of core zone resources brought about by the project. However, an underlying assumption of ICDPs is that whatever happens in buffer zones should have either direct or indirect effects on the core zone. Measuring the effectiveness of an ecodevelopment project solely by how much core zone degradation was reduced would be unfair, but there *should* be some relationship or trend evident over time. A basic tenet of the ICDP concept is that better land-use practices over the long run will have a positive effect on natural resource protection, although perhaps not immediately or in a directly measurable fashion.

¹ "People should be considered as part of a biosphere reserve. People constitute an essential component of the landscape and their activities are fundamental for its long-term conservation and compatible use. People and their activities are not excluded from a biosphere reserve; rather they are encouraged to participate in its management and this ensures a stronger social acceptance of conservation activities." (United Nations Educational, Scientific and Cultural Organization [UNESCO]. 1984. Action Plan for Biosphere Reserves. *Nature and Resources* 20(4):1-12.)

² "Environmentally-Sound Community Development Around Key Protected Areas." *WWF Proposal to the Biodiversity Support Program*. April, 1991.

³ Project Summary, Biodiversity Support Program, 4pp.

The evaluation team could find no consensus about the rate and extent of deforestation in the project areas. Depending on their point of view, local experts and researchers claimed a range from almost no deforestation to a dramatically high percentage of available forest cut annually. There appears to be little dependable information available to support either extreme. Whatever the case, little information was received and scant testimony was heard by the evaluation team that the major portion of buffer zone old and secondary growth forest degradation (including *monte alto*, or "high bush" of ten years' growth or more), much less of core zone forest, is being caused by subsistence activities of the slash-and-burn agriculturalists who live in the buffer zones in the four areas visited.

In the evaluators' opinion, other activities, apart from subsistence agriculture, represent a major source of forest degradation in most project areas, such as the clearing of forest for extensive cattle ranching and more recently for medium to large-scale cultivation of commercial crops. These activities have been aggravated in some cases by government and corporate incentives, concessions, land tenure disputes (at the local and state levels) and unprosecuted illegal penetration into core zone areas.

Given the conceptual framework of the program, it may not be sufficient to focus almost exclusively on peasant subsistence agriculture, if short-term decreased deforestation and conservation of biodiversity are the primary goals. This is not to say that this population should not be targeted; it should, but perhaps with more realistic objectives. There are very good reasons to continue working with this sector of the population, not the least of which is that subsistence farmers have a greater and longer-term stake in the conservation of biodiversity than do large cattle ranchers and loggers, and certainly more than politicians and government bureaucrats. That stake will have increasing significance over the long run.

On the other hand, complementary strategies targeting other sectors might be developed to reduce forest degradation in the buffer zones or to protect core zone resources in the immediate future. Further, since the exact relationship between buffer zone resource management and core zone protection remains unclear, any effects of the former on the latter should be considered hypothetical at this stage. Opportunities to test the hypothesis should be structured into the project design in the second half of the MEP.

c. Insufficient Information to Apply Strategy

WWF developed early and promulgated vigorously what it called a "conceptual framework" (*marco conceptual*) to govern the development of the projects. This outlined a strategy to identify an area's key environmentally degrading influences and assess the most important economic activities of local people. A comparison of the two would then identify commonalities, so that projects could introduce more sustainable practices for natural resource exploitation in precisely those areas of greatest overlap, in order to maximize positive environmental influence.

There was a general failure at the beginning of the program to determine what the primary degrading influences were. Some socioeconomic studies were commissioned, but none of them adequately accomplished this, certainly not enough to provide a base for project development, according to all the project coordinators.

As a result, the projects may have failed, thus far, to have significant, recognizable positive impact on the primary environmentally degrading practices within their zones of influence, since these are not necessarily known. This may not represent a failure of the conceptual framework, but rather a result of insufficient information on which to base the strategy. In turn, this created a potential for its misapplication or misinterpretation by implementers. If it is true that most of the activities promoted by the projects do not address many of the key environmentally degrading practices in the area, the *marco conceptual* never was put to a fair test. At the same time, if more information about deforestation's causes demonstrates that

slash-and-burn agriculture in these areas is the single most important factor, a comparative measurement of deforestation rates should show positive benefits over the project period in project areas.

d. Assumptions Not Adequately Tested

A basic premise of the ICDP approach is that conservation will be most effectively and conscientiously carried out by the people who stand to benefit most from natural resource protection. This is a welcome change from previous preservationist efforts to set aside land areas as untouchable, physically moving the population out of the area. The people most usually targeted by ICDPs are the "end users" of natural resources; that is, rural inhabitants (mostly peasants and/or small commercial farmers) who are assumed to be least able to afford to lose the small amount of land they have to unsustainable resource use. The evaluators observed that in the MEP, *only* this population has been targeted, to the exclusion of other environmentally degrading activities in the area, and other sectors responsible for environmental destruction.

While accepting the strategy of promoting widespread use of sustainable farming practices and stabilizing peasant agriculture, the evaluators also note that the conceptual framework implies that *any* significantly degrading, economically important practice should be addressed. Since only this population and only their farming practices are being addressed systematically, it implies that the MEP designers either failed to follow the framework, or assumed that the local peasant population was the most important cause of forest destruction, an assumption not adequately supported by existing data in the evaluators' opinion and not evident from interviews in several of the project sites.

WWF formally and informally, publicly and privately, does not support some of these implicit assumptions, leaving the alternative that the *marco conceptual* was not followed fully. Indeed, the problem does not seem to be that these assumptions are indeed held, but that the program's failure to address other causes of environmental destruction is contradictory to the conceptual framework. Maintaining such a strong focus on the role of subsistence agriculture in habitat destruction implies the following assumptions:

- (1) peasants are the primary users of natural resources; they may be the primary degraders of those resources; and they have the most to gain from more sustainable practices and the most to lose from environmental destruction;
- (2) they can and will reduce their unsustainable practices once introduced to the appropriate techniques;
- (3) they will be motivated to change because they have access to and control over the resources they are harvesting (and, therefore, an incentive to manage the resources in a sustainable manner); and
- (4) the organizations implementing ecodevelopment or ICDP projects know the appropriate techniques for sustainable management of natural resources.

In southeastern Mexico, these assumptions have not yet been adequately tested. Early experience indicates that some or all may not be correct for the region. The evaluation team found, among other things:

- (1) There was little evidence in project documents and no consistent information in an admittedly narrow range of interviews that the agricultural practices of the local peasant farmers - the target population of the projects - are the major causes of incremental environmental degradation. There were diagnostic documents written prior to project design which may describe evidence of peasant-caused environmental degradation, but

these were not reviewed by the evaluation team, nor were they referred to by project staff.⁴

- (2) The projects have been unable to offer techniques that produce visible and tangible changes in peasant productivity in a short period of time *and* reduce environmental degradation that is caused by peasants' traditional practices. Some of the changes they introduce, according to agronomists, are definite improvements and eventually will have positive results (e.g., increased nitrogen levels will cause increased yields), but most of these are not readily visible in the first year or two when peasants most need to see tangible results.
- (3) Both land security and pressure for land are low. First, the Mexican government has legal right to all lands, including *ejido* land. It can and does transfer, seize or expropriate it at any time. Second, in most of the project areas, *ejidatarios* have large (relative to their experience) holdings ranging from 20-100 ha each, depending on soil fertility.⁵ Third, since most *ejidatarios* are first generation *ejido* members at all of the MEP project sites except the Chimalapas, we did not find any farmers who have been forced to subdivide their initial parcel given with *ejido* rights, either due to an influx of other *colonos* or to a second generation of *ejidatarios* (their sons). As a result, the incentives to adopt intensive agricultural practices were not present and many of the farmers interviewed by the evaluation team expressed their belief that the soil was not in need of improvement.
- (4) None of the implementing environmental organizations had prior experience in community development, agricultural extension, or application of sustainable resource use technologies.

e. Current Conditions Ignored

In most of the targeted project areas, local land-use practices and knowledge of resources in core zones either were not adequately researched, or the information that did exist was not integrated with information about the types and effects of different forms of land use in the buffer zones. According to project coordinators, the information that was gathered has not been incorporated into project planning. For example, little information had been generated - much less made available for use - in three of the four sites regarding land tenure, land use and disputes, access and control over natural resources, or people's perceptions of their environment and their security.

f. Participation Not Consistently Practiced

"Local participation" is a frequently used term and a concept often promoted as an essential ingredient in successful community development, including the MEP ecodevelopment projects. However, its implementation is not simple, and there is considerable disagreement about its function. The evaluation found (and provoked) considerable controversy regarding its application and, indeed, its definition. Since the MEP design proposed the participation of local communities to be an important element in the success of the program, it was

⁴ See *Diagnóstico y Evaluación de la Reserva El Ocote, Chiapas (Primera Fase)*. Informe Final. Ecosfera. Feb. 1991; *2ª Fase del Estudio "relaciones e Interacciones Hombre - Naturaleza de los Poblados Localizados Alrededor de la Reserva Ecológica El Triunfo"*. Informe Final. Instituto de Historia Natural. Agosto 1990; Boege, Eckart and Raúl Murguía. *Diagnóstico de las Actividades Humanas que se Realizan en la Reserva de la Biósfera de Calakmul, Estado de Campeche*. Informe Final. CIESAS-Golfo INAH/CINVESTAV-Mérida. Junio 1990.

⁵ Fertility of plots is an important variable the evaluation team was unable to measure; each *ejido* attempts to set aside some common land and communal forest, and then divides the rest of its area into individual family holdings combining steep and rocky land, rich bottom land, and forested and cleared areas in a roughly equitable fashion.

important to attempt to determine to what extent it had been carried out. This was made more difficult by the lack of a clear definition in the original proposal; however, it can be interpreted that effective participation would be designed and developed in practice over time.

In the 1960's and thereafter, "development" tended to be measured by macroeconomic indicators; its implementation was defined by the providers of resources and imposed on the presumed beneficiaries. The failure of this model to benefit marginalized sectors and, specifically, the local communities where it was carried out, caused its increasing rejection by those it was supposed to help, and motivated efforts by development NGOs to develop alternative methods and models. One of the ingredients that grew in popularity was the inclusion of beneficiary groups, through consultation or partnerships, in the design and implementation of projects.

By the 1970's and throughout most of the 80's, "participation" became seen in what bordered on absolutist terms, requiring that communities in which projects were implemented would have first and final say over which needs would be addressed and what activities would be carried out. Notwithstanding the good intentions underlying the methodology and the occasional results that appeared to be more positive than the traditional top-down model, this process also permitted the most articulate, ambitious or opportunistic community members to obtain external support for their own interests, sometimes leaving much of the community behind and skewing the priorities of the external agents. Its benefit was that communities were consulted about their problems, and development assistance did try to support local initiatives.

Experience began to swing the pendulum back the other way, with the result that some agencies offered clearly defined assistance on a "take it or leave it" basis; needy communities might have other priorities but understandably seldom would turn down offers of support. In other, more flexible agencies, a "negotiation" took place between providers of assistance (technical, human, financial) and recipient communities. The providers made clear their priorities and why, and what they had to offer, while the communities were given an opportunity to describe their problems and needs, and to express their own sense of priorities. Some agencies sought to draw on the strengths of the communities and integrate their resources and those of the intended beneficiaries.

The MEP ecodevelopment program favored this last option and promoted a process of "participatory appraisal" (see C.1.f. below), which was supposed to give the communities a voice in determining the future relationship with the project, and give the external project implementers better information about the human, social, cultural and economic context in which the project would function. According to the designers, the process of agroecology promotion used by these projects was supposed to achieve participation that would gradually increase (quantitatively and qualitatively) over time, as a result of the project's, not the local people, making many of the basic decisions at the beginning.

Eventually, according to this methodology, community residents, and particularly natural leaders, would become integrally involved in deciding what needs would be addressed, which existing activities would be affirmed and what other practices would be introduced. But not before they had received considerable guidance from outside and learned to trust the outsiders. "Genuine" participation, according to this methodology, is, therefore, not initially dependent on local people having a voice, but by becoming involved as voluntary "participants" and over time developing greater capacity for effective self-expression.

The evaluation did not question the concept as much as its implementation. There are some legitimate concerns about the implicit arrogance in presuming to predetermine what externally selected communities need and universally providing a predetermined package of solutions. Among other things, the abuse of a relationship between unequals by those with

resources is difficult to avoid at any time, and particularly so when the outsiders presume to make all the initial decisions. However, even assuming the best intentions, accurate and skilled implementation of the methodology was essential. It was of considerable concern to the external evaluators that some of the projects were unsuccessful at learning from the participants, modifying their practices, or ever considering the "beneficiaries" as real partners. It was gratifying to see the successful cases, and troubling to see the failures.

Responsibility for both of these should be shared. In the latter cases, some of the cause may lie with the implementing agencies' failure to fully understand the model or learn to apply the methodology. Part of the responsibility also lies with the designers and promoters of the process who may have failed to recognize when it was being poorly applied and to rectify the errors through training and reorientation.

Real participation in some projects, even incipiently, was not very evident, even though "cooperation" with the project and acceptance of introduced conservation practices were present, although at this early stage still limited, understandably, to a minority of local residents. In some, local leaders seemed interested or enthusiastic, but most of the community members were not clear about the purposes and were not very involved in the project, which after only two years should be expected. Cooperation is a "necessary-but-not-sufficient" condition for real participation but sometimes was used synonymously, representing in these cases a failure of the program designers to clarify to the implementers how the process should develop.

Another potential source of the problem seemed to be that a premium was put on the necessary technical aspects that extensionists and promoters were supposed to master, while much less attention was given to the less tangible, qualitative, social aspects of effective promotion. This seems to be a result of the concept and methodology of the designers, who believe that good techniques will "sell" themselves and win the confidence of an expanding number of participants, not requiring much attention to the socio-cultural dimensions. The external evaluators observed that the most effective promotion, as measured by the most widespread acceptance and creative manipulation of variables, coincided with the presence of extensionists and/or promoters with the greatest capacity to relate to, integrate with and gain the confidence of the targeted communities.

In the long run, for community participation in the project to grow and assume increasing responsibility for the project, there must be local systems for community land and resource management and access (such as is the case in the most highly organized *ejidos*). Where communities have not yet organized around common demands for land security or control over needed resources, the projects will have to promote this.

g. External Initiatives, Local Risks

The implementation of an ecodevelopment program in proximity to protected areas represents the introduction of perspectives and priorities of international conservation organizations. Local inhabitants will inevitably have somewhat different perspectives and priorities. Both are stakeholders, with different goals and each paying certain costs. Historically, local residents have paid the majority of hidden costs of traditional conservation demanded by the international community in loss of resources, income and opportunities. With superior financial and political clout, external conservationists may (unwittingly) impose their values, perspectives and priorities on local populations, creating an inevitable inequity that has been an important obstacle to conservation success.

International conservation organizations with an awareness of these issues are now promoting ecodevelopment projects or ICDPs partly in an attempt to reconcile the differences and alleviate some of the inequities. Nevertheless, the very nature of externally initiated, promoted and funded projects unavoidably involves a built-in power imbalance that cannot

be completely eliminated under current socio-political conditions. Local residents still carry the greater burden of risk because the "project" is their livelihood; they cannot walk away from the consequences of an experimental approach. Conservation organizations cognizant of the inequity need to take responsibility to mitigate possible negative impacts, which they should take into account in planning and measuring success against expectations.

h. Time Frame Too Short

The original conception of the Ecodevelopment Program was designed to identify *current* problems of degradation and generate short-term solutions which would begin to be realized in a five-year time frame. The evaluation team found instead that subsistence and slash-and-burn agriculture will take much longer to cause the much-feared significant damage. The short-term danger that these practices present to mature tropical ecosystems seems to be negligible in some cases, undetermined in others, especially in comparison to other factors. Over time, however, demographic growth and colonization pressures may saturate the currently cleared and fallowed areas, increase the pressure to cut old growth, and increase the velocity of destruction due to slash and burn.

Therefore, the MEP's attention to these rural populations is still valid, although perhaps to solve problems further in the future than was originally envisioned. It allows time to mitigate probable future degradation by slowly developing alternatives for small-scale agriculture on land that will eventually come under increased pressure and demand.

i. Narrow Focus

The medium-term challenge for resource conservation is less the practices of slash-and-burn agriculturalists and more the politically protected individuals, partnerships and corporate interests, as well as those government incentive policies that have negative ecological consequences. Much of southeastern Mexico is characterized by nearly feudal socio-economic relationships, by tremendous disparities in wealth, and by an almost total political monopoly exercised by lumber industry barons and absentee owners of vast tracts of livestock grazing land. In addition to being politically well connected, this sector demonstrates little interest in or concern about the future of the natural resources it controls or seeks to control. These forces, far more than subsistence farming, represent the present-day factors which already affect and limit alternative resource management techniques and strategies.

2. Recommendations

a. Broaden the Focus

If the overall ecodevelopment goal of the MEP is to be effective in reducing the degradation of mature tropical forest and forest resources, the program will need to do the following: lighten the burden of blame on the poorer peasant populations; broaden the focus of the program beyond the poor; develop strategies to influence national and state policy makers and local politicians; work with Mexican NGOs to limit or curtail illegal commercial extractors who often function with the tacit protection of local officials; and address extra-legal land speculation and conversion schemes which transform vast areas of forest to other uses, to the eventual detriment of the environment, the national economy and the quality of life of the majority of the human population living in the region.

These new directions should complement, not replace, the work with local populations, and should be undertaken through the auspices and initiatives of the Mexican partners in the MEP and/or alliances with other ENGOs. Community development work will give the implementing organizations the legitimacy and credibility to extend their activities to more politically controversial areas that will make them vulnerable in some arenas. Work with local populations has intrinsic value for the advances it is making in discovering solutions to

socio-economic problems, and provides a foundation for monitoring and measuring environmental degradation and its causes.

Some potential areas of focus for the Ecodevelopment Program in its second half are discussed below.

- (1) **Land Tenure:** It is not within the scope of the Ecodevelopment Program to resolve the land tenure problems of Mexico. However, following the example of Maderas del Pueblo in the Chimalapas, it would be important to establish "on-the-ground" agreements as to usufruct rights with the users and residents of the core and buffer zones of the wildland areas, independent of the political boundaries established by government agencies. That is, people have not usually been interested in conserving an area unless they have some security (either legal or through organizational unity) in their right to use the land. The ecodevelopment projects should contract whatever independent research is necessary to supplement previous diagnostics, in order to develop accurate summaries of land use and land rights in each community or ejido in their respective buffer zones. They also should determine how much of each community or ejido's land is part of the core zone. On the basis of this information, they then should work with the communities to develop strategies to obtain legal recognition, protection from illegal extraction and ranching and to carry out land use planning.
- (2) **Cattle Ranching:** Working with local subsistence agriculturalists is important and beneficial for environmental management in the long term. However, the MEP needs to work with other sectors of the local population and on other land use systems if it hopes to have significant influence on the problem of deforestation in the medium term. For example, the environmentally degrading effects of cattle ranching are well-known. Direct economic incentives and positive cultural perceptions encourage this form of land use, with disastrous results for the environment and the poorer sectors of the population.

Many peasants begin cattle ranching operations with high hopes, but with little infrastructure, experience or adequate technical assistance. The MEP needs to search actively for alternative sustainable management systems which integrate cattle ranching with agriculture. The program will have to address the cattle problem sooner or later in any case: the agricultural and reserve areas are surrounded by cattle ranching properties which encroach on *ejidal* land, either illegally or through share-cropping arrangements with local peasants, which serve to occupy and open new pasture areas. In addition, in both the Chimalapas and Calakmul regions, campesinos expressed a strong desire to raise cattle. In Calakmul, one *ejidatario* speculated that the land "saved" by *frijol abono* and a switch to sedentary agriculture could be used for opening pasture area for cattle.

The MEP already confronts a growing percentage of the local population interested in cattle as an alternative or addition to present forms of land use. In addition, the cattle ranching population is not homogeneous. While the MEP is unlikely to influence the wealthier "urban cattlemen" or the absentee land barons -- especially those who raise cattle as a hobby or a mechanism to access large tracts of land -- at the practical land-use level, they might be influenced at the policy level through incentives and disincentives. On the other hand, a blanket rejection of cattle as an alternative economic activity runs the risk of alienating aspiring *ejidal* ranchers and small property owners for whom a few head of cattle represent a significant social and economic advance. These people might otherwise be interested in experimenting with alternative sustainable management systems that integrate livestock raising (including smaller animals) with agriculture.

The MEP has an opportunity to lead in this area. Very little work has been done in Mexico on alternative management systems, including intensive (rather than extensive) raising of large livestock in tropical environments. A number of institutions and programs are beginning research projects and studies in this area. Instead of each group

working in isolation, WWF might encourage a collaborative effort among such institutions and groups, including, for example, researchers from the Instituto Ecologico, A.C., the Centro de Ecologia (UNAM), CIES, and PROAFT, A.C. and the Universidad Autónoma de Yucatán (Facultad de Veterinaria y Zoolotecología), which has a program of applied research in dual-purpose tropical cattle ranching, and another in sustainable use of tropical resources.

- (3) **Illegal Commercial Extraction:** In a number of *ejidos*, there was evidence of recent core zone deforestation for planting commercial crops such as chilis, and reports that coffee plantations were also being developed illegally. *Ejidos* which reported these incursions observed no intervention by, and received no satisfaction from, government authorities. In other cases, deforestation is caused by expanding cattle ranchers, either on their own property, on *ejido* holdings, on traditional commercial land, or on national land. A share-cropping arrangement is common in some areas by which ranchers induce *ejiditarios* to clear forest in exchange for part of the crops harvested; after one to two years the entire area is converted to cattle-growing land. More information than currently exists is needed to determine which practices are illegal and which are not, with strategies then developed to assist communities to protect their own resources and watch over public forests that would otherwise be burned or cut. On the basis of this information, the MEP will be in a better position to prioritize community development, environmental education, public policy and advocacy strategies.
- (4) **Agrosilvo-pastoral Techniques:** The heavy emphasis on agricultural techniques appears to be an understandable and appropriate tactic at the beginning of a project. As the project gains experience, and as the implementers learn more about the inter-related economic and ecological problems of each micro-ecosystem, more complex solutions to the complex environmental conditions encountered at each project site need to be developed and experimented with. The original program strategy was that, over time, each individual project's activities would expand to include social forestry, agroforestry, silviculture, non-timber forest products, pastoral agriculture or some combination. It will be important for the MEP to identify other organizations experimenting with integrated solutions, and to complement *frijol abono* with a variety of other techniques that address more of the economic and ecological challenges facing the peasant population.

b. Reinvestigate the Rate and Causes of Deforestation

In the very short time that the evaluation team spent in each project site it was readily apparent that the causes of deforestation are diverse and that there is considerable disagreement and little hard data regarding the rate and primary causes of forest destruction. Each project was started using as part of its base a diagnosis of the area's ecology and some data regarding the socio-economic conditions of the population. However, there is considerable and urgent need to update this information and ensure the objectivity of the research. Hypotheses should be substantiated before recommendations are made or plans are developed. Local community representatives and experienced social scientists as researchers would substantially improve the dependability of results.

This is not to say that WWF should reinvent the wheel or carry out redundant research. Gomez-Pompa et al.'s article in *Sustainable Agriculture in the Humid Tropics*⁶ was a short study of this subject, and cites several other more extensive studies. PROAFT has spent two years commissioning a series of fifteen studies on various aspects of the rates and causes of deforestation. The summary reports and plans based on the studies are being composed at the time of this writing. WWF is not working in isolation and could be taking into greater consideration the value and experience of other groups working on the same matters.

⁶ Mexico, pp. 483-548. National Academy of Sciences, 1993.

This information would have significant usefulness in determining whether the conceptual framework of the MEP is adequate, inappropriate or inapplicable. It is also a necessary ingredient for strategic program planning to direct the next two and a half to three years of the MEP. Corroborating information should ensure that MEP objectives are realistic and based on an accurate picture of conditions, and that application of the conceptual framework in the second period is improved over the first.

C. Project Design and Implementation

1. Findings & Observations

The projects were implemented in widely separate geographic areas with important topographic, climatic, soil, biological, ecological and cultural differences. The implementing agencies differed significantly as well. However, the projects shared a common purpose, model, design, intellectual base and funding source. The evaluation team attempted to determine how consistently the design was replicated under different circumstances, how useful and relevant it was and where the design was counterproductive.

Much of the eco-agricultural work which is reported to have been well received elsewhere seems to have confronted fairly high levels of difficulty in the southern Mexico projects. No statistics have been kept regarding rates of participant growth vs. drop-out or of increase vs. deterioration of technique application. Empirically, the evaluation team observed a range from high to low enthusiasm, from great to minimal understanding of the purposes of and the techniques themselves, and from expanding to shrinking participation. It was our impression that either due to unexpected levels of resistance or apathy, or to normal but unanticipated attrition and turnover, the techniques, as well as their understanding and acceptance, faced considerably more limitations than the program designers had expected or projected. Efforts to understand why this would be so have not been made by the program designers; on the basis of fairly sketchy information the external evaluators attempted to propose some preliminary hypotheses.

a. Characteristics of the Socio-Cultural Context

The MEP in southern Mexico is based on a system of socially-sensitive promotion of economically and ecologically appropriate production techniques. It may be that socio-cultural conditions elsewhere, where successes have been highly lauded, are sufficiently different to have generated methods which are less applicable - or have created unrealistic expectations for replication - in the southern Mexico context. Or, unidentified failures in the methodology of introduction and promotion may contribute to a diminished acceptance level. Alternatively, the program planners may have been overly ambitious or have exaggerated the speed, rate and degree of acceptance that could be expected in a short time under these conditions. In any case, some modifications of the methodology seem to be indicated.

b. Applicability of Available "Models"

The COSECHA team in Honduras (see d. below), which served as the primary source of methodology and technology for the MEP, strongly believes that "models" do not work. Rather, they advocate flexible, locally appropriate planning, a "learning process" approach, and locally appropriate solutions to problems. Simultaneously they also reject the other extreme, that nothing that works in one place will work in another. In practice, they seek to develop responses tailor-made to local conditions, such that technologies that have worked well elsewhere may be applied and rejected, applied and found successful, or never attempted because they were obviously not applicable. In addition, the methodology calls for using and

developing techniques that had not previously been used elsewhere but show promise under local conditions.

In practice, in spite of the philosophy of COSECHA, the projects developed their methodologies patterned very closely on the successful work they had been shown in Honduras. The extensionists carried back great enthusiasm for the specific technologies, and sought to replicate those experiences as closely as possible. It was a rare Ecodevelopment Program participant that understood and followed the principles described in the previous paragraph. The program itself had no specialists in agroecological project design and techniques, so flexibility and adaptability depended primarily on people in each project who lacked a wide range of experiences needed to establish a flexible and adaptable project. The periodic visits from the COSECHA team tended to focus on details of the agricultural techniques and not on the methodology of promotion or the design itself. As a result, the COSECHA program, *in fact*, did serve as a model more than a guiding philosophy. Many of the fundamental principles - of experimentation, flexibility, responsiveness, application or modification of local traditional practices, adaptability - were not put into practice as much as COSECHA and WWF intended or believed.

c. Key Technique May Not Achieve Long-term Objectives

"Green manure" has been the centerpiece of the technical package since the program's inception, and is the most widely promoted and adopted technique in all of the projects. *Frijol abono*, the common local term (literally "fertilizer bean"), is intended to have positive agricultural effects from short to long-term: short-term as a herbicide, medium-term as a means of reducing labor hours in the field, and long-term as an organic fertilizer, with the added potential to be adopted as a high-protein food.⁷

There is little doubt that this green manure technology has been successful elsewhere in Latin America (COSECHA cites the Guatemalan Petén and the forest frontiers of Nicaragua, as well as in the northern Yucatán of Mexico). Indeed, the bean itself has been used traditionally by villagers in parts of the Mexican states of Veracruz and Chiapas, although not for most of the purposes being promoted by the project for which it is also effective.

Thus, it is highly likely that successful introduction and widespread acceptance of green manures in these project sites will eventually increase soil quality and subsistence agricultural productivity. In addition, it may reduce migratory (slash-and-burn) agriculture, it may have a positive influence on peasants' general subsistence agriculture practices, and - even further - it may have additional benefits by contributing to or enabling reconversion of cattle pasture into agricultural or agroforestry lands. Each of these would be an important advance worthy of the effort and investment in the projects. Since it is too early in the process to know, these activities should be continued to test the hypotheses and to learn the most effective ways to achieve these various results.

⁷ Leguminous ground cover (*frijol abono*, or "fertilizer bean") of two varieties, known locally as "*nescafé*" or "*terciopelo*" (velvet bean) and "*canavalia*," has been the single most often promoted and most widely accepted technique in all four project sites. In those instances that *frijol abono* was introduced to solve specific, well-understood problems, its cultivation has been well received. Depending on local conditions, it has had substantial positive effect in reducing pre-planting labor where pasture grasses are prevalent, in reducing or eliminating weed encroachment in corn fields, in maintaining soil moisture, and in providing biomass for organic fertilizer. Soil quality improvement due to "green manure" and nitrogen fixation has not yet been demonstrated quantitatively by the projects, but qualitative improvements in yield have been noted at most sites.

The legume has been considerably less successful when closely associated with *labranza mínima* or other techniques which proved to be unpopular (El Ocote), where corn and beans are not cultivated very much (El Triunfo), where mechanized agriculture is increasingly prevalent (Calakmul) and where land tenure insecurity was felt to be a bigger problem than lack of agricultural productivity (Los Chimalapas).

On the other hand, unfortunately, all of these achievements may be possible without having a significant effect on the rate of deforestation. According to the ecodevelopment strategy, the ultimate purpose underlying the techniques' rigorous promotion is to reduce the incidence of shifting agriculture *and thereby* lower the rate of deforestation. Is this occurring? There is no information being generated to find out. Making it more difficult to draw a direct relationship between reducing (apparently stable) levels of shifting agriculture and (unknown) rates of deforestation, is that in the majority of project sites most or all formerly old-growth forest stands that have been cut have either been cleared for crops, cut for grazing land, or are growing back as part of a fallow rotation, but there is no information on the relative size or prevalence of each of these. Many of those which have not been cleared are protected by *ejido* or community regulations, or are considered too rocky or inaccessible to be of significant productive value. There also is not much information to indicate that a great deal of primary and/or old secondary forest is currently being destroyed by slash-and-burn practices in these project sites.

The concern being raised here is not what *frijol abono* can offer (which may be considerable), but what it cannot. It remains to be seen if the MEP has unrealistic expectations of the change that is possible as a result of technical improvements in subsistence agriculture, either because of overly optimistic perceptions of community development, or from an incomplete or erroneous understanding of conditions in the project areas, including who and what causes deforestation.

d. Ongoing Technical Assistance

The projects were guided by WWF from the outset with a heavy emphasis on agricultural alternatives developed by World Neighbors (WN) in Honduras, and a methodology of introduction and promotion described in *Two Ears of Corn* by Roland Bunch. A formal relationship was established between the MEP and COSECHA, a Honduran technical assistance NGO founded by Bunch and associates to expand the methodology and techniques beyond Honduras. With an impressive record of successful projects and skillful training, COSECHA sent most MEP-related trainees back to their project sites in Mexico determined to implement activities modeled closely after those they had seen in Honduras. Continuing consultancies by COSECHA team members have provided on-site assistance and encouraged this replication.

The skills and sensitivity of COSECHA's promoters and their record of successful sustainable agriculture projects have made this group an excellent resource for the Ecodevelopment Program. However, COSECHA's ready availability to the Mexican projects by means of contractually-based secure WWF financing is not without drawbacks. One is that COSECHA has become the predominant source of technical options and extension methodology for most of the WWF program. Another is the understandable development of "brand loyalty" on the part of trainees that has discouraged program planners from identifying other, complementary Mexican resources which could enhance the program and offer more options to communities.

e. Additional Technical Assistance

COSECHA stays in close contact with CIDICCO, a Honduran institution dedicated to maintaining contact with some 400 institutions in 60 countries around the world that are working with and sharing information about green manures technology. This enriches the information base on which COSECHA depends for its technical assistance to these and many other projects, and helps them stay up-to-date.

In addition to these technologies, the projects are either directly or tangentially involved in many other aspects of subsistence agricultural production, ranging from commercial coffee to chilies, from corn and beans to vegetables. Technical trouble-shooting is a continuous

demand in all the project sites. The extensionists, understandably, are not able to answer the entire range of questions they are inevitably asked, from solving specific infestations of unknown origin to determining the correct seed variety and optimum planting regimen for a specific location.

The program does not appear to have foreseen this demand. Neither do project planners seem to understand how important this function can be in generating credibility and trust among community members; some may believe it sufficient to be technically competent in only those areas being promoted directly by the project. In any case, there are no systematic relationships between these projects and accessible, external sources of technical knowledge and research. These are needed to help project extensionists respond to needs and requests by the farmers they are trying to convince to alter their practices, especially as some of the new practices have significant risks associated with them.

f. Participatory Rural Appraisal (PRA)

At the start of the program, WWF introduced and then promoted the methodology of PRAs (*Evaluación Rural Participativa - ERP*) as a tool to enable implementing environmental organizations to determine communities' priority needs and to identify the most appropriate people with whom to work; in other words, as a means to assess communities before beginning work in them. The plan was to use World Resources Institute (WRI) and Grupo de Estudios Ambientales (GEA) personnel to train field staff of implementing organizations in PRA techniques, and to carry out assessments in all or most targeted communities. It was hoped that PRA would facilitate effective participatory planning that would ensure popularity and acceptance of whatever resource management strategies would later be promoted.

The process failed to serve this function effectively in nearly every case. There is some controversy among the projects about how and why it failed. It appears that in no project and in no community was the process carried to its conclusion. The process was poorly implemented in some cases, and experienced poor follow-up in others. Some project people blame the process for being inadequate or inappropriate, while others think its application was misunderstood.

Discussions with project people familiar with the history of the PRA process led to three hypotheses: (a) the project implementers were unwilling to submit to community priorities or negotiate their own priorities with the communities; (b) the organizations misapplied the techniques by trying to harness it solely for information-gathering without being committed to sharing decision-making with the community relative to findings and conclusions; (c) consultation with the communities at this early stage was opposed by COSECHA as counter to its methodology and its continuation was discouraged.

The case merits more analysis than was possible in the time available for this evaluation, since the PRA process is often highly praised in environment/development circles.

A reasonable, albeit partial explanation for its failure is that its design purpose is different from the purpose for which it was actually used. Rapid Rural Appraisal (RRA) was the forerunner of PRA and was designed to capture as much information as rapidly as possible for use by outsiders. It may be that this was what was desired by the ENGOs at the outset. PRA, in contrast, is a combination of information gathering, analysis, strategic planning and empowerment.

The PRAs were originally intended by WWF to be used as a mechanism for implementing the MEP. Instead they became isolated workshops in which the information-gathering became the goal instead of the means. The information did not remain with the communities, nor was it used as part of a strategy for local resource management planning.

The project staff and the host communities who were to inherit the benefits of the technique were left more confused than impressed. Staff did not continue to "practice" PRA, even though they may share many of the underlying tenets of the technique. Communities were left feeling misled by the project implementers.

At the beginning, the implementing organizations (except Maderas del Pueblo) had little or no experience working with marginal rural communities. They did not know how to apply the technique, and depended entirely on WRI and their just-trained Mexican counterparts (GEA). This guidance, judging from the written reports and interviews, was inadequate and sometimes inappropriate.

There also seems to have been a reluctance on the part of ENGOs to allow community members or leaders to develop a project based on their definition of their problems, and on their own strategy for solutions. WWF provided criteria that the projects' activities had to meet. Within these, projects were theoretically free to do whatever their field staff and project planners thought would work. However, the ENGOs had no experience with empowering local communities and may have feared a conflict between the list of techniques and "interventions" they thought they were supposed to carry out, and a process that might raise expectations and open-ended demands on the part of local community people.

g. Planning and Timing

Changing an agricultural practice which is part of a household and community production system is not like changing a machine part. It has unforeseeable effects on household and community structures and processes, which change at a much slower rate. The acceptance of a particular technique may be relatively rapid among a minority of residents, but integration within the household and throughout the community, necessary for permanent adoption, may take much longer. When projects work with a small minority within a community, factionalization may inadvertently result if non-participants within the community perceive that others are reaping special benefits from external sources. In other cases, projects may change the role of the woman in the household, which likely will cause (what are perceived as) negative repercussions for the family, the community and the woman herself (regardless of the potential long-term benefits, or the "justness" of the role changes).

These effects on the community need to be considered beforehand (to the extent they can be foreseen), and the pace of integration into community processes should be slowed enough to evaluate the positive and negative effects at each step. Interviews with various projects' staff members did not directly address these issues, but wide-ranging discussions never touched on these dynamics, raising the concern that awareness of them may need to be increased.

A number of more specific planning and timing issues arose in discussions with project staff and community members during the evaluation process. The more generic of these are summarized below.

- (1) The original WWF proposal to BSP and the original proposals from the implementing NGOs to WWF underestimated the amount of time that would be needed to create an effective relationship between the activities of conservation and those of development. None of the cooperating environmental organizations had significant prior experience with ecodevelopment, the definition of "sustainability" is still uncertain and externally promoted *campesino* conservation is fairly new and unproven. The projects did not initially seem to take these obstacles into account, instead appearing to suffer from a somewhat naive expectation that plans, actions and results would flow quickly and smoothly.
- (2) The "normal" rate of change in communities is generally slow, and considerably slower than the pace apparently planned for this program. Furthermore, planners tended to

underestimate how long start-up would require, perhaps due to numerous unforeseeable variables, a lack of understanding of how handicapping their inexperience would be and a tendency to let wishful thinking dominate experience and reason.

- (3) Effective planning requires flexibility, in order to adjust to the unpredictable and irregular rhythms of change in targeted communities. Donor agencies as well as implementers have to adapt their expectations to this reality.
- (4) The first year to year-and-a-half, when little effective community development took place, was time not "lost" but a necessary first step. It is also an almost universal phenomenon. Most implementing organizations, particularly those with little experience, have to develop the expertise, acquire appropriate staff, and invent the structural relationships needed.
- (5) On the other hand, the lack of experience of most of the implementing ENGOs, and selection of inappropriate staff, caused needless false starts and delays that exceeded normal start-up problems.
- (6) Slow is not the same as never. Since ecodevelopment is a long-term process, taking 1-1½ years to get community work started is not a problem as long as, once started, the methodology is effective.
- (7) Unfortunately, false expectations were created by early project proposals, documentation and reporting, which meant the implementing organizations' central office planning staff created impossible conditions for the field staff. This pressure led in some cases to lowered morale and further inefficiency.

Fortunately, none of the donor organizations (USAID-Mexico, WWF and BSP) seem to be unduly alarmed at the slow pace of the start, so it may have only been their documents which were unrealistic, along with the proposals of the implementing organizations. Most project activities which are now on track should be viewed as closer to 1-1½ years old, not 2½ years. Thus, whatever concrete changes in agricultural practices or techniques that now exist are not at the half-way mark of what can be expected by the end of the five year period originally scheduled for the program.

h. Incentives and Subsidies

The program has not altogether successfully addressed the complex issue of incentives to attract local community participants to the project. COSECHA brought considerable past experience, thought and analysis to the design; at the outset it was recognized that a negative history of paternalism in southern Mexico would mitigate against the use of any financial or material donations which could create dependency on the project. Artificial incentives, according to COSECHA, tend to be negative primarily for psychological reasons, especially visible economic subsidies such as give-aways, cash payments, free inputs, lower-than-market interest rates on loans, and so forth. On the other hand, support in the form of training, community visits, assistance with securing greater land tenure and the like are less visible, less tangible, less artificial, and people tend to be more appreciative, less dependent and less likely to become bitter when they end.

But the issue continues to create problems. Current practices regarding donations, samples, free services and other material subsidies range widely and without evident consistency or clarity. Projects vary from a rigid policy of giving nothing away, not even seed samples, to a more common practice without formal guidelines of "lending" seeds to be returned (in double quantity in some cases, one-for-one in others) after the first harvest, to giving out 1-2 kg. of seeds to anybody who expresses interest in participating (in such projects a significant percentage of recipients either do not plant the seeds they receive, or hoard most and plant a

few). Some implementing organizations have an apparently contradictory policy of providing no material goods but donating services such as dormitory or office support in town, free transport for inputs such as manure, tools and occasionally items unrelated to the project such as boat motors, and liaison with and representation before government agencies.

To complicate matters, few of the technical alternatives being offered are economically sustainable in the short-term. They require invisible subsidies in the form of extra labor by participants, frequent supervision and training by project staff and promoters, and the generation of temporary or artificial demand (such as the promotion of *frijol abono* seed for human consumption). There is no evident plan, much less a public policy, on the part of any of the projects for reducing such subsidies as the new techniques become more self-sustaining, or for ensuring that sustainability is reached before the project terminates activities.

On the other hand, incentives to participate in a project are not all material or economic. A sense of increased land-tenure or income security, gradual empowerment, participating in something new and creative and the promise of new knowledge or of training can be powerful attractions. The concept of providing incentives for people to participate is not necessarily a bad one, especially if they are non-material or at least not serendipitous or dependent on project staff largesse or friendship. Some of the projects offer such incentives without realizing it, others without realizing their importance.

In practice, COSECHA acknowledges, there are many grey areas that make the principles difficult to apply. Some articles, such as training materials, can be given away without creating dependency. Rides cannot be denied without losing people's friendship, yet hauling people's goods to market or inputs back to the community can generate expectations and dependency. Exchanging seeds works better and is more culturally rooted than giving them away.

WWF and COSECHA understood from the outset that this area is not an issue easily discussed with villagers, as they will nearly always argue for more subsidies and give-aways than are in the best interest of the program objectives. WWF made it clear in early discussions that it was strongly opposed to flexible interpretations of the COSECHA model, but in fact the projects are experimenting, learning from experience and developing their own solutions, consistent with the general methodology. There may have been contradictory signals which made interpretation by the projects more difficult.

There is no need for uniformity from one project to another, since these are autonomous and independent organizations. And a project activity cannot be expected to "sell itself" in one or two years on the basis of material improvements alone. The problem is that none of the projects appeared to have a well-thought-through policy that was understood the same way by all staff and by community participants alike. In addition, there was no evident awareness of how easily trust could be eroded by arbitrary application of rules that people either do not understand, do not agree with, or which are not applied evenly or rationally. Finally, few of the project staff went through a process of analysis that would have helped them develop policies or guidelines which they could then modify based on their experience. In this area at least, COSECHA or WWF seem to have provided less guidance, orientation and monitoring than would have been ideal.

2. Recommendations

a. Evaluate PRA

A careful evaluation of the previous failure of PRA techniques should be carried out in order to modify and adapt these exercises to the requirements of ecodevelopment projects. If these particular techniques cannot be made to work, others should be developed.

b. Assess Community Diagnostics

The projects should then review their abandoned efforts to carry out initial diagnostic studies to determine the perceived needs of the resident communities in which they wish to work. There should be no further entry into new communities without better initial diagnostics. Otherwise their activities are dominated by needs perceived by the conservation community, making it difficult or impossible for their activities to fit within both the social and natural environments in which they are implemented. Although both WWF and implementing ENGOs included an initial year-long diagnostic phase as part of the project time frame, it needs to be done more professionally in the future. The justification for a longer preliminary project phase is that it increases the probability of long-term viability (i.e., sustainability) of the project as a whole, because an accurate diagnosis increases the likelihood that the project's techniques will be accepted and integrated into the local communities' systems of land and resource management.

c. Develop the Means to Include Community Participation

A common failing in most projects and most communities has been lack of collaboration in designing the project. Better communication is necessary, and discussions should be held with local residents and landholders regarding the differences and similarities between the goals of each group with interests in the area (including the implementers), so that all participants in the Ecodevelopment Program are clear about the challenges and constraints they are facing. A more open dialogue also addresses the issue of trust.

It is not expected that every group or individual will be in agreement about appropriate actions to take with respect to land use. However, everyone should feel that s/he has had the opportunity to voice an opinion, and has been heard and understood, so that all concerns are considered.

Implementers should recognize that the forum for these discussions may differ from one group, locale or community to another (e.g., men, women, youths, farmers, landholders, ranchers, *ejidal* authorities, etc.). In the conventional workshop or community meeting setting, the typical scenario is that only a small, select group - such as those who are politically motivated or renegades - speak up. As a result, the meeting may serve more to manipulate either the community or the ENGO instead of serving as a public forum. An ENGO may unwittingly find itself a pawn to one or more political factions, thereby increasing the risk of rejection of project staff by local participants and of community destabilization. Much of this risk is eliminated if a PRA process is used properly, as this methodology is designed to facilitate, identify and promote open decision-making and communication.

Despite the best of intentions, what people say and what they do may differ, so PRA findings must be backed up by other data, collected through direct observations, surveys and mapping, and long-term monitoring of land-use changes. Projects should continue to experiment with and utilize a variety of open-ended formats such as household visits (especially for the viewpoints of women) and informal conversations in the field (the real "workshop" setting of the *campesino*). They should also make much more use of inter-community visits by project participants and participatory experimental/demonstration plots. The projects can then process the information obtained in diverse ways, analyzing it in a team to develop hypotheses. Proposed activities should then be vetted with key informants and promoters from the new communities in question, before deciding to implement.

d. Additional Outside Technical Assistance

Systematic interinstitutional relationships are needed between these projects and external sources of technical research and knowledge in the fields in which these projects are working.

These arrangements should be made to support project extensionists in responding to requests by the farmers they are working with, particularly related to solving problems caused by the new practices being introduced.

There are other research and education institutions in Mexico, the United States and Latin America now experimenting with solutions to numerous problems of sustainable agriculture, integrated pest management and conservation of biological and genetic diversity. The MEP is neither the first nor the only program in Mexico trying to develop technologies for sustainable resource management and would benefit from a more collaborative style.

For example, in the U.S., a growing number of research and education institutions are working on land-use problems related to tropical deforestation, including the University of California (e.g., CLADES - the Latin American Consortium on Agroecology and Development - and the Division of Biological Control, both at the University of California, Berkeley, the IPM / Biological Control group at U.C. Davis doing research on IPM and combining traditional agriculture with conservation of genetic diversity in Latin America, and U.C. Santa Cruz research on Latin American tropical agriculture in peasant communities), Yale School of Forestry, the University of Florida, and the Smithsonian Institution / Rodale Institute program (working in Guatemala).

In Europe, the University of Wageningen, Holland, has a very competent and widely-known program in tropical agriculture and extension. In Great Britain Wye College, University of London, Edinburgh University and Oxford University have experienced tropical agriculture and tropical forestry programs that include applied research and technical assistance. The Natural Resources Institution (London) has considerable experience in tropical crops and resource utilization.

In Mexico, the field of conservation and natural resource management is finally growing and several institutions have ongoing research in the area of tropical forest conservation and management. Some might be of direct use to the MEP, some might not. Examples are: Instituto de Ecología, A.C.; Centro de Ecología, UNAM; ICRAF / INIFAP; Coordinadora del Estado, A.C. (Oaxaca); the Centro de Investigación Ecológica del Sureste (CIES); Plan Piloto de Quintana Roo (GTZ-SARH); and the Universidad Autónoma de Yucatán.

The MEP projects are more unique in another dimension. Although many researchers, NGOs and educational institutions talk about cultural diversity or local benefits of conservation efforts, few programs can be found that genuinely integrate community development with conservation. It is therefore critical that the MEP Program collaborate and consult with any institutions that have incidence in both physical and thematic areas, in order to compare experiences (good and bad) to avoid repeating each others' mistakes and to build on each others' learning. WWF-Mexico should investigate establishing collaborative ties with those groups whose activities overlap geographically and thematically with the MEP, such as the Tropical Forest Action Program for Mexico (PROAFT, A.C.), PROTROPICA (having community development projects in the Yucatán peninsula) and the Maderas del Pueblo, A.C. / PRAXIS, A.C. project working in the northern section of Calakmul with EEC and Oxfam (UK) funding.

Through effective collaboration, the MEP has the opportunity to help develop protocols, priorities, procedures and techniques for sustainable agriculture in conjunction with conservation of biodiversity and tropical resources.

e. Explicit Policy on Incentives and Subsidies

Each project should develop an explicit policy on incentives, services and subsidies that takes into account the need for flexibility and responsiveness and the need to avoid creating dependency, clientelism or the appearance of favoritism. Some of the projects provide free

services to community members, without evident thought about how this might appear to other people in the area, or how it might be received by the beneficiaries. Some of these services consist of interceding in disputes, advocating for participating individuals and groups in conflicts or negotiations with landowners, ranchers, businessmen or government authorities, and providing unprogrammed and sometimes unrelated material assistance (such as free transport for equipment and inputs, free seeds, etc.) and messenger services.

A more effective role - which is probably what is intended - would be to facilitate more self-advocacy and self-reliance on the part of the communities, encouraging and training them to articulate their own needs and demands directly, and to meet some of their resource requirements collectively. There are entire courses and organizations that specialize in this dimension of community organization and should be investigated by the Ecodevelopment Program.

There is no easy solution to the problem of community members wanting rides for sick relatives or emergency cargo transport. This is a universal dilemma faced by outside organizations with material resources above the level of the community. The projects need to discuss and develop guidelines that will be consistently applied, and that take into account the negative effects of their necessarily selective generosity. Meanwhile, they should cease as much as possible to provide free services where these can be so easily interpreted as favors for those who cooperate rather than as benefits deriving directly from the results of the project.

f. Speed of Improvements

WWF and the implementing organizations should closely monitor those projects that are not doing well technically. Projects that do not show some significant improvements within a relatively short period of time, such as six months, may never show improvement without major project modifications. Where projects' technical promotion is adequate but handicapped by deficient social organization or weak community relationships, significant improvements will probably require acquisition of new personnel with more experience and/or skill at working with peasant communities. If the skills of the field staff are adequate, and the community still is not receptive to the project, at some point, the team should make a decision to move on to another community.

g. Identification and Valuation of Local Knowledge

The MEP needs to encourage and even train the implementing NGOs to work with all sectors of the communities (men, women, youth and elders) to learn and recognize the range of agricultural practices for household subsistence known by community members, in order to design and adjust the agriculture, home garden and other activities as integral parts of an overall community ecodevelopment strategy.

D. Relationship Between Ecodevelopment, Wildlands and Protected Area Management

1. Findings & Observations

a. Relationship Between Buffer Zone Development and Core Zone Conservation Unclear

According to the planning and funding documents, the four BSP ecodevelopment projects in southern Mexico are linked to "wildlands protection." Three of the four projects are connected to protected area sites which are already decreed (two national biosphere reserves and one UNESCO-MAB biosphere reserve) while the fourth is in the process of being established as a "Campesino Ecological Reserve" (*Reserva Ecológica Campesina*).

One premise of the Ecodevelopment Program is that conservation is most effective when coupled with a local sense of stewardship of natural resources. However, the relationship between ecodevelopment projects and protected wildland areas is not intended to be directly causal; sustainable buffer zone management does not directly protect core zones of El Triunfo, El Ocote and Calakmul (the case of Los Chimalapas, not a managed protected area and potentially a community-managed reserve, is somewhat different). There is, nonetheless, an implicit relationship between the MEP buffer zone conservation activities and core zone protection, whose vagueness makes measuring results of buffer zone management more difficult, especially in conjunction with other organizations' initiatives and policies in the wildlands sites.

At a conceptual level, the underlying assumptions of both "wildlands protection" and "regional conservation management" include many components of the traditional "biosphere reserve" model such as:

- (1) division of the area into defined zones of limited use (core zone) and multiple use (buffer zone) with an undefined surrounding area (zone of influence) for the extension and expansion of conservation activities;
- (2) initiation of research applied to identifying and resolving local needs;
- (3) community-level, socio-economic development in buffer zone areas to protect the core zone.

The biosphere reserve system was intended to be an alternative parallel to conventional systems, but in practice the reserves are often combined with already existing environmental protection systems and sites. In the case of the TNC "Parks in Peril Program" for example, which has or will have incidence in several of the four WWF ecodevelopment sites, protected area management has emphasized the establishment of more traditional "conservation" practices (including non-use areas and research-only areas) in the core zone, managed by regulations, guards, patrols, confiscation and fines.

The methodologies for core zone protection and management are beyond the purview of this evaluation, although they impinge on and are influenced by the human activities outside the designated boundaries of the core zones. Management of buffer zones, however, is the primary purpose of the MEP. According to the common philosophy, this implies a need to:

- take into account local residents' experience, needs and aspirations in the planning and design of protected areas;
- encourage local participation in the activities of protected area management; and
- assist local people in developing their own capacities to protect and manage the natural resources on which they depend for a living, thus (at least theoretically) reducing negative human impacts in the buffer zone, encroachment into the core zone, and conflicts between protected-area managers and local people.

An implicit distinction in the MEP has been made which divides the conservation initiatives between agencies responsible for core zone activities and buffer zone development. Nevertheless, the evaluation team discovered an inherent (but still latent) conflict between the two emphases (core zone protection and buffer zone management), especially if each approach is to be "successful" on its own terms. This potentially divisive strategy needs to be addressed before it becomes a problem in reality.

On the one hand, ecodevelopment activities promote and develop environmentally-sound, local land-use practices (in already cleared or disturbed sites), and focus on needs and ambitions of rural producers. The strategy is supposed to reduce the need for clearing or extracting from more mature forest areas. The MEP also tries to promote the expansion of

resource management (and therefore resource access) by encouraging a sense of local ownership and responsibility for the entire gamut of resources which surround and influence primary production processes, from the soil to biodiversity to bio-cultural patrimony.

These activities, in turn, are situated in a broader framework, which includes the need to foster an awareness of humans' relationship to the environment, to analyze the positive and negative influence of land-use practices and to develop a sense of land stewardship. This broader dimension presumably is to be carried out by a process of "environmental education," although little information can be found in MEP planning documents regarding the objectives or methodology for this process.

On the other hand, Mexican governmental agencies, TNC and local partner agencies work to limit, control or prevent access to the resources adjacent to the ecodevelopment project sites in order to maintain the core zones' ecological integrity and biodiversity for the patrimony of the nation and the international conservation community. This goal, generally, is realized by: establishing and enforcing laws, regulations and rules; posting signs; training uniformed guards to patrol and police the area; confiscating poached species; and assuring that the individuals who commit infractions are turned over to the proper authorities for punishment.

One potentially conflictive result of these two different approaches is that management of the entire area becomes divided into two factions. One group works on the outside of the core zone boundary looking in, being instructed and training others to incorporate a "reserve" concept into an integrative, ecological world view. The other group works inside the core zone, defending the area from encroachment by a perceived hostile human population, which, if not prevented, will overtake, over-extract and degrade the protected resources. This group tends to resist any incorporation into a land-utilization system other than a structure of complete and enforceable non-use (with the possible exception of approved research and occasionally recreation via ecotourism).⁸

The two opposing strategies present a second dilemma for protected area management. An exclusive core zone protection strategy requires continuous and perpetual maintenance at constant or increasing levels of investment. The work is never done: as pressures for resource use increase, so do the demands for protection and vigilance. Protection by surveillance is not a sustainable management practice. On the other hand, a key criterion of ecodevelopment is that the conservation and resource management process, once established, is both sustainable and sustaining, gradually reducing the need for outside investment as it is incorporated into practice and culture. In this dichotomy between "hands-off" and "hands-on" conservation, natural resource protection can become a struggle between long-term sustainability and short-term security.⁹

Over-reliance on "muscle over management" also alienates the local populations from the natural resources and erodes their sense of responsibility for these resources. Such reliance loses the opportunity for long-term self-management with minimal vigilance, and increases the need for ever harsher measures of protection.

If the two types of conservation models functioned at the same level of political power, or within similar socio-political structures, an eventual integration of core zone and buffer zone

⁸ A good description and analysis of how the "exclusion strategy" (insider management versus outside peasants) alienates local populations is in Lusigi, W.J. 1981. "New Approaches to Wildlife Conservation in Kenya." *Ambio* 10(2-3):87-92.

⁹ The importance of integrating several strategies, including environmental education, ecodevelopment, protection & management, research and policy, has been stressed repeatedly by specialists in the field, especially UNESCO-MAB, and much has been written. See especially United Nations Educational, Scientific and Cultural Organization (UNESCO). 1984. "Action Plan for Biosphere Reserves." *Nature and Resources* 20(4):1-12).

activities (and objectives) would be more likely. For this to happen, protection of the core zone would have to fall within the purview of a local democratic or participatory political structure which competently manages land and resource access and use in buffer and core zones alike. However, core zone protection in three of the four wildland areas evaluated is carried out primarily by external or parastatal organizations (sometimes with the complicity of a docile or opportunistic local organization), which promote the enforcement of government-decreed sanctions in coordination with powerful, central government agencies such as SARH and/or SEDESOL.

The principal activities in the ecodevelopment projects, on the other hand, are carried out by participating individuals or communities, primarily poor peasants. Between community-based project participants and highly-structured, well-funded agencies there is an unavoidable imbalance in levels of sophistication, control and power. The former are seldom able to compete in developing, implementing and enforcing their visions or programs for appropriate conservation management.

This situation creates a conceptual and cultural conflict. On the one hand, community members perceive core zone management agents as outside usurpers with repressive government backing. On the other, protection agencies may perceive that community development activities promote, and even enable, the encroachment and takeover of perimeter (or all) areas of core zones as a byproduct of local empowerment.

Although other variables exist, the logical projection of this conservation conflict is that one group is bound to lose control over the decision-making process related to management of resources in which they have economic and moral interest. At the very least, this plants a seed for future conflict and weakens both types of protection strategies, which otherwise could and should be mutually supportive. It also represents a lost opportunity to integrate management and protection of natural resources in the planning process for core and buffer zones.

2. Recommendations

a. Increase Collaboration Between Mexican Implementing Organizations

The implementing organizations should recognize (and demonstrate this recognition in practice) that no single group is completely correct or knowledgeable; rather, solutions lie in piecing together the knowledge of a multitude of populations with varying experiences. Nowhere is the case for interagency collaboration at the level of the implementing NGOs more obvious than in the case of Ecósfera, Pronatura-Chiapas and Línea Biósfera working in El Ocote. Collaboration was very close between the first two, while the third had been excluded altogether in spite of its greater acceptance among local communities and its far greater experience in community development. Environmental NGOs need to remember that no one has a monopoly on ecodevelopment truths and no one has all the answers. If implementing agencies can avoid the thematic and regional territoriality and the institutional jealousies observed by the evaluation team, they will increase and strengthen their abilities to carry out their individual activities. This is also true for IHN in El Triunfo, which now has a virtual monopoly on all activities in El Triunfo, from reserve management to ecodevelopment to environmental education. The principle should also be observed by Pronatura Yucatán and the Xpujil Regional Council (in collaborating with a parallel ecodevelopment effort in neighboring communities in Calakmul). WWF is appropriately facilitating more effective collaboration in El Ocote and would be well-advised to press harder for similar changes elsewhere.

b. Increase Interagency Collaboration

The possible conflict between protection and ecodevelopment discussed earlier needs to be addressed more directly by BSP. The government of Mexico (or any other country) cannot be expected to abdicate its responsibility over national lands, nor to relinquish its claims to areas that it deems as requiring protection, especially under international pressure. The concerns of The Nature Conservancy regarding surveillance and regulation of resource use are not entirely unfounded. At the local level, there are always parties interested in extracting resources for individual, short-term gain. Further, not all members of a community will necessarily accept or adopt an ecodevelopment viewpoint. At all levels, therefore, some environmental protection and vigilance will be necessary.

Thus, organizations working to strengthen the capacity of resource protection at both the "official" (government-sanctioned) and local levels need to undertake joint planning of strategy and implementation. Otherwise, the protection imperatives will overwhelm the beginning and tentative efforts of local communities to take responsibility for stewardship of their natural surroundings, given the relative simplicity, ease of implementation and political weight of pure preservationist methods. This will ultimately undermine the process of ecodevelopment and weaken the potential for long-term sustainable conservation.

Although BSP is a consortium of WWF, TNC and WRI, the MEP is implemented solely by WWF. Apart from WRI's support of PRA activities in the first year, there has been little or no involvement of BSP's other consortium members. BSP should establish ongoing dialogue leading to joint planning and collaboration between the MEP and TNC's Parks in Peril program, especially related to Calakmul and El Triunfo. There is also an understandable U.S. bias that could be corrected by initiating collaboration with the EEC, UNDP, ODA, GTZ and other multilateral and European agencies with interest and incidence in the area.

c. Evaluate *Vigilancia* Concept:

There has been some discussion at the local level, and among the ENGOs implementing the ecodevelopment projects, of the possibility of local supervision (i.e., village scouts) of protected area access and resource use through the TNC Parks in Peril program. The principle most essential to success of any protection scheme is the inclusion of local populations in regulation and enforcement. Of nearly equal importance is the avoidance of establishing informants who are paid to report on - and have control over - their neighbors. This will inevitably become another source of erosion of community cohesion and introduce new opportunities for corruption.

The evaluation team found that the ENGOs and communities were both interested in and concerned about local vigilance. We strongly encourage that any regulation and enforcement derive from a community-based system which distributes power equally, rather than from a system whereby a few individuals are selected by an external agent. It should be possible to merge the power concerns of the community and the environmental concerns of the NGOs.

The ecodevelopment projects do not now have any involvement in core zone protection but will be negatively affected if they are not included in discussions, planning and implementation of village-level involvement. The MEP should work with the Mexican implementing organizations and TNC to ensure this community participation.

E. Community Involvement

1. Findings & Observations

a. Communication

Distances between local project headquarters (e.g., Matías Romero, Jaltenango, Malpaso, Xpujil) and project communities, and between communities, are in most cases extreme. It is likely that infrequent visits by central office staff of many of the implementing NGOs and of WWF do not allow full appreciation of the hardships this creates for project staff - or community members - who can never escape the realities of rural life in southern Mexico: long distances, scarce transport, poor communication and harsh living conditions. Project staff cannot visit frequently or easily with the vehicles they have (see Constraints above). Staff generally drive to one community, stay one day (or two to three days, in some projects) and don't return for several weeks or months. Continuity is lost between each visit, especially in communities where no local promoters are located. The program has not addressed this problem directly, in spite of it being one of the most debilitating conditions that can be most easily rectified (with the provision of vehicles). Analogous to the avoidable problems caused by mismanagement of disbursements from WWF headquarters, the program's much larger investment in human resources is undermined by transport deficiencies to a disproportionate extent relative to the costs of correcting the problem.

b. Responding to Felt Needs

Notwithstanding emphatic articulation of this point by WWF, the projects generally have not recognized that understanding the felt needs of local people is part of a process of integrating project activities (which presumably are based on externally identified needs - the other half of the equation) into existing community priorities. This analytical and integrative process is an essential ingredient in effective community development.

Part of the problem is that all four projects lack the diagnostic tools to systematically detect and analyze conditions and respond strategically to the communities. Maderas del Pueblo recently began to extend its technical assistance to a host of additional communities requesting it, but the organization does not have any systematic way of identifying priorities. The IHN ecodevelopment team consciously began working in coffee production because that was the local people's highest priority, but there is no ongoing, systematic mechanism for recognizing or identifying changing priorities or expanding from coffee to other productive fields. Ecósfera, Pronatura-Chiapas (in El Ocote) and the Pronatura-Yucatán team in Calakmul primarily provide assistance in pre-selected areas without evaluating failures and making appropriate modifications. Geographic expansion is still more a function of opportunistic responsiveness than a result of strategically developed planning.

Since the early exercises in PRA and the initial year-long "diagnostics," few further attempts were made by the implementing staff or NGOs to do analyses of the communities where the projects intended to open up new work (excepting Pronatura-Chiapas with three women in three communities in El Ocote). There were few signs that much effort was made to consult community representatives or leaders regarding their assessment of the community's needs or problems. No external assessments have apparently been made. Rather, the projects tend to make their own decisions, based on their own criteria, about what they will do in which communities, with which people, when, how frequently, when they will withdraw, what the objectives are, and how they will measure their successes and failures.

Part of the reason may be that few or no staff of the projects have received training in strategic program development, or in community assessments, and most of these skills are not traditional techniques in the areas where they are implemented. Further, when PRA lost

currency, WWF did not help the projects to develop another methodology to assess local conditions and introduce the projects to target communities.

Another part of the reason is that COSECHA takes a fairly dogmatic position regarding the importance of the projects making all the basic decisions at the beginning of the process, believing that consulting the community will be counterproductive, because, for example, if resource conservation is not a "felt need" of the people, the project would then have to abandon the idea. This is a misinterpretation of responsive planning and an exaggeration of participatory process. There does not seem to be room in the methodology for a middle ground, in which project design includes proactive planning and responsiveness to community concerns such that integration can occur.

c. Introduction to Target Communities

The evaluation team learned from project personnel that there are three general approaches being used to gain access to and trust (or at least cooperation) of community members.

- (1) Start relating to the community - or some of its key members - on whatever issue or need they consider their top priority (e.g., coffee prices and production problems in El Triunfo, land tenure in Los Chimalapas). When trust is beginning to develop, carry out a diagnostic process to identify or approximate local needs. Then, continuing to work on the priority issue, find ways of promoting increasingly sustainable and rational resource management practices while broadening activities to address more seriously environmentally degrading practices. Employ integrated environmental education activities.
- (2) Start by carrying out a survey (such as with men in Calakmul and women in El Ocote) using whatever methodology fits the conditions (such as a modified PRA or facilitated group processes). Based on the information gathered, introduce activities that attempt to respond to the priority concerns, while encouraging the participants to observe, think about, analyze and seek to change other circumstances in their lives. A first activity can be considered "successful" if it gains participants' trust. Follow with introducing practices that are more environmentally oriented.
- (3) Begin by introducing a series or "package" of services or activities (e.g., El Ocote with men) that have been economically effective and/or socially acceptable elsewhere; analyze the causes of receptivity and rejection, make modifications and repeat with emphasis on the practices that received least resistance. No additional diagnostic effort is needed if introduced techniques gain followers. Offer other services or introduce other techniques as it becomes clear what will take hold. Community development, per se, is not necessarily a result.

One of the most important tasks at the beginning of a new organization or project's interaction with a community is to develop positive, strong relationships with community leaders and members. While any of these approaches could be used effectively under appropriate circumstances, the evaluation team generally agreed that one of the most fundamental elements must be to develop activities in relationship to people's expressed needs, even when the project has its own priorities. This is legitimate because ecodevelopment is a long process, and an immediate decrease in environmentally degrading activities is not the objective. This is not to suggest doing whatever the community wants and delaying introduction of ecological or sustainable agricultural technologies. It means tailoring that introduction to the existing practices, concerns and other priorities that can be discerned or are expressed.

In more cases than not, relationships between project and participants are fairly positive, but the overall impact has been weakened by too few communities in El Triunfo and El Ocote,

overly rapid expansion in Calakmul and delayed expansion of technical work in most of Los Chimalapas. Modifications of the first approach above will most likely make the best use of local information and speed the introductory process in cases where the NGO or its ecodevelopment work are not well-known in the targeted communities.

d. Valuing Existing Techniques

An excellent example of this principle has been the use of the velvet bean, which in some southern Mexican areas has traditionally been intercropped with corn for its value as forage for livestock. The additional values of ground cover for weed control and prevention of soil erosion, of soil improvement from its nitrogen-fixing properties, and its seed for human consumption, have been introduced by the project. In those communities which did not know of or use the velvet bean, its introduction was essentially that of a "new" technology.

Unfortunately, in most agricultural development projects, including many of the MEP projects, extensionists are trained to introduce new techniques, oftentimes on the assumption that "new" or different is better. They are seldom trained, and in these projects they have acted infrequently, to identify (much less expand or modify) environmentally beneficial *traditional* techniques such as fallowing, crop rotation, intercropping and biological pest control. There does not seem to have been much conscious effort to promote the value of existing sound practices. Instead, the priority has been to introduce "new" techniques that can coexist with the most common "benign" practices.

In some cases, projects are having modest success with modifying the new techniques they introduce to make them more acceptable. However, there is not much evidence that projects have made a concerted effort systematically and strategically to integrate existing or traditional practices with introduced practices. Without this occurring, extensionists may be perceived as importing (and sometimes imposing) rather than integrating and combining techniques. This may have contributed to the limited "appropriability" (where this occurred) of introduced activities and techniques - that is, how accepted they were (or were not) to the local people.

The theory underlying the extension methods used was that people will continue to use their traditional good practices if there are no problems associated with them. This would be especially true when working with a limited technology; one is not destroying what already exists. What is overlooked is that *in practice*, in their enthusiasm for promoting a "new" technology, extensionists have tended to ignore the additional value inherent in traditional practices (which they often fail to see), and by encouraging the new to the exclusion of traditional practices, they indirectly invalidate them. Alternatively, local farmers with limited time and labor tend to transfer some of their energy to the new practices and diminish their attention to the others. This attests to the value of integrating old and new and explains the down-side of introducing new technologies "along side" the traditional.

Finally, few projects have developed concepts or strategy to use existing practices as a basis for an educational process that helps people understand conservation.

e. Trust

Much of the success of social promotion is due to a relationship of trust that must be built between community members, extensionists and other project personnel. In addition to the use of local promoters recruited from participating communities, part of the original design was to begin project activities in preselected communities with a PRA experience, which was supposed to (among other things) build initial trust. But the PRA process was unsuccessful and was abandoned early in all of the projects.

According to COSECHA, the projects are built entirely around the idea of establishing trust by proving to the people, through rapid recognizable success, that the extensionists are both willing and able to show them how to solve their problems. Nothing else, they say, builds trust as firmly and quickly because it gives direct evidence, in the people's own life experience, that the extensionist knows about effective solutions to their problems, and is truly on their side (is willing to do what's necessary so that they can benefit from that knowledge).

The evaluators did not find that these principles, however effective they may be elsewhere, operated effectively in several of the MEP projects. Relationships are usually based on more than the introduction or adoption of a few farming techniques. Without the participants' knowledge of what motivates external project extensionists, and what they will gain or lose, and without some sense of "shared risk" present, there is little reason to expect peasants to trust or believe the assurances of even well-intentioned outsiders.

Furthermore, the principle betrays a degree of arrogance contradictory to the principle of gradually increasing participation and sense of ownership by establishing the extensionists as "experts" who will "solve" people's problems, opening the door to dependency. According to this model, the people do not necessarily even have to perceive that they have the problems; soil quality or erosion, for example, may objectively have needed improving according to the extensionists, but in some areas visited by the evaluation team the local people did not think it was nearly as important as reducing the labor demands of subsistence agriculture or improving the diet or increasing incomes, and some people directly stated (their belief that) soil quality was not a problem at all. They would have preferred sustainable agricultural techniques that helped them address these other problems. (Indeed, the same green manure technology can contribute positively in these areas; the problem may have been in the narrow way the techniques were presented, not the choice of techniques itself.)

To make matters worse, in many cases, the extensionists initially did *not* know as much as the principle implies they should have, and because they were not trained to learn quickly about local conditions and problems, the technical information they offered was not quickly appropriated. Thus, "recognizable success" was not as rapid as it was supposed to be.

The program seems to have neglected overall that there is more to gaining villagers' trust than knowing technologies that will benefit them, such as knowing and respecting their language and culture, living among people, sharing risk with them, and so on. These may not be technical issues, but they are equally important elements in the design and implementation of a project and were generally overlooked or their importance minimized throughout the first half of the program.

During the COSECHA orientation and training workshops for extensionists, some of these dimensions were talked about informally (COSECHA sees them as merely "issues of personal relationships"), and dealt with on a case-by-case basis during field visits. It was their observation that there were few problems in this area. The evaluation team thought it was more serious an issue and that the deficiencies, although not visible as "interpersonal problems," did indeed limit the acceptability and effectiveness of the technical contributions.

It appeared that those implementing NGOs that limited their interaction with communities to providing technical advice and introducing techniques have not progressed as far as COSECHA's principles would imply. On the other hand, where land, common production problems or other community-wide concerns were addressed in a direct and fundamental way by a project, there seemed to be a noticeable increase in the acceptability of project staff and their ideas.

f. Continuity

In externally-initiated, community-level projects, either activities are advancing, or they are going in reverse; there is seldom a "neutral." Community members who are most involved with the project tend to be enthusiastic at the outset, wanting to see quick progress as a result of their efforts. Even when there is no cultivation practice underway at the moment, there is need for project presence, at the very least to continue providing trouble-shooting service and to reiterate the long-term potential of the introduced techniques.

When extensionists failed to appear regularly or as expected, participants began to lose interest (and, in many cases, credibility with their neighbors). Or when extensionists experienced setbacks due to community rejection of a technique, or a crop failure regardless of its cause, they had to quickly adapt and offer something reasonable in its place. To do this effectively, they had to be in the communities frequently and stay there for longer periods of time. The implicit objectification of the communities by extensionists who dropped in was a major obstacle to acceptance.

Some of the organizations implementing these projects may have started with the idea that they only had to train technically competent extensionists who would simply introduce techniques and change would result. Some have begun to learn that the social and economic dimensions of the work are at least as important as the technical and ecological aspects. Those organizations that cannot integrate this lesson into their organizational structure, management procedures and planning processes will not realize much success in promoting environmentally-sensitive agricultural change.

g. Qualitative Presence

Why do local people accept well-meaning researchers or extensionists? When asked, community people often say it is because of the outsiders' willingness to live and work side by side with them, to accept their help and advice and to include their concerns in the decision-making process. In turn, the outsiders provide a window to another world outside the local area. The local people are given a vision of the importance and value of their resources and efforts in a wider context. The result is a rough overlap of perceptions of the environment from the meeting of two cultures, which is partially embodied in a shared dialogue.

The ingredient most essential for project acceptance, sorely missing in the early period of most of the projects and missing today in some of them, is shared perception and common dialogue. Extensionists and project administrators must want to spend time with, learn from, and to some extent, see the local habitat through the eyes of the people living there. The projects have been recruiting more such people, slowly, and need to find, incorporate and train many more of them.

Convivencia (literally to co-exist or cohabitate) is a term used frequently in most of the project sites by outside extensionists to describe a process of "becoming involved" substantially and personally in community concerns beyond those directly related to project activities. It is believed that this accelerates the rate of acceptance of the extensionists by community residents, and therefore speeds up the process of acceptance of the techniques they are introducing. It also presumably opens the community to the penetration of ideas the extensionists wish to introduce, by means of (so-called) environmental education and the raising of people's consciousness about the value of natural resources.

As long as participation in community activities is seen merely as a device to convince local residents to do something different, it misses the point, and will not work for long. Few of the communities appeared to have genuinely accepted the extensionists as allies or friends when they only travelled periodically, stayed briefly and only pushed their environmental or

agricultural messages. Rural poor people may be unschooled and may not speak Spanish fluently; they are nevertheless quite adept at discerning whether outsiders are genuine in their relationships and sincere in their interest regarding peasants' lives.

As practiced in some of the projects, *convivencia* ignores the two-way nature of communication, which requires that "participation" and "education" go both ways; that is, project staff must learn (and want) to be sensitive to the community and its perceptions of the project at least as much as they expect local people to be open to the environmental concerns of outsiders.

Although the extensionists mentioned *convivencia* frequently, it is unlikely to have been their concern alone. The evaluation team was not in any of the project sites long enough to develop relationships with local residents that would elicit their frank comments on the situation. However, experience in similar situations elsewhere, documented in the Mapimí Reserve, indicates that local residents explain their cooperation with Reserve managers, researchers and project extensionists as a product of *convivencia* and the trust that it evokes over time.

2. Recommendations

a. Increase Stakeholders' Communication and Participation

Given the concerns expressed by community and *ejido* members regarding control over resources and fears about *vigilancia*, a method suggested elsewhere in Mexico is to form a community oversight committee to manage the selection and monitor the behavior of the guards. Such a committee would have the moral and legal authority to remove enforcement officials who fail to follow community-set guidelines of consistency and fairness, and to require the rotation of each official every 1-2 years so that no one remains in a position of power for long, and so that the enforced and enforcers are changing positions. The MEP should facilitate discussions and planning in this direction at the community, implementing agency and regional levels.

The same principle can be applied to community and *ejido* involvement in buffer zone planning and management. "Experts" alone cannot make technical recommendations which will receive support of the residents unless they are involved. The projects could increase participation by developing closer relationships with local "natural" as well as religious and elected leaders and with other organized groups, including the churches, commodity producer organizations, youth clubs, *amas de casa* and the *ejido* management itself. The project, enjoying greater political and social independence, could serve as the link and work to strengthen local organizations' formal involvement in management plans and activities.

b. Presence in the Community

Projects should ensure they have adequate staff and promoters, as well as the necessary transport, to establish ongoing presence in each community where they work. On the basis of the diagnostic and planning process they should determine the nature and amount of presence, discuss this with the communities and "negotiate" an informal agreement, so that both parties know what to expect. Constant and continued presence of NGO project personnel contribute to communication and trust.

The following are techniques to increase project presence in the community:

- (1) participation in community activities not directly related to the project;
- (2) understanding of the process, structures and leadership of local community organization;

- (3) *convivencia*, or sharing the living situation and constraints, and thereby understanding "perceived needs" at a personal level; and
- (4) informal conversations and discussions that are not in an interview or meeting setting and that may continue over days or months (some conversations take a long time; extensionists and researchers need to adjust to local rhythms and give community members a chance to think things over or find the right moment before responding).

It is important to recognize that the initiation, implementation and maintenance of the ecodevelopment projects are based on a social contract with the target communities. Unlike a legal contract, this social contract may be "signed" or continually affirmed in ways with which the project's staff may not be familiar. These affirmations may include helping with the daily work, participation in community affairs, non-participation in community/private affairs, etc. Each community or settlement is different, and it is the responsibility of project personnel to determine what constitutes a social contract in their area and what is required of them to uphold that contract.

c. **Communication**

Radio is often the most widely used communications medium among semi-literate peasant communities, and usually has considerable credibility. In a number of other areas in Mexico, as well as in countries such as Honduras, Peru and Ecuador, radio stations are operated by implementing NGOs for educational and organizing purposes. Mexican examples are INI in La Huasteca, San Luis Potosi, which broadcasts in three or four local indigenous languages, and CEQRODE in Quintana Roo, which prepares audio tapes in Mayan for broadcast on a number of commercial and religious radio stations covering a wide geographic area. The projects should investigate the educational potential, political issues and technical requirements of this means of raising awareness among a broader section of the population, providing concrete information and promotional messages.

F. Extension & Promotion Methodology

1. Findings & Observations

Because the ecodevelopment projects were predominantly focused on sustainable agriculture brought about by small-scale technical changes, a heavy dependency on extension was necessary. However, the tradition in much of Latin America is for "extension agents" to be highly skilled technically in certain fields, with the most advanced people being the most specialized. In this model, it is assumed that the beneficiaries of the technical assistance have enough formal education and training and enough economic flexibility to seek and afford new ways of doing things, to compare alternatives and to assume that the technical extensionist has the answers. Little emphasis is put on ability to communicate with people because it is assumed that the target population actively seeks the new information.

The model for the ecodevelopment projects is a very different kind of extensionism, which requires prodigious interpersonal, cross-cultural and communication skills. Often these are more important than technical sophistication, and frequently conditions require generalists more than specialists. "Promoters" drawn from the beneficiary communities can provide an intermediary between the project (which has a "mission" from above more than a mandate from below) and the farmers (who may not view the extensionists as mere sources of neutral information). The evaluation attempted to assess the effectiveness of the methods and processes of transferring information from the project to peasants. Of equal importance was determining the extent to which the projects sought to base their intervention on the existing knowledge and practices - harmful or sustainable - of the "beneficiary" populations. Since most of the projects were not invited by peasants to help them farm more productively, but rather the projects selected communities where they would promote

their ideas and techniques, the onus is on the projects to bridge whatever gaps exist. We attempted to identify the degree to which this was happening.

a. Promoters

One of the elements of effective community ecodevelopment, as taught by COSECHA and followed by all of these projects, is the need to develop local community-based promoters, or "barefoot extensionists." Guidelines for their selection and development include that they should be identified: by their eagerness and capacity to learn and implement the technical skills introduced by the project's extensionists; by their volunteer efforts on behalf of the project; and by their social and communication skills. As a rule, they should prove themselves and their commitment before they are selected, or given special training, or asked to carry out activities on the project's behalf. They should not receive more than a supplementary stipend, so that they remain primarily dependent on the economic activities they share with their neighbors, and thus retain their credibility.

Some of the projects have recently begun to identify and train a few such people, but the overall impression is that this dimension of the program is not as well conceived or as highly developed as the technical work. A few dimensions of this follow.

- (1) Although most of the promoters are reasonably effective, their skills tend to be considerably stronger in technical areas than in social analysis, promotion, organization, or environmental education related to the technical changes being proposed.
- (2) When promoters are from the same or nearby communities where they are assigned to work, they are generally young men, without prior standing or influence in the area. COSECHA's experience in many different cultural settings is that when a young farmer starts producing two or three times what others produce, or is able to produce well without using slash-and-burn techniques, by that very fact he quickly acquires all the status or influence he needs to be a good promoter. In fact, few farmers in these projects increased their production rapidly, especially by a factor of two or three (perhaps the time frame was too short), or rapidly converted a significant amount of land to stable agriculture (which takes at least several years to prove itself in any case). Conceivably, this could limit the degree to which the early experimenters in a community might quickly earn status as models or demonstrate their qualities as potential promoters.
- (3) Older promoters are mostly from outside the communities, hired as much for their translation (El Ocote) or political (Los Chimalapas) skills as for agricultural or environmental knowledge.
- (4) The identification and hiring of promoters has resulted more from urgent institutional necessity than from the natural emergence of qualified people. More often than not, the promoters are full-time, paid staff, not part-time stipended volunteers. In only a few cases do the promoters appear to meet the implicit criteria above. Although their work appears to be an important addition, providing greater "reach" and more ongoing contact between the project and its target communities, they were neither selected by their communities nor are they dependent on farming any longer for their livelihood.
- (5) Experience in other countries has shown that it is usually easier to train promising "natural" social promoters in specific agricultural or ecological techniques than it is to teach social promotion skills to competent technical people. However, in most (but not all) of the project sites, the promoters seem to have been selected more for their technical capability than their educational and leadership skills. This tended to replicate prior experience: the research staff of environmental organizations who started to implement ecodevelopment projects found modified farming techniques easier to learn than community organizing and social promotion.

Promotional and pedagogical approaches are simply more foreign and harder to learn. As a result, a number of key points were overlooked, including that the project must integrate with people's felt needs, and must fit into community structures, decision-making processes and cultural norms. The bias in favor of technical aspects could have been, but was not, reversed by selecting promoters according to the guidelines above.

It is worth noting that promoters cannot be expected to know everything from the start, either in the technical or the social realm. Once they are involved in the process, they can develop additional skills. If the "entry gate" for promoters is too high (in terms of what they must already know or learn very early) there will seldom be enough of them to keep the project going. COSECHA believes that they only need to be well motivated and have technical skills. The evaluators concluded that, in addition to having demonstrated their innovative and technical capacities, they must also have natural leadership and communication abilities; most technical skills could be developed or refined later.

b. Limiting & Packaging the Techniques

The World Neighbors-COSECHA model has as one of its basic tenets that activities should be limited in scope and number, especially at the beginning. This approach was followed closely by the MEP, which deliberately discouraged project extensionists from looking at a wider range of problems and needs being expressed by community people. COSECHA believes that a concentrated, well-managed effort at solving one important problem well makes a project more dynamic, more credible and trusted and generates greater involvement by the people, than any project which tries to address two or more problems, which the project will not be able to handle well due to a lack of knowledge, management skills and complex organizational challenges.

Extensionists were taught that a very limited variety and number of simple techniques would be more easily absorbed, accepted, adopted and integrated than an overly-wide range of choices or complex activities. This approach appears to be sound in principle, if not exaggerated, and neither the project representatives nor the external evaluators could take issue with it. However, the evaluators learned that *in practice* its application was not always successful, either because it was not implemented correctly, or in some cases because its implementation was taken too literally by project staff so that flexibility and responsiveness were lost.

The dogmatic implementation of this presumably sound methodology seems to have mitigated against project creativity, with extensionists and promoters usually discouraged from developing solutions to "secondary" related problems that arose from efforts to solve the initial problem and sometimes unable to articulate the "solutions" they brought in ways that local people could see would be beneficial to them, given their perceptions of their problems.

Unfortunately, the avoidance of complexity is a hopeless pursuit in community development. Further, the inability to distinguish a "scattershot approach" - trying to do all things for all people (something clearly not recommended) - from an integrated and responsive approach, may have been an important factor in the limited acceptance and slowness of results experienced by many of the projects.

Some specific examples of deficiencies observed are:

- (1) Most or all of the projects have suffered from extensionists too closely following a set, or "package" of techniques (especially *frijol abono* with maize and *labranza mínima*), regardless of how useful they were to people's particular agricultural needs. Since staff did not have regular contact with other potential sources of simple and effective technical

innovations, they sometimes lacked adequate flexibility to respond effectively to project-related secondary problems, or to people's perceived priorities.

- (2) There was some confusion about whether communities and individuals were to select practices or techniques from a group of alternatives, based on what they understood to be their needs, or whether the package of solutions was to be presented intact. Some extensionists articulated the former as the process, which must have been either a case of wishful thinking, or a misinterpretation, since COSECHA denied that this was the intent. Overall, in almost all of the communities, each project promoted the same narrow set of techniques. Some communities may have had some choice, but only from a limited set of alternatives. For example, the "A-frame" level (*Aparato A*) may not be the only way to establish a contour line, or even the best way under all circumstances. It was, for good reason, part of the package, but apparently the method of orienting projects against being responsive or experimental caused some projects to promote its use even where contour farming was either not necessary or not very important. The technique and the practice had to be abandoned by the project, but not without some loss of momentum and credibility.
- (3) More important than the tools, the essence of the "package" is the underlying premise of COSECHA's experience. The package includes not only such things as the A-frame but the *a priori* assumption that contour planting and terraces are needed by the communities, without first discovering and responding to a problem perceived as important to local farmers. In many cases, the techniques were useful right out of the package; in some they should have been more adaptable.

Overall, the approach seemed to be that these projects were brought to the targeted communities with clear and proven solutions to well-understood problems; as soon as the extensionists had convinced local people to use the package of new or improved techniques, they would see immediate and dramatic results and be convinced of the desirability of continuing to work with the project. Notwithstanding the potentially counterproductive missionary overtones, the program lacked modesty and an experimental approach. Without betraying or eliminating any of the excellent experience and technology developed elsewhere, greater efforts could have been made to orient project activities toward "developing local solutions to local problems" by experimenting - jointly with local participants - with various varieties, techniques and conditions in such a way that the participants would make the important discoveries and be convinced by their own experience, not by the wisdom or expertise of outsiders. Where this was done early, as in the case of Calakmul, it was highly effective in generating widespread interest and demand.

c. Limited Sources of Technical Inputs

Community promoters and project extensionists cannot possibly have solutions to all the technical questions that will arise in the context of an agricultural project. Indeed, COSECHA maintains that they need only know how to make a success of the specific and limited technologies they are promoting in order to demonstrate success. However, this ignores the reality that solutions cause other problems, and that by their very accessibility to the community, and by establishing themselves as experts in certain areas, extensionists will be expected to help solve other problems.

Problems or needs constantly emerge, ranging from a known or unknown pest, such as the white fly [*mosca blanca*] and the gopher [*tuza*], destroying a crop to a need to identify and gain access to the cheapest source of natural fertilizer. The MEP project extensionists, without ties to external sources of technical, economic and biological information, are on their own and forced to improvise much of the time, able only to repeat vague principles or give general answers to people's often reasonable and specific requests (see also section C.1.e.).

Apparently by COSECHA's design, in the MEP projects the extensionists are supposed to have almost no other place to go for answers. According to COSECHA, in addition to a network of technical support being expensive, these are "cutting edge technologies" (in spite of being modified traditional or very simple new techniques). Thus, they say, the chance of finding Mexican institutions that could help these project participants with technical problems that arise is "virtually non-existent."

The external evaluators and some project participants disagreed. There may be some contradictions and possible self-aggrandizement inherent in the rationale for limiting access to technical support. More importantly, to not pursue solutions to technical problems as they arise, whenever they do not distract attention or detract from project priorities, seems unnecessarily self-limiting and counterproductive and ignores the complex and interrelated nature of agricultural problems, as well as the need for extensionists to be helpful and appear responsive to farmers with occasional problems as they arise.

d. Acceptability of Techniques

Beyond the issue of whether techniques being promoted might be harmful, irrelevant (which they are not), or inappropriate (which they may be in select and rare cases), is the question of their being "inappropriate," or not acceptable to local people. When specific techniques are rejected by a significant number of people - which they have been at some MEP project sites - the projects' effectiveness may diminish and risk losing momentum and trust. A number of project staff noted the distinction and expressed concern about the presence and importance of the phenomenon.

The clearest example, although not necessarily representative, was that even after some projects had been working for two years in specific communities, many or most participants (as well as potential participants) still preferred slash-and-burn cultivation to so-called *labranza mínima* because, they believed, they can clear and prepare for planting considerably more land in a day's work (eight times as much, one community estimated) by using the traditional method of chopping with a machete. *Labranza mínima* requires that they do many things they have not done before, and do not like to do when they try. As they described it, they must lay out contour lines, build terraces, plant live or construct dead barriers to hold the soil, chop and move dead weeds, hoe the soil, make compost, mulch, carry manure, water the plants, and apply organic fertilizer. It is too much work with too few results, they believe.

The projects' technical advisors insisted that only in the first three years would extra labor be required, after which farmers would never again need to cut down heavily overgrown, three to five years' growth of trees and thicket (*acahual*). Instead, according to the blueprint, the farmers would have improved their soil enough to be able to rotate back and forth every year between leguminous ground cover (beans) and subsistence crops.

Such claims by project personnel, however accurate, still represent unsupported promises for most farmers who have never seen the new technology work over the necessary period of time. The lack of experimental and demonstration plots probably contributed to the resistance experienced. So too did the fact that when most people did not perceive any problem with the soil before the project started, the project staff either did not take note of it, or did nothing effective to generate awareness of the problem. As a result, the extensionists in some projects are seen as promoting labor intensive techniques for an apparently non-existent problem. "Why improve the soil if it is already good?" one *ejidatario* asked. Underlying this is a distinction between "felt needs" and "real needs." Part of the challenge is for the project staff to make real needs become felt needs, to help people feel or perceive needs they did not feel or perceive before.

The primary concern is not with whether *labranza mínima* is the most useful technique (although that issue needs to be dealt with), but rather that the projects have been introducing practices to fix things that are not yet widely perceived as problems by local people and have failed to either create a new perception or express the "solution" being offered as a response to already perceived needs. More difficult and more long-term but complementary would be to help the communities to identify their problems in such a way as to explore with them a number of alternatives and develop together some appropriate solutions (the primary among them could easily and "coincidentally" include those practices the project wishes to introduce). In the long run, although this last approach requires more delicacy, diplomacy and time, it develops greater self-reliance and empowers and trains people to identify and solve their own problems in the future, long after the project departs.

A lack of prior experience in these activities and with these communities on the part of most project staff has probably caused many such misunderstandings and false starts (although many on a smaller scale than the example given). Most of the field personnel, and some of their managers in the central offices, have learned from the experience and are promoting new activities in a manner much more responsive to local people's perceptions of their needs and problems.

e. Mix of Techniques

The combination of introduced techniques and the relationship between them needs to be more closely analyzed. The mere fact that a blend of certain practices produces successful results under some conditions does not mean it will produce similar results in all cases. For example, all four of the projects watched as community after community rejected *labranza mínima* because of its labor intensiveness and lack of visible short-term benefits. Ironically, in communities where its promotion was closely associated with the much more popular *frijol abono*, extensionists now have to promote the leguminous ground cover all over again because people assumed that the techniques were inseparable. In other areas such as the eastern part of Los Chimalapas and parts of Calakmul, numerous communities that have prior relationships with the implementing NGOs have been requesting extensionists to help them learn the best ways to plant and use *frijol abono*, because they have come to trust the people offering the assistance or have seen how useful the beans can be. The promoters are not ruling out erosion control, pest management and even mechanized soil preparation in association with legumes, but the "package" is being redesigned and individualized for each specific location.

f. Soil

The integration of soil management and sedentary agriculture into a wider strategy of environmental stewardship has not been made in many of the projects. The present program model promotes techniques which focus on and emphasize one resource - soil - over all others, almost as if soil conservation were the same as (or will ensure) sustainable natural resource management. The program attempted to select and introduce technologies that were relevant to the agricultural practices common to the area. For example, the projects invariably identified soil poverty as a condition which keeps yields low, with the result of contributing to the use of a slash-and-burn system of rotation between cultivated and fallow fields to maximize soil fertility. There was nothing wrong initially with soil as a focus, as long as it was a means to another end.

The problem was not that the technologies were inappropriate, but that they may have been insufficient. The extreme emphasis on soil quality and improvement allowed the project staff to ignore parallel or interrelated aspects such as weed control, adequate water supply or seed quality, all of which may be equally necessary to bring about stationary agriculture, which in turn should lead to less tree-cutting and a slower-moving agricultural frontier. Although extensionists, promoters and participants had been made aware of those relationships, the

nintense focus of the methodology deflected attention from the real goal. Soil fertility became a primary objective rather than the mechanism by which to promote sustainable resource management.

g. Pest Management

The projects have identified as growing problems the widespread overuse of chemicals (as demonstrated in the case of growing insecticide resistance of the "*mosquita blanca*" or "*mosca blanca*") and the prohibitively high cost of those chemicals. The program has introduced an important principle to a variety of communities, that of non-chemical, or organic, agricultural production. But while green manure and hand tillage are potentially effective ways to address soil problems, they are not enough to combat pest infestation, a problem increasingly encountered where non-chemical cultivation practices are on the rise, as the ecodevelopment program is trying to make happen. Probably the program's most important pest-related contribution in projects is the initiation of discussions about the need to reduce currently high dependency on agrochemicals, a destructive practice inherited from the green revolution.

Beyond stimulating increased awareness, some of the projects - at a very modest level - are beginning to combine certain non-chemical cultivation practices and natural pest management techniques from the past with modern organic and integrated pest management (IPM) techniques. The complex nature of IPM requires a high level of sophistication on the part of practitioners, the simultaneous deployment of a substantial variety of techniques and consistent application over a relatively long period of time.

Although some of the extensionists understand the concept and are familiar with many of the practices, the projects generally lack the technical capacity to successfully promote IPM. Consistent with the COSECHA approach to keep to a narrow range of simple techniques, they have not attempted to make IPM a major focus. On the other hand, perhaps contradicting that approach and more in line with what the evaluation has advocated, some projects have been offering communities some limited "biological pest management" practices, which provide important alternatives to chemical dependency, effective in these areas since more pesticides than fertilizers are used. Interestingly, however, for some reason the projects do not seem to promote crop and variety diversity as biological pest control, although these are the simplest and most traditional of all techniques used or promoted, require few if any inputs, little technical know-how and few changes on the part of the peasant farmers.

Thus, some of the projects seem to be trying to practice IPM without it being a primary focus of the work. Lacking adequate know-how or understanding of the introduced techniques because of a lack of training (due to the simple-and-narrow approach), some projects may be creating unexpected vulnerability to pests for peasant producers. This may be a case of trying to work with too much technology, or of being inadequately prepared to integrate simple ecological principles with traditional practices, or of an inability to address common needs that can be expected to arise in the project sites.

h. Visible Results

Most of the techniques being introduced in the southern Mexico projects generally require several years to demonstrate significant improvements in soil quality, production increase per unit of land or labor savings. The initial enthusiasm may be soon dampened, forward momentum lost and possibilities of expansion to include other people may be significantly reduced. The people who agree to try out the techniques often do so based on initial promotion by the project extensionists. They wisely experiment the first year on very small parcels (1/16 ha or less) in order not to risk their entire production. The COSECHA approach requires that there be visible and rapid success; in many cases, if farmers do not have concrete and measurable results after the first year or after two harvest cycles, they may

be unlikely to repeat or expand the techniques or promote them to others. This has occurred in the projects in southern Mexico, to an unknown extent but certainly more than was projected.

i. Replication

Local models of successful application of introduced techniques are scarce, especially in the early stages of any project that depends mostly on technical solutions. This makes adoption slower, replication much more difficult and expansion to new communities an arbitrary rather than organic process. The evaluation team found few examples of voluntary replication, although requests for assistance from other communities are increasing in some projects. Ordinarily, when new members of a community want to participate, it is either because they have seen successful activities in their participating neighbors plots, or because participants have taken it on themselves to promote and help their neighbors. The increased demand is far less often due to second-round promotion by project staff. In the projects the evaluators visited, there was generally a fairly low level of voluntary promotion.

As a result, a multiplier effect was not found to be prevalent. Without voluntary replication by neighbors or voluntary promotion by participants, project personnel have to do all the promotion. This might indicate that the techniques and/or the promotion style have not been very deeply accepted, which would not be surprising, given the early stage of change in most of the project communities. To address this, each implementing organization should be looking at the few examples where voluntary replication, modification, experimentation and innovation are taking place; identifying the reasons; and seeking to replicate as much as possible the conditions that are present. In other words, to be more effective in the future, autonomous multiplication should be an increasingly important measure of project effectiveness and should be used as a guide in modification of methodology and technology.

This aspect of the program as a criterion for measuring/evaluating projects' success becomes increasingly important as the funding becomes more limited or as the project nears the end of a funding cycle. Eventually the techniques themselves must take root on their own, independent of outside funding, in order for the projects to have made a genuine, lasting impact on the communities.

j. Innovation

The projects do not seem to promote creativity, innovation or improvisation by community participants. Mostly, the operating mode has been that the extensionists are supposed to supply the techniques that the communities need. With a few exceptions, neither was there found to be much effort to promote slight modifications to existing agricultural practices, nor are there vigorous searches for traditional techniques that should be revived (with the exception of support to a few women seeking to revive knowledge of medicinal herbs).

This neglect weakens the project. When it happened that a community or group of participants rejected parts of the "official" package, the rejected elements could have been replaced by locally-appropriate, "home-grown" alternatives. An opportunity is lost, and the extensionists have to work doubly hard to compensate. Second, more effort may be required to introduce something new than to modify something old (although "new" techniques sometimes enjoy a legitimizing mystique that old ones do not). Third, community members will become more inventive on their own, after the project has concluded, if they are encouraged and rewarded while the project is successfully promoting and demonstrating improved methods. The lack of an experimental mentality probably contributed to the lack of innovativeness observed in these projects.

Genuine "ownership" of and control over their own lives has eluded poor Mexican (and other Latin American) peasants for hundreds of years. In the evaluators' opinion, community

development is more successful when it addresses the symptoms and underlying causes of disempowerment. Lack of innovativeness, albeit a symptom, also helps perpetuate poverty and powerlessness. Wherever a project can break into the self-perpetuating cycle - if it does so knowingly - it can have positive, long-term effect. When it misses such an opportunity, it fails the people it is intended to strengthen.

k. Integration of the Family Unit

The great majority of emphasis in the program is on adult male heads of households, who are the primary producers of commercially marketable (cash) crops. Limiting its focus to this sector omits other economically and socially important people. Contrary to what many people seem to think, the family - not the individual or the community or cooperatives - is the most important production unit in these areas. The projects have not yet developed promotion or technical strategies that integrate the family unit in the project implementation, much less in its planning. Instead, the projects tend to maintain a division between men's and women's activities (working primarily with the men who produce food for market; engaging some of the women, who are in charge of family nutrition, in less important, unrelated activities when possible), with the communities' youth and elderly also remaining to be integrated.

l. Dooryard Gardens

The evaluation team found that, with the exception of 45 indigenous settlements in the Chimalapas, the communities in the project sites had their roots in other parts of the country. Many are comprised of people from a variety of areas who have recently settled together in one place by chance. Many of these have left behind a wide range of integrated subsistence agricultural practices, including *solares* (or *huertos familiares*), to become small-scale subsistence/marketing producers who now purchase some of their food and most other basic necessities with cash.

The establishment of *solares* is one of the practices which has been abandoned by most households in many of the communities served by the MEP. *Solares* are home gardens (also known as kitchen gardens or dooryard gardens) that are used for cultivating a variety of plants, sometimes integrated with small livestock, in the area next to or surrounding a dwelling. Cultivated species may include: vegetable crops for household consumption and/or market; medicinal plants; trees for fruit, firewood or construction material; forage plants for livestock; and ornamental plants.¹⁰

To date, the projects have been following a conventional methodology of promoting vegetable gardening and productive activities for women. COSECHA doesn't feel it is time yet to address this aspect of the family economy, perhaps seeing it as a separate and unrelated or competitive activity. However, *huertos familiares* often represent an intersection of the spectrum of household production and labor, serving as sites for experimentation, transplanting, seedling cultivation and raising small livestock, all integrated with regular activities that center on the home. As such, *huertos familiares* offer ideal areas in which to integrate the activities of all household members and other project activities. Only in Calakmul was this process of integration elaborated by the project coordinator, and it has only begun to be considered for the overall project.

¹⁰ For more information see: Alcorn, J.B. 1990. "Indigenous Agroforestry Systems in the Latin American Tropics." In: *Agroecology and Small Farm Development*. M.A. Altieri and S. B. Hecht, eds., pp. 203-213. Boca Raton, FL: CRC Press; and *Biótica Nueva Epoca*. 1993. Vol. 1. [entire volume dedicated to home gardens]; and Brownrigg, L.A. 1985. *Home Gardens in International Development: What the Literature Shows*. Washington, DC: League for International Food Education, U.S. Agency for International Development; and National Research Council. 1993. *Sustainable Agriculture and The Environment in the Humid Tropics*. Washington, DC: National Academy Press.

m. Markets

Market conditions (access, prices, independence from middlemen) are often as important as production conditions to peasant farmers. Some of the projects have tried to motivate people to modify their farming practices by harvesting different crops (such as fruit, vegetables or NTFPs) or by cultivating traditional crops in new ways (such as organic coffee, chemical-free permanent corn fields or organic honey). These projects believe that eventual success depends on as much attention being given to ensuring dependable markets as on ensuring dependable harvests.

This is not as easy as traditional economic development models may suggest. Most traditional marketing ventures are highly unsustainable by local communities; they are expensive, require intensive use of resources, such as trucks and up-to-date marketing intelligence, are inaccessible to most villages, and are susceptible to being taken over by the few villagers who first learn to manage them or have the disposable resources to invest in them, to these villagers' personal benefit.

The MEP projects certainly would benefit from more attention to the marketing side of the equation. However, they might be wise to develop *alternative* marketing strategies that depend on farmers learning to be highly innovative; where peasant producers can develop processes to produce more product at less cost (earning more money with crops already familiar) or master new crops or livestock which command better prices, they might make use of advantageous niches and develop a more profitable agriculture before making major modifications in their practices that make them more dependent on traditional external marketing patterns. This strategy, when effective, may be more cost-efficient and accessible than trying to use external (and undependable) resources such as credit, technical assistance or benign intermediary groups, or developing "parallel" structures such as producer-owned marketing cooperatives in competition with existing middle-men, or *coyotes*.

In the MEP ecodevelopment projects, with the exception of "natural" coffee marketing in El Triunfo, little attention thus far has been given to these issues, nor to value-added activities such as home processing, much less to collective efforts such as transport cooperatives or group purchasing. Instead, emphasis is placed almost exclusively on the production side, on ever-elusive self-sufficiency and on conservation of natural resources. Some broadening of the production-oriented approach should be considered.

2. Recommendations

a. Differentiation Between Extensionists and Promoters

During the early phases of projects such as these, promoters are not the same as extensionists. The latter are full-time employees of the project, responsible for carrying out the project activities on behalf of the implementing organization. They provide training, on-farm or in-village visits, inspiration and moral support, carry out experimentation, facilitate community participation and serve as the liaison between the project and the community. It is not intended that these be highly trained technical specialists or "experts" in the usual sense of the term. Instead, they usually are, and in most of the projects have been, young people in the early part of their careers with low- to mid-level technical degrees or some technical training. They identify primarily with village-level people, and their orientation and bias integrate the social with the technical, so that they do not see or establish themselves as professionals or specialists.

Promoters should be stakeholders in the projects, community residents who have emerged as leaders with a commitment to help their neighbors. Their primary identity should remain as peasants or indigenous people dependent on the local economy and part of the local

community structures. Gradually, promoters should take over the functions of the extensionists so that the overall process is managed by the villagers.

Functional lines between these two groups have gotten blurred and should be clarified. If the blurring were the result of the projects' advance to the phase that promoters were taking over responsibility for the projects, this would be considered a success. It is too early in the life of most of these projects to expect this to happen. However, the evaluation found that the blurring was in the opposite direction; many promoters were too quickly hired by the projects as full-time employees, without having developed the respect and credibility they need (and that the COSECHA methodology requires) as a result of their own demonstrable successes with the technologies promoted by the projects. Legitimacy of promoters should be a result of their roots in and dependency on community economic and social activities, not their identification with the project. The projects should attempt to clarify these distinctions in practice.

b. Criteria for Promoters

Each project should seek, recruit and train promoters from within the communities where they will work who already have some experience and commitment to community organization and have shown signs of natural leadership. Their primary incentives should be training and personal satisfaction, not salaries. They should remain primarily dependent on farm income similar to their neighbors, and they should demonstrate through their behavior an ongoing personal commitment to the community's well being. Whenever possible, they should cover a range of ages and both genders.

c. Training of Promoters

Because of the importance of promoters in introducing and multiplying what the project has to offer, their training should be a higher priority. It should be at least as concentrated on promotional and social skills as on technical information. It is a long-term investment with generally high results. The MEP projects could benefit substantially by much greater attention and effort in this area.

Some local people who show interest and promise should also be selected for specific training in environmental issues and techniques, strategy, promotion, education and community organizing. Most of the sites of these projects are fairly isolated, and few trained people from urban areas will remain many years there. While the projects have had some success in identifying skilled and experienced Guatemalans who had prior training in Honduras and elsewhere, Mexico needs to enhance its national human resources and develop its own cadre. On an institutional level, WWF should discuss with other organizations and universities the feasibility of collectively identifying and recruiting candidates from project sites and of developing specialized training for promising community organizer-developers. The MEP should work with its NGO partners to do something similar on a smaller scale, starting with initial training at the project level.

d. Network of Promoters

In the second half of the projects five-year time-frame, a network should be facilitated of promoters from all the communities in all the projects. Other than planning and coordinating, this should have minimum direction or interference from extensionists, researchers, administrators and project managers. Regular meetings, perhaps twice per year, as well as training events, should be organized by the Oaxaca staff.

The purposes of such networking include increasing the promoters' sense of value, improving their skills in areas in which the extensionists are not yet adept, permitting mutual learning

and "cross-fertilization" and providing non-financial incentives to encourage promoters to continue their work. The network would:

- (1) help promoters see that they are part of a larger system and effort and that they have outside resources at their disposal to assist them in the event they cannot get what they need from their project extensionist;
- (2) value the promoters' work similarly to that of the extensionists, by providing appropriate training to each (more social *formación* and *promoción* training to the promoters and more technical training to the extensionists) and the same training to both in some cases;
- (3) increase community understanding and acceptance of the project by helping promoters to translate the ecodevelopment philosophy, ecological concerns and rationale in terms and language appropriate to the community;
- (4) provide greater accuracy to diagnostic findings at start-up and expansion into new communities by ensuring trustworthy interpretation of findings, by utilizing promoters from nearby communities to identify, select and make initial contacts in and be the bridge between the project and new communities; and
- (5) assist in the monitoring process by ensuring application of grass-roots perspectives and participation of representatives of the "target" population.

e. Demonstration Plots in Each Community

The extension methodology as it is currently applied in these projects seems to assume that local peasant men and women will be convinced to adopt new techniques to a great extent because they like or trust the people importing the ideas, not because they have tried the techniques or observed their neighbors' experiments and found them interesting enough to take some risks of their own. This is not the intent of the program as it was designed, and appears to be a distortion of the COSECHA methodology. The positive results of this tendency to convince rather than demonstrate will likely continue to be quite limited.

Currently, every one of the projects suffers from a lack of useful models or examples of successes of introduced techniques within the context of local conditions. This suggests the need for experimental and demonstration plots located in each participating community, managed by the participants themselves, with only some guidance from the extensionists.

The basis for demonstration plots already exists in the MEP. Each project at one time experimented (in relatively unsystematic ways) with techniques and bean seed varieties in almost every community the first year. At the time of the evaluation, the promoter from the Río Negro community of the Toluca *ejido* in El Triunfo was experimenting on his own with various crop species and techniques. El Ocote had a (now-defunct) school plot in the village center. Calakmul had experimental plots in each of its first three communities which served to promote as well as learn how different varieties and practices would fare under local conditions. For some reason, the MEP never encouraged the systematic use of demonstration plots. Apparently, the projects developed a tendency to depend on the extensionists' expertise rather than maintaining the commitment to facilitate a process of learning by doing, or "participatory technology development."

More emphasis by the WWF technical staff is needed in order to encourage, instruct and guide the formation and use of such plots on the part of the project extensionists, promoters and community participants. These plots can:

- allow broader participation with minimum risk;
- test the "appropriateness" of one or more techniques under local conditions;

- show visible or demonstrable results;
- assess the "appropriability" of the technique(s) for the community;
- support the emergence of natural promoters;
- experiment with community-derived new and traditional techniques;
- encourage creativity and innovation with little risk; and
- serve as a teaching site for children, women and men who are not yet active participants in the project.

It should not be difficult for each project to develop a stronger emphasis on local level experimentation; the 16-section plot in El Ocote provides an excellent prototype of comparison plots useful for experimental, promotion, teaching and demonstration purposes. The Calakmul project has plans to develop experimental comparisons between mechanized and zero-tillage agriculture for corn and chili peppers, in order to provide visible evidence to support their contention that mechanized tillage is economically and ecologically inferior.

Perhaps one of the reasons such plots were not developed more consistently was that WWF did not perceive its projects as particularly experimental. Community participants, to their credit, in many cases arrived on their own at the point of developing such plots. Extensionists did not always put much stock in them. Experimental and demonstration plots require patience on the part of both donor and implementing organizations, because the results (especially the multiplier effect) will not be seen until the second or third year at the earliest. More support from implementing agencies is needed, as well as greater encouragement from WWF combined with technically appropriate assistance.

Experience with participatory research has shown that experimentation of the sort recommended here has the best chance of being accepted if it starts small enough to engender little or no risk to either community participants or the implementing NGO - or, if there is risk, it is shared by *both* the participants and the team members. The experiment should require only a small investment of time from the community, and some or all of the cost should be borne by the NGO, so that even if it "fails" technically it represents a gain in knowledge and experience for the community and the NGO.

The experimentation should be designed to test and demonstrate the value of one or more techniques or crop species, and should use comparisons as a learning and teaching tool. Plots can be used to test and demonstrate the viability of different traditional and introduced crops and techniques, native and exotic species, and even techniques or crops that the NGOs might consider inappropriate but which have the interest or curiosity of the community. It should be a live and lively activity, stimulating interest, innovation, thought and creativity, not merely a tactic to promote something the project independently decided should be adopted.

The location and size of the plot(s) should be decided between the project team and project participants, preferably close to settlements or a main path or road to encourage casual visits by non-participants. It may be useful to have more than one plot for comparisons between traditional and introduced techniques, or even to encourage friendly competition between groups of participants. Local community members should take part in (or be fully responsible for) data collection, and analyses should be structured so as to be uncomplicated enough to be understood and managed by people with no scientific experience and with minimal literacy.

Experimental and demonstration plots can have many overlapping uses. They can integrate school involvement, local "internships," visitor information and farmer extension. They should include experimentation with crops and techniques of interest to promoters, project participants and non-participating community members.

f. Dooryard Gardens as Integrating Mechanism

"Traditional" techniques brought to these areas by immigrants might be foreign to the region and the particular ecosystem where the people now find themselves. But they are based on years or generations of experience, may be culturally rooted and warrant testing under no-risk conditions. Neutral and innovative experimentation may also reveal little-used techniques which can be made appropriate to the "new" locale, with which the scientists and project teams were until now unfamiliar. Three of the four projects in the Ecodevelopment Program have made efforts to promote *huertos familiares*, either as individual or communal garden plots. In most sites the level of enthusiasm for the garden projects was low (few participants, little initiative from the community), although the two communities participating in the environmental education program in Calakmul and possibly one in Chimalapas are exceptions.

More emphasis should be put on the home gardens (as is being done in the Calakmul project) because they are areas in which the projects can integrate most or all aspects of their program (experimentation, agroforestry, market production, etc.) at a low risk, and also work with all members of the household. Projects should use dooryard gardens as a forum in which integrating agroecological and environmental educational needs is easy and natural.

G. Training

1. Findings & Observations

a. Incongruence Between MEP and Implementers' Priorities

From the beginning a high degree of emphasis was given by the MEP to technical training of cooperating partner organizations which were to implement the ecodevelopment projects. This approach was a result of an awareness of the organizations' lack of experience, the newness of the model, weaknesses at the field level and a decision by WWF and BSP to be active participants in the learning and implementing aspects of the entire program.

For the start-up phase of the projects, WWF offered assistance in two primary areas: Participatory Rural Appraisals to open work in individual communities, and project design and planning to help the implementing organizations develop proposals and work plans that WWF could approve. Most of the former was subcontracted to WRI, and most of the latter was done by WWF staff.

After project activities were approved and begun at the field level, WWF closely monitored the implementers' progress -- intervening frequently, helping to steer the organizations away from major errors -- to give them guidance relative to WWF's priorities and to identify further needs. It was a very "hands-on" process that some of the implementers may have found strange and a few found uncomfortable, but which can be credited for the eventual formation of a strong and positive mutual relationship and a functioning inter-project network with WWF as a partner.

Technical assistance began early, primarily in promotion of a range of sustainable agriculture techniques using the World Neighbors *Two Ears of Corn*¹¹ methodology. Experienced practitioners of the methodology were brought to projects for on-site assistance, and project field and management staff were sent to Honduras for training.

¹¹ Bunch, Roland. 1985. *Two Ears of Corn*. Oklahoma City: World Neighbors.

The challenges of replacing inappropriate personnel, training field staff in the techniques of promotion and sustainable agriculture and trouble-shooting the field projects took up most of WWF's attention. The other key areas, institutional strengthening and organizational development, appear to have received less attention during this period. Modifying counterproductive norms (such as elitism, urban bias and egotism), addressing institutional policies and procedures and improving their administrative and project management emerged as serious needs as time went on. For much of the time, WWF primarily responded to the projects' own identification of training needs, so that only those areas with which project staff were familiar were taken into account. It seems appropriate that WWF would also develop a list of needs of which projects might be less aware. Experience and hindsight indicate that WWF and the projects did eventually identify most of the key areas of need requiring outside help, but this process took too long and then WWF was slow to adjust its own training priorities on the basis of needs emerging in the field.

Part of the problem may have been that there was no relationship between the very deliberate and professional program design process being undertaken at the time by the Organizational Development Program (ODP) at WWF headquarters and pressing needs for training at the project level. Staff turnover within the WWF/WHN and Mexico programs may have prevented them from responding more rapidly to these needs. Alternatively, these programs may not have recognized the need or the importance of specific responses early enough. The resulting project deficiencies are fairly obvious and widespread.

More specifically, in the first year, WWF held two workshops for implementing organizations in Participatory Rural Appraisal techniques, provided by the Center for International Development and the Environment (CIDE) of World Resources Institute (WRI). CIDE would train the Mexican organization *Grupo de Estudios Ambientales* (GEA) so that further training of project teams could be done locally by Mexicans. CIDE also translated into Spanish a handbook and trainers' manual.

Additionally, in its original proposal to BSP, WWF outlined seven other areas of training as priorities for the ecodevelopment projects to be carried out during the first two years of the program:

- (1) a conservation education project was to be designed to complement community extension projects;
- (2) project personnel were to be oriented in the set-up and management of internal monitoring and evaluation systems;
- (3) ongoing training for field extensionists in extension methodology, agricultural techniques and community organizing was to be provided;
- (4) selected extensionists were to receive a combined World Neighbors (Honduras) - World Wildlife Fund training in the promotion methodology outlined in *Two Ears of Corn*;
- (5) potential collaborating organizations were identified who could provide training to other implementing organizations in promotional methodology. These were groups such as the Programa de Formación en la Acción y la Investigación Social (PRAXIS) and the Fundación Mexicana de Desarrollo Rural;
- (6) administration and project management assistance were to be provided, including bookkeeping, financial administration, strategic planning and personnel management, among others;

- (7) community-level training was to be developed, based on needs identified by the project extensionists, involving basic adult literacy, parliamentary procedures and improved rural stoves.¹²

In contrast, Maderas del Pueblo's five year proposal for its ecodevelopment project, for example, outlined consulting and technical assistance as priority services needed by the communities where Maderas was working (this is similar to needs identified or discovered - sometimes in less well-defined terms - by all the projects). Maderas also hoped to support or provide training to communities in marketing, traditional forest production, advocacy with and solicitation of support from government institutions and assistance with red tape (*trámites*), strengthening the internal organizational capacity of community groups and defending human rights of people in conflict with officials due to their organizing or pursuit of land rights.

Since WWF recognized the limited institutional capacity of the implementing organizations, it should have been more clear that these organizations could not offer needed services to the communities without having similar services provided them by WWF. Only **organizational strengthening** is common to both WWF and project implementers' lists. And, according to its second year final report, WWF did not believe its support in this area was adequate.

b. Factors Inhibiting Success of Training

The low level of organizational development, a pattern of administrative weaknesses, lack of project management experience and staff turnover were reported by WWF throughout the period as the primary internal factors that have hampered the projects. This is in no small measure due to the implementers' lack of previous community development experience and an unexpectedly high staff attrition rate, although other factors also contributed. When the projects eventually succeeded in identifying their training needs, these did not necessarily coincide with WWF's list of offerings. Staff turnover also inhibited success when training invested in people was lost when they left the projects.

c. Priority Areas

The projects' training needs, aside from technical aspects, fall into two categories of equally high priority:

- skill-specific, on-the-job training of project staff;
- organizational development assistance (which, as of the time of the evaluation, had been mostly limited to Oaxaca-based WWF program administrator Felix Morales' work with implementing organizations on their administrative systems).

During the first three years of the program's life, neither area was addressed with consistency, although each received sporadic attention. However, with regard to organizational development, the WWF ODP in 1993 visited each project and has now completed structural and administrative reviews of each of the implementing organizations, in an effort to identify their administrative and institutional needs. Due to budget considerations, most follow-up assistance is being planned for an inter-institutional group format, rather than on-site, individualized training and facilitation with each organization, tailored to its precise situation and needs, which might be of greater benefit. However, ODP now intends to adjust its training program to fit the needs of the projects; as it takes a more active role in supporting these institutions, significant improvements should accrue to the ecodevelopment projects themselves.

¹² Ack. Bradley. 1991. "Environmentally-Sound Community Development Around Key Protected Areas of Southeastern Mexico." A Proposal to the Biodiversity Support Program. Washington, DC: WWF.

The projects, for the most part, were pleased with the training they had received. It should be noted that few or no other projects administered by these agencies receive the external attention that the ecodevelopment projects receive from WWF, and few other international agencies (with some exceptions, such as GTZ or TNC's partnership NGO and scholarship programs) provide even a fraction of the institutional support. Thus, some of the satisfaction was due to a comparison with other agency support. However, the inconsistencies and large gaps should be filled over the next year or two to supplement the advances that have already been made.

d. Planning for Training

Each year at the inter-project annual meeting, each organization describes its training priorities for the coming year, and all discuss what common needs exist. The Oaxaca staff are responsible for keeping informed about training resources and opportunities. There is a fixed training budget for each project that they can use, within certain guidelines, according to their own priorities. Some additional funds from WWF-Washington may be made available in special cases, particularly when WWF wants to promote a particular kind of training. Additionally, general (inter-project) training events, which occur an average of once per year, are funded directly by WWF. Projects can request subsidies but have been expected to pay most costs of special training from their general or project funds. WWF also has a contract with COSECHA in Honduras to provide consultations several times a year to each project.

An estimate of the total number of person-days of training received in the year preceding the evaluation is as follows:

Community	Off-site person-days	On-site person-days
Calakmul	56	39
Chimalapas	61	22
El Ocote (Ecósfera)	40	17
El Ocote (Pronatura)	56	17
El Triunfo	50	?
Averages:	52.6	23.75

These are rough estimates, since data of this type are not compiled by either the WWF office in Washington or Oaxaca. Because reports of individual trainings do exist, a time-consuming search of the files in Washington, Oaxaca and each project headquarters could probably identify more specifically who and how many people were trained in what; some reasonably accurate quantitative information could be developed, if desired.

2. Recommendations

a. Evaluation of Training Results

WWF would benefit greatly from better information collection and analysis, at a minimum to evaluate the results of its technical assistance to implementing groups. It could also do more to assess qualitatively the effects of its interventions, as in the cases of off-site training, consultancies, project-selected training and on-site technical assistance.

Currently, very little data related to training needs of projects, or training assistance that they obtain from sources outside WWF, are compiled by the WWF Washington or Oaxaca offices. Accurate quantitative information can be (but is not) developed from existing training files, while qualitative information will be even more difficult.

Monitoring and evaluating the effects of training is a general problem for development agencies and others seeking to bring about changes through improving human resource capabilities. Whether a particular training event, training method or subject area had qualitative significance is very hard to determine. How many farmers have modified their slash-and-burn practices on fields not included in the project-related experiments? Are women really changing their families' diets to include cooked *terciopelo*? Is less firewood being collected by families using the new stove? Do people in the community aspire as much as before to be cattle ranchers? Do the extensionists and promoters and other project staff meet more frequently, plan strategically or communicate more effectively?

These and many similar questions, if answered, will give some indication of the usefulness of the training that WWF has provided, acquired or funded and of the needs that remain. Much more planning, clearer objectives and indicators, and developing the capability and commitment to collect and analyze data will all be required for the projects and WWF to know if the training has been utilized effectively or represents the best possible choices.

b. Need-Identification and Planning

The projects require help to identify their needs with respect to the MEP (it is hard for most people to identify precisely what training they need) followed by a plan to assist each organization to meet the priority needs of its project and administrative staff.

c. Training for Trainers

On the basis of two to three years' experience, the project implementers have developed mostly positive relationships with the communities and local organizations where they work, which include providing technical assistance in organizational matters. Projects are frequently asked to provide help to communities in precisely those areas where they recognize themselves to be weakest - such as strategic planning, collective decision-making, self-monitoring and efficient and responsive administration. Assistance from WWF and other outside sources needs to be designed to benefit both the implementing organizations and the communities where they work by enabling them to learn, internalize, master and pass along the needed skills and tools. "Training for trainers" should be an integral element of all training provided the projects, so that some of the staff receiving institutional strengthening assistance can then extend it to the community groups that need it.

d. Follow-up

Training provided or paid for by WWF for community participants, promoters and project staff generally appears to have been relevant, important and put to good use. Follow-up does not seem to have been given the same attention and should be provided more systematically and frequently by WWF-Oaxaca and ODP to help ensure that the long term benefits of training are realized fully.

H. Environmental Education

1. Findings & Observations

There is little doubt that environmental or conservation education was originally conceived as an essential element in the MEP. "Changes in attitude, awareness and knowledge are precursors to achievement of permanence in environmentally-sound development," according to the final WWF proposal to BSP. Practical educational experience, it was stated, should include analyzing immediate environmental problems and both propose and test solutions to those problems. This should have the effect of increasing environmental concern and people's ability to do something about those concerns. WWF believed that it was important for the Ecodevelopment Program to include a strong and integrated component of education to ensure environmental, technical and institutional sustainability.

Notwithstanding a clear commitment from WWF at the beginning, environmental education has never been well integrated into the MEP. Its definition is neither consistent nor clear, and its role in ecodevelopment is uncertain. Some of the projects have activities they call "environmental education" which are not, while others have unnamed activities which are. All projects acknowledge that environmental education would be a useful activity but are frequently vague about how to implement it or even what it is.

In the absence of a single, clear working definition for the MEP that would have helped the evaluation team determine to what degree the program was effectively engaging in environmental education, the team developed its own definition based on the experiences and perceptions of all four project participants and both external evaluators:

"A process of participatory learning and teaching which is integrated with daily life, responds to felt needs, implies changes of attitudes, behaviors and abilities, serves as a tool to improve people's lives and leads to a more harmonious relationship between humans and their surrounding natural environment."

By this definition, environmental education is not currently being carried out effectively within any ecodevelopment project.

a. Environmental Education not Understood

An important obstacle to effective implementation of an environmental education strategy was the existence of a number of unspoken and sometimes unconscious assumptions (not all held by everyone but surprisingly common overall) evident in staff actions and attitudes toward the environmental education components of the projects. Examples of these assumptions included:

- environmental education is women's work;
- the principal value of environmental education is to "market" techniques of sustainable agriculture;
- environmental education is little more than a series of techniques or activities to be implemented similarly to agricultural techniques;
- environmental education is the transfer of information from the "experts" to the "uninformed;"
- environmental education is limited to "changing attitudes," from which it automatically follows that behavior will change.

b. Failure of MEP to Develop Methodology

According to the initial proposal submitted by Pronatura-Chiapas and accepted by WWF, "This project proposes a methodological model for the development and implementation of an environmental education program, based on environmental realities and problems, on social and cultural characteristics, and on the need to incorporate viable development models among the human communities of the El Ocote Ecological Reserve."

The project was to begin with an in-depth research and analysis of the targeted populations, including their socio-cultural context, education levels, understanding and beliefs regarding the natural environment, forms of organization and communication, and the environmental problems perceived as priorities.

Once this information was complete, conservation education materials would be designed and tested with selected communities. A communication and education strategy would be defined, an implementation program designed and materials would be produced. Part of the program would include a strategy for training the extensionists of the Ecósfera team and other community leaders to carry out the educational activities.

The initial proposal described in some detail the conditions of the targeted area, limiting its discussion to the El Ocote area of the state of Chiapas. There is little doubt, reading the proposal, that Pronatura-Chiapas' intent was to design and implement an environmental education methodology for El Ocote. There is nothing to suggest an intention to develop a process, methodology or materials for the entire WWF ecodevelopment program, or even for the four MEP subprojects. However, according to a WWF document, "This project was approved in May 1991 to support the development of a community-based conservation education program for the Ecodevelopment Program. We agreed to support a proposed pilot effort around the El Ocote Ecological Reserve... with the idea that it would be useful also for testing new approaches to conservation education which would be relevant for the other projects in the program."

In short, it appears that WWF intended for Pronatura's EE project to serve as a pilot project for the entire MEP. This broader objective, however laudable, never materialized. There is also no evidence of any planning for that broadening had the initial project been reasonably effective.

c. Not Integrated with Technical Extension

In practice, the MEP has developed neither an adequate conceptual framework nor a series of activities to integrate education with economic production practices. The extensionists appear to have much less understanding of peasant incentives, motivation and values than of their agricultural practices and use of natural resources. Project staff seem to understand fairly well the need for improved production techniques and have developed the skills to promote such techniques. They have not developed a parallel methodology to understand how peasants think and how they view their environment; consequently most promoters and extensionists have not developed the capacity to communicate in *campesino* concepts and idiom about the natural resource base and its relationship to people's livelihood. In addition, most of the training received by the extension and promotion staff has been in technical areas; very little pedagogical orientation or instruction has been provided.

Due to the projects' focus on production activities, project staff seemed largely unaware that both community development and environmental education are more processes than they are activities. Neither did they seem to recognize that an integrated process of information exchange, understanding and behavioral change will fundamentally alter the lives and livelihoods of people, whereas the adoption of a few techniques will have little lasting effect as socioeconomic conditions change over time. Extensionists may be more comfortable with

explicit technical experiments in the field than with implicit social and behavioral experiments in the intangible fields of values and perceptions.

Based on what is known about effective "popular education" among rural peasants, it is reasonable to suspect that ecodevelopment will be deficient if it is perceived or practiced as either technical assistance (alone) or as education regarding natural resource use (alone). Neither is sufficient by itself. Environmental education is an integration of practice, theory and experience where technical assistance and the provision of environmental information are integrated into the same process rather than practiced as two parallel tracks with different audiences. None of the MEP projects seem to understand this, judging from their proposals and their practice.

d. Confusion with Women's Projects

The single most obvious failing of the MEP environmental education activities program is that they have been confused with community development activities among women. In the few communities where there are even nominal "environmental education" activities, they are carried out by the only women staff associated with each project, who specialize in working with women in a very few communities, while other male project extensionists work with community men on economically important crops and techniques. The female extensionists work on activities of interest to village women. However, the women's projects mostly appear to be afterthoughts, secondary, parallel, and not integrated. They do not appear to assist in strengthening the long-term natural resource management base or even the men's projects attempting that; instead they are at best like "women's auxiliaries."

Ironically, by themselves the activities in some cases are extremely effective, quite valuable among the women participants, and possibly more effective at developing economically and socially viable alternatives in response to people's perceived needs than a number of the male-oriented projects. However, a sardonic characterization of the projects' woefully non-strategic approach to women's activities, coined by one observer, questions the relationship between women's activities and the rest of the program: "So, if you teach the women to sew, then the men won't cut down trees?" There is an apparent tendency of tokenism, either to mollify women-in-development critics, or to legitimize a male-dominated project concept, or to permit women extensionists to work with women without having impact on the men.

In the evaluators' opinion there is unquestionable value in working with women along with men who are producing for cash income. Unfortunately, the ecodevelopment projects' work with women does not appear to be grounded in the view that the primary production unit is the family more than it is the community, the committee, or the individual. To develop effective environmental awareness, to change behaviors that are rooted in the culture and to affect values and attitudes, behavior and activities must be introduced or altered at the level of the family as an integrated whole, not addressed to one element, the men. Work with women need not be an auxiliary to work with men but should be part of an integrated process of changing attitudes toward resources and their use.

2. Recommendations

a. Make Environmental Education a Process

Environmental education, as part of an ecodevelopment project, *should* be:

- (1) a process of identifying, valuing and affirming sustainable and ecologically-sound uses of natural resources, (including those already practiced, those adopted and those adapted);
- (2) a process of identifying what motivates each element of the family unit: men (e.g., income from commercial production), women (e.g., nutrition, health and security),

youth (e.g., opportunities) and elders (e.g., perpetuation of values and preservation of their functions within the family and community);

- (3) a process which integrates rather than imposes useful technical information in response to people's felt needs, and helps people identify those needs and value their own resources and capabilities.

b. Integrate Environmental Education with Ecodevelopment

Environmental education should not be set aside as a separate project nor confused with gardens or women's activities. Much of the real long-term value of the eco-development projects will be the change in attitudes and perspectives resulting from the entire process. Badly needed is an integration of environmental education and eco-development that encompasses practices, attitudes and a consciousness of a balance between humans and natural resources. This is probably the single most important change the program can make.

Changes in both attitudes *and* behaviors towards natural resource management are possible *if* these changes derive from a deepened understanding of humans' relationship to their environment. They will not come exclusively from a desire to produce more, sell more or raise more crops. The closest thing to a model in the program is the dooryard gardens activities in Nueva Vida, the first community organized in the Calakmul project. This integrates environmental education (as a living process, not a teaching exercise) with the larger community development project, includes youth and men as well as women, and is a learning opportunity for the project staff as well as the community.

c. Develop a Conceptual Framework

The MEP needs to develop a conceptual framework for environmental education, with scope and reach similar to the conceptual framework for community development and sustainable agricultural practices that was supposed to serve as the guiding principle for the entire program. The framework should generate a strategy, a program and a series of activities for environmental education in much the same way the agroecology projects were developed and guided.

Many people's attitudes toward the relationship between environmental education and development seem to divide into two groups: a) eco-agricultural professionals frequently seem to assume that if people change some of their behaviors (because new ones are viable, come with incentives and have been promoted well), their attitudes will change, which will have a multiplier effect; or b) the assumption of many environmental educators, who seek to increase environmental understanding, is that if the attitudes change, so will environmental behaviors. A merger of eco-development and environmental education eliminates this dichotomy by changing both attitudes *and* behavior through an integrated approach which applies social, moral and economic value to resource protection as well as to past and present resource conservation practices, including traditional, introduced and innovated activities.

Integration may require that the eco-development projects adjust downward their expectations of short-term material results of improved techniques and will require an understanding and acceptance of the long-term benefits for conservation of a community-based *socio-cultural* change process. Achieving the objectives of the MEP will require the inclusion of effective environmental education, which should lead more surely to better understanding *and* changed resource management behaviors.

d. Exchange Information and Perceptions

Environmental education is a two-way street. To be most effective, the agro-ecology technical staff of the eco-development projects need to learn the values and environmental perceptions

of the local people with whom they work. At the same time, the local people need to learn the vocabulary by which technical information is articulated and the perceptions of the environment held by the scientific community. In this way, each group will understand the viewpoint of the other, and the projects will understand the criteria on which the communities base their land-use decisions and production practices. Only then will the project staff be effective in facilitating change and leave something of lasting value in the communities after the project is completed.

I. Institutional/Organizational Development

1. Findings & Observations

a. Advocacy & Representation

As a functional intermediary between government and communities, some of the projects, particularly Maderas del Pueblo, have sought to advocate or intercede on behalf of the communities they are working with. The role of intermediary is an extremely important one, depending heavily on earning and keeping the trust of at least the communities, and possibly of government authorities as well. It is not an easy role, and it has its pitfalls. The line is fine between advocacy and "representing" the communities, which can engender dependency fairly quickly among people accustomed to government paternalism. In interviews with project staff and community leaders in the Chimalapas, concern was sometimes expressed that Maderas might be getting in the way of communities' own self-expression, or their learning how to advocate for themselves. Other variants also exist. IHN is a parastatal; for a variety of reasons it neither identifies with nor advocates for the communities with which it works. On the contrary, one of its officials described efforts to attract other government agencies to provide services to the low-priority El Triunfo buffer zone communities, since IHN statutorily could not do so. IHN indicated that one of its functions is to bring more governmental influence to bear on the social problems in these under-served communities and could not understand that there might be a conflict between this role and that of promoting community organization, participatory development and greater self-reliance.

Pronatura Península de Yucatán, an NGO, carries out its work in the Calakmul project through the Consejo Regional Xpujil. While sometimes pursuing independent policies, PPY is ultimately dependent on the structure and approval of the Consejo, which is legally an autonomous entity but in practice is closely associated with Mexico's ruling political party and almost totally dependent on government funds. Its prime advisor is the personal representative of the State Governor. The Consejo also holds official responsibility for management of the Calakmul Reserve. It is not possible for the project to work in those communities closer to the core zone which are not members of the Consejo, or in some that are considered by the Governor to be "unfriendly," or in *ejidos* where an opposition political party is dominant. Ironically, such communities comprise the majority in the Calakmul area, not the minority. The impression one receives locally, however, is that the Regional Council is the sole authority in all the buffer zone communities; therefore, any institution wanting to work in the Calakmul area must do it through the Council. Thus, the PPY ecodevelopment project is not an intermediary between the government and the communities but rather, is subject to the government/ruling party/state Governor's interpretations of what the communities need and which ones should be included. Within that structure, however, in practice the project has gone to considerable lengths to develop an independent identity for the project and respond to community concerns.

Ecósfera and Pronatura de Chiapas in El Ocote have entered into a "consortium" relationship with a vastly larger government research agency. Now they share office space with and receive administrative, communication, logistical, infrastructural and budget support from

the government. It is not clear if their inability to be accepted by, or identify with, the communities where they have been working is exacerbated by this relationship. Since the communities in the areas covered by these two NGOs are only accessible by boat, the government vehicles in which the project staff travel may not matter much to community residents. Some people in the area are actually less mistrustful of outsiders who work with the government ("we *know* what their purposes are..." one person said, referring to patronage and votes) than of those who do not ("what do *they* want with us?" he wondered about NGO personnel).

These two NGOs formerly had taken a very strong, public stand against a major highway construction project planned and designed to run through the middle of El Ocote Reserve. This stance put them in direct opposition both to the State government and to IHN which administers the Reserve. There is no way for outside observers to know to what degree this "consortium" relationship could compromise Ecósfera and Pronatura's future ability to advocate on behalf of the communities as strongly as they did for natural resources in the past.

b. Institutional Capacity

After a year and a half of slow progress, the institutional capacity of environmental NGOs to implement ecodevelopment projects began to show significant advances, and now most are managing project activities with considerably more success than at the beginning. For a variety of reasons (with one exception), WWF chose initially to work with environmental organizations (all NGOs except for IHN) as its primary partners to implement the ecodevelopment projects. Each organization had some experience in the respective geographic areas where the projects were to be started, primarily in research that later provided the baseline data for the ecodevelopment project. Unfortunately, none of these agencies had much experience working with communities, carrying out community diagnoses, implementing community projects, or promoting development activities. This handicapped their efforts especially at the start, as has been discussed previously in this report.

All of the implementing organizations spent a considerable amount of time, from one to one-and-a-half years, developing internal administrative and managerial capacity, establishing policies and procedures, placing, training and replacing staff until they had appropriate field personnel, and developing useful and appropriate methodologies. Neither WWF nor the organizations seemed to have foreseen how much learning was required, how many false starts would occur, or how many failed beginnings would be necessary.

Some observers have presumed that it was time lost, or time wasted. Conceivably so, but that is not the only possible conclusion. The luxury of hindsight permits the observation that a richer mix of development and environmental NGOs would probably have passed more quickly through the start-up phase and achieved initial implementation sooner. Had WWF facilitated more effective inter-agency communication and collaboration earlier, and especially if it had emphatically promoted mutual learning between development and environmental NGOs, some of the mistakes and failings might not have occurred to slow progress as much as they did.

However, rapid start-up and short-term visible results fortunately do not appear to have been WWF's primary criterion for success, or to have been required by the projects' donors. It is just as well, for this might have been short-sighted. The favorable long-term effects on the "family" of Mexican environmental organizations should be counted as a positive byproduct of the Ecodevelopment Program. How useful in the long-run these experiences will prove to be for the ENGOs involved, and how much spill-over to other ENGOs will result, is uncertain and should be assessed independently.

The ENGOs engaged in community ecodevelopment may not avoid the conclusion that in order to protect effectively a region's ecology in the long run, they cannot be limited even to ecodevelopment among the poor *and* protection by regulation and enforcement. Since their experience in this program has given them a closer look at who is degrading which resources at what rates, they must come to the realization that larger economic and political forces also are involved and must be addressed. Whether these environmental NGOs are willing or in positions to address the larger issues remains to be seen. However, they have developed a far broader lens through which to view environmental reality, and their capacity to choose the roles they will play have been undoubtedly strengthened.

From the point of view of the MEP, a number of advances have been made, especially in Calakmul and Chimalapas. There are also still some significant institutional deficiencies that need to be rectified, most of which are addressed elsewhere in this report. At the macro level, they include the problem of a single organization trying to provide Reserve protection and community organizing support at the same time, the uncertain level of ongoing institutional commitment (beyond WWF funding) to human populations whose livelihoods depend on the use of natural resources, and the environmental organizations' understanding of and commitment to altering structural causes of poverty that contribute to environmental degradation caused by peasants.

More specifically, none of the organizations include any representatives of the communities where they work in any of their planning or project design processes. (A possible and very limited exception is the hiring as a staff member by Maderas del Pueblo of an elected community representative from one of the Chimalapas indigenous communities.) The organizations do not yet engage in systematic monitoring of their work, either based on their own objectives or those of the Program. Their reports and proposals include input from project field staff and sometimes promoters, but these people are not an active part of the process. The organizations also do not yet carry out regular participatory planning activities that include the promoters and extensionists as well as the coordinators, managers and directors. All of the organizations except IHN expressed interest in receiving more assistance in these areas and most have made some efforts in these directions. IHN managerial staff perceive that their structure and government status prohibit flexibility in some of these areas and so are disinclined to make changes.

c. WWF Support

The southern Mexico organizations implementing the MEP enjoy a relationship with WWF available to few other grantees. There has been good attention by staff, a diversity of staff available for advice and moral support, and, as a result, a collegial relationship of mutual trust and respect has developed.

Annual meetings are held by WWF with representatives of all the implementing agencies and field staff from all the projects. After an initial hesitation due to people's fears of "evaluation," these meetings have been a significant factor in the process of learning from mistakes and refining the program. The meetings are participatory, well-resourced, address very important and sometimes sensitive matters and outline the key challenges for the upcoming year. The primary area requiring strengthening is that more follow-up to the meeting throughout the year might substantially help the projects realize more of their potential.

The existence of a WWF office in the region (located in Oaxaca) has contributed to a healthy relationship with the projects. The high quality and commitment of the multiply-skilled staff have added to the effectiveness of the office. WWF has managed a unique combination of hands-on, non-coercive involvement (rare for a donor) and trust-based interaction with and guidance of each project's field staff. WWF staff in Oaxaca, and some in Washington, have

been perceived as part of a project team. There are few examples of this elsewhere, and it should serve as a model for other programs.

The Washington-based Wildlands and Human Needs Program staff member visited, according to the project staff, an average of twice the first year and once per year per project thereafter. Occasional visits by the Washington-based Mexico country director and specialists in areas such as forestry, environmental education and biodiversity averaged about the same. Visits by the Oaxaca representative average three times per year for regular visits, with the option to receive special visits in cases of crisis or urgency. Support from the WWF Washington office has been primarily in the areas of problem-solving and analysis of how best to pursue the strategy (and conceptual framework). WWF stayed up-to-date on the intricacies of project administration, technical and community relations problems, and progress toward objectives. Definitive, directed suggestions were often forthcoming, but demands, per se, were seldom made. Project staff, however, said that the strong suggestions were often interpreted as orders, and they were not comfortable disagreeing.

The primary blemish on an otherwise positive relationship has been severely flawed financial management of the projects from WWF's Washington headquarters. Neither the problems nor their destructive effects on the Program can be overstated. It is understood that WWF underwent several major changes internally during this period, including another organization-wide restructuring, the departure of a key financial official without an immediate replacement, and a major overhaul of financial administration systems and requirements. It would be impossible under any circumstances to buffer entirely the projects from the effects of such changes; the fault seems to be the lack of awareness that the projects would be affected, and the lack of any measures taken to minimize the impact.

Another area in which there is considerable room for improvement in WWF's support to the projects is exemplified by the case of the belated "Initial Environmental Examination" (IEE) which USAID-Mexico required be carried out by an outside consultant two-and-a-half years into the program. USAID regulations require these assessments to ensure that no significant environmental damage is being caused by its funding. Certain activities are permitted automatically, including research, institutional strengthening, training, strategic planning, community diagnoses, controlled research experimentation and other environmentally benign start-up activities. Other activities are perceived as likely to be harmless, but require a brief review to ensure that they deserve a "negative determination" (i.e., having no negative environmental effects). The MEP projects fell into this latter category.

There is some question about how clear USAID/Mexico was about what would be needed in an IEE, what criteria should be applied, and what methodology would be used. There is also some question about how seriously WWF took the requirement and who in the MEP structure should be responsible for compliance. What is most clear is that the projects were never adequately informed of the requirement, nor given the opportunity to recognize that they agreed with the underlying principles. The evaluation team learned that, once they were encouraged to look dispassionately at the matter, every project and every implementing organization fully agreed that they were concerned about minimizing negative environmental impacts, and that there were technical areas in which they could use information, advice or assistance. They were never given this opportunity, nor were they oriented and trained to carry out the initial reviews which AID sought.

AID perceived that no process was ever set in motion, and that the projects were obviously not following guidelines of which they had no knowledge. The result was the design of a methodology and criteria without input from the projects or WWF, and the imposition of external consultants who understood nothing about the projects or their perspectives and who were mistakenly perceived by defensive implementing agencies as investigators looking for wrong-doing with the possibility of funds being cut off for non-compliance. In the end, many of the tensions were resolved, but an opportunity to unify purposes, establish a

participatory process and provide useful training was lost. It would have been better to have understood the rationale for the requirements and develop creative processes to meet the obligations, than to ignore or minimize their importance, making the projects victims instead of participating beneficiaries of an evaluation process with which they agreed.

d. Inter-institutional Relations

Considerable effort has been put into multi-project, off-site training with representatives from all or most of the projects. The concept of a "program" that is greater than the individual projects seems to be understood by those who have participated in these events. This is less true for promoters and other field-based staff, and higher-level agency officials, who have not participated in inter-project activities. In some cases, agency officials received special training at COSECHA for NGO managers and policy-makers; this was reported by project staff to have been instrumental in improving their relationships with their head offices. It should be provided again for those organizations which have experienced turnover or restructuring that involved management and executive level staff.

Recently WWF has been facilitating discussions among management staff of organizations with projects in and management responsibility for El Ocote, including Ecósfera, Pronatura-Chiapas, IHN and Línea Biósfera. Initial reports indicate that staff members are beginning to communicate more openly with each other. It is too early to know if this will result in substantive improvement in coordination or collaboration where tensions and conflict existed before. Nevertheless, it is a positive beginning and a good example, and needed in the three other project sites as well.

e. Intra-organizational Relations

Most of the projects lack adequate integration between field and central office staff and between project and executive levels. In the case of Maderas del Pueblo, Ecósfera and Pronatura-Chiapas, the higher-level personnel responsible for policy and public relations seemed to have a good understanding of the ultimate goals of the projects, but tended to be idealistic and rhetorical in their approaches. In some cases, they demonstrated inadequate understanding of the constraints to project implementation endemic to their particular organization or in their particular locale. Project staff tended to be more realistic about limitations and less sweeping about what they could accomplish, but they frequently demonstrated significantly less understanding of or ability to articulate the vision or long-range goals of the project.

Pronatura-Yucatan has had the greatest success in resolving the inherent managerial and administrative tensions between field and central office, and it required some important education and revision of guidelines at headquarters at least as much as at the field level. The other implementing organizations continue to show significant internal differences in perspective, priorities and even values, and there was evidence that communication and understanding are lacking. Throughout all levels of each organization, "participatory planning" is still more form than substance. In the case of IHN, there is little attempt even to pretend that field staff have a significant role in planning, are consulted or have opinions and experiences of value to the institution, beyond the specific project (and then, one suspects, only because of the close contact between field staff and WWF).

The successes of most of these projects - as in very many other organizations - ultimately are dependent on one or two individuals who either have the vision (Chimalapas), the skill (Calakmul), or the theory (El Ocote), which drives, motivates and serves as a cohesive force for the other staff. It is a challenge for each of the implementing organizations to broaden the base as quickly as possible, to help the key people avoid burn-out and to develop the leadership skills of as many other staff as feasible.

f. Staff Turnover

There has been fairly high staff turn-over in almost all of the implementing organizations since they began the ecodevelopment projects with WWF. Some of this is due to previously hired people who were unaccustomed to life in the rural areas of the projects. Some was also due to the failure of the institutions themselves to understand what those demands were. Another element was the inappropriate skills of people who were professionally trained in technical areas but unable to translate and adapt their ideas and information to peasant communities.

Probably the largest failing was shared throughout the program: a lack of understanding that the communities had to be genuine partners in, not objects of, the project design and implementation process. This was accompanied by unexpected physical hardships and disappointment about lack of community receptivity. As pressure for results mounted from within the implementing agencies, from the communities and from WWF, a natural "weeding-out" process occurred. This has resulted in the gradual increase in appropriate, effective staff.

More disturbing has been the departure in a few cases of skilled, committed, effective staff who experienced excessive conflicts or frustrations, low pay, difficult working conditions and a lack of moral and logistical support from the institution. The potential for more of this destructive attrition is quite high in all of the projects except Calakmul. Measures may need to be taken rather quickly to prevent further such loss.

2. Recommendations

a. Increase Inter-agency Collaboration Within a Project Site

Improved communication is needed between projects working on similar issues, between organizations working in the same area (such as in El Ocote), and between government agencies and NGOs working in the same geographic area or on the same issue. Many members of the projects' staffs believed that this should be facilitated by WWF since part of the problem is that their prestige within their own organizations is often not high enough to bring about such change. Also, their organizations are not perceived as highly enough respected among other agencies for their initiative to carry the necessary weight. With more WWF attention and support in this area, the partner organizations believe they can be more effective in negotiating, collaborating and preventing some of the abuses their communities confront. This should be evaluated, weighed and made a priority by those determining the functions of the Mexico City office.

b. Increase Communication Between WWF and Implementing Organizations

As described in greater detail above, WWF has earned trust and respect from its partner organizations by working closely with them in the development of this program. However, there is room for improvement in communication both from Washington and Mexico. None of the implementing agencies knows much about WWF regulations, procedures, structure or decision-making processes. They also are not certain what they can expect or how much support they can request of the Oaxaca office.

Project implementation and agency staff concurred that improved communication between WWF/Washington and the projects is also necessary. Communication with WWF should be more frequent, more oriented to analyzing and solving specific problems and issues of urgency, and more responsive to partner organizations' limitations. Reports sent by projects to WWF need to be read and analyzed quickly and responses returned without delay. This gives important external feedback and will enable project staff to make adjustments. It will provide an incentive for projects to be more clear, honest and analytical in the reporting, which will help them in their own monitoring and self-evaluation. Currently there is a

tendency to think the reports are simply placed in a file to satisfy a bureaucratic requirement to be retrieved just before a field trip or a semi-annual internal report.

Field and managerial staff and the evaluation team agreed that WWF's project administration should be more agile and responsive, less bureaucratic, and have clearer guidelines, forms and requirements. This should be accompanied by training or orientation in WWF requirements. Second, the Oaxaca and Mexico City staff's relationship with key people in the Washington office needs to be strengthened so that administrators, program directors and financial managers view the Mexican staff as colleagues on a comparable level within the hierarchy, not as people with inferior training and less validity to be "handled."

WWF staff in Oaxaca need to be integrated into the overall Mexico strategy of WWF, with particular reference to the Mexico City staff. At present, there is not a clear understanding of the function of that office or its programmatic and structural relationship with Oaxaca and WWF/Washington, even though some effort has been made at communication. In addition, people in the projects must understand the nature of their participation in a larger WWF program or strategy for Mexico, if there is one. They lack a view of the larger picture, including the roles of the Mexico City and Oaxaca offices and whether they are part of the same operation. Otherwise, the implementing agencies are not real participants in a strategy, but objects or functionaries of that strategy as identified and managed from outside.

For its part, WWF has not always been consistent in its communication. A confusing array of people visit project sites from the Washington office and occasionally from Europe, each with their own skills, interests and missions. Administrative guidelines change, bureaucratic demands are imposed, and the projects may be the last to learn of new requirements. WWF can improve this situation in several ways:

- (1) provide specific orientation or training to the appropriate administrative and program staff of each implementing agency, covering administrative, management and other internal, structural and institutional matters that will have bearing on the ability of the agencies to function effectively;
- (2) arrange field visits to Mexico for key executive and administrative staff of WWF/Washington to orient them to the realities and limitations of the field (a model for this is provided by Pronatura-Yucatan);
- (3) institute annual trips for selected representatives of partner agencies from Mexico to visit the Washington headquarters, setting up internships of 2-3 weeks during which they work in each of the key departments at WWF. To be avoided, if possible, is being "talked to" or "oriented" in a brief and rushed series of meetings that both overwhelm and confuse the visitors and convey a somewhat top-down attitude rather than assisting each party to develop a sense of the complexity, the human qualities and the common commitments that indeed exist.

c. Mixture of Implementing NGOs

Generally speaking, had WWF been motivated by the most rapid implementation of ecological agriculture, it should have put priority on local NGOs with extensive development experience and proven institutional capacity. Given the MEP's stated emphasis on sustainable economic development integrated with resource conservation, this would have been more effective. Internal factors, it now appears, have hampered the Program's progress more than external factors.

Instead, WWF chose to work with a broader group of implementers, including environmental NGOs, a parastatal organization and two others that defy categorization (Maderas del Pueblo and Línea Biósfera). All have learned a great deal from the process, even though this

was not a stated goal of WWF at the outset. There have been some positive results, therefore, from a decision that might be questioned relative to its intended objective.

In the future, WWF should explore its potential partner organizations more critically and in greater depth, identifying with more frankness their weaknesses and strengths, and either (a) select those with the greatest capability to carry out ecodevelopment activities in order to progress as rapidly as possible, or (b) seek a diversity of organizations whose particular combination of expertise will complement each other. In either case, WWF should avoid initiating project work with institutional partners that will make the same mistakes that the first generation of organizations did.

WWF should avoid working with any organization that has a monopoly over a particular area or reserve. Further, some conditions for continued support seem to be legitimate; for example, this evaluation report might provide WWF with the basis for withholding support from any agency which is unwilling or unable to collaborate with others, which has an internal structure that inhibit learning, growing and changing, or which will not engage in internal training and revision of norms which are incompatible with the project. It is not productive for WWF to work hard with a team of people only to have them leave due to foreseeable conflicts between the goals of the project and the style or structure of the implementing agency. And, important qualities to expect of new partners should include evidence of sensitivity to community needs, experience in working with peasant populations and credibility or trust already earned.

To make up for some of the choices made in the first round, WWF should also now commit to a long-term institutional development program with those partner organizations that are in the best position to work collaboratively in priority biosphere areas. Ongoing skills-related, in-service training should be an integral part of the program even with the strongest organizations.

d. Follow-up to Annual Meetings

In the future, more follow-up throughout the year by Oaxaca-based WWF staff will help these very valuable events to realize even more of their full potential. It is a common occurrence in many or most organizations and projects that the enthusiasm and momentum gained by a productive retreat or meeting is lost afterwards, either because tasks are not clearly assigned before the meeting ends, or there is no single person responsible to make sure that tasks are actually carried out. The effect is that much of the investment of human and financial resources is lost when a relatively small amount of additional effort would gain a disproportionately large amount of positive results.

J. Documentation, Monitoring

1. Findings & Observations

a. Sharing of Information

The hierarchical nature of many of the implementing organizations results in a continuing failure to share documents and information from executive and management levels with field staff. This includes articles, instruments, data, reports and sometimes technical information that would be useful to field staff either as tools or to keep them apprised of general developments in their areas of work. This prevents the field staff from learning, growing and developing personally as much as they should, with obvious benefits that would accrue to the project. It also contributes to a sense of isolation and undervaluation experienced by many of them, and causes unnecessary demoralization. The guarding or monopolizing of

information and contacts by managerial staff is counterproductive to the interests of the ecodevelopment projects, even though it may serve to preserve the hierarchy, protect the jobs or egos of people in positions of greater responsibility, and keep other staff from challenging their authority. The loss is doubled when it denies technical, social and agro-economic information that would strengthen the participating communities if the project staff could provide relevant and timely resources. This is an area that should be addressed by whatever activities are contemplated for organizational development or institutional strengthening interventions.

b. Collection, Analysis of Information

Information of relevance to the projects generally is not systematically or efficiently collected by the organizations, and what information is available is not adequately analyzed or applied to the problems and challenges faced by the project. Field staff frequently do not know what information they should gather in the field (such as base-line data) to make possible "before and after" comparisons to identify the positive or negative changes (if any) caused by the project and to help in the promotion of introduced or modified techniques. Further, staff have not been oriented, much less trained, in simple surveys, questionnaires or interviews, or how to collect and compile information, how to analyze it, and how to exchange, manipulate and otherwise utilize it as tools for project modification. This leads to the loss of valuable information, and makes the re-planning and mid-course adjustment process more difficult.

c. Negative Environmental Impacts

Little attention or recognition has been given to the possible negative effects of the project. USAID requires a preliminary environmental impact assessment, which is designed to indicate if there are any unintended negative environmental impacts resulting from project activities. These assessments were carried out in three of the projects simultaneous to our team's diagnostic evaluation process. At the end, the consultant reported that he had discovered no significant negative effects, adding that his reports would specify those danger-sign areas requiring close attention in the future. The projects' staffs recognized that they share AID's concerns in this area. Their work in the ecodevelopment projects is motivated - among other things - by a desire to protect and improve the natural resources where they work. They know it would be counter-productive to engage in activities which had secondary destructive or negative effects. Nonetheless, neither BSP, WWF or the implementing Mexican organizations have any ongoing efforts to monitor or prevent potentially negative effects. The need for training in this area was acknowledged by the projects.

Other negative influences of project activities might be even more difficult to identify but just as important, including cultural, economic, social or political impacts caused by the extensionists or the techniques they promote. These also have not been assessed, and no organized monitoring or analysis has been developed yet. This is partly due, it seems, to the unexamined assumption that since the projects are implemented by people motivated by a conservationist spirit, no real harm can result from their work.

d. Base-line Data

It will be quite difficult to determine what effects the project will have had without some comparative data. Most of the projects have fairly recently completed their first full year of project implementation (after the slow start and numerous readjustments). Very few concrete results can be expected this early, and few were observed. This means that most of the indicators of project-inspired changes will not have been altered very much, whereas the indicators are now fairly well known. It is not too late, therefore, to gather information before most changes have taken hold, to enable the projects to measure their effects at the end-of-term evaluation.

e. Monitoring

There is currently no mechanism in place for projects to monitor the general results or effectiveness of their work. Such self-analysis, whether formal or informal, could be based either on what the organizations' proposals state are their desired outcomes, or what the staff on a daily basis perceive and articulate are their objectives. Most - if not all - the organizations recognize the need for this kind of scrutiny and analysis, some are evidently intimidated by the idea, while others lack the know-how, the structure and/or the discipline.

In October 1992, Chimalapas and Calakmul received some initial technical assistance from a WWF-funded external consultant (one of the members of this evaluation team) to assist in developing indicators and monitoring procedures. Due to logistical and planning errors and poor communication, the process did not go as far as was hoped. Nevertheless, a positive result, according to project staff, was acquiring a clearer idea of the benefits of monitoring and how a staff team could carry it out. Follow-up from WWF was needed and requested but not forthcoming, to the disappointment of at least one of the projects. This is now an area of recognized priority need shared by all the organizations, and should be given immediate attention by WWF. Individual project monitoring efforts, as they are developed, also need to be integrated with the Mexico GCC project-wide monitoring effort being carried out by MSI under a contract with USAID-Mexico.

2. Recommendations

a. Matrix of Indicators of Project Success

A successful program requires a series of planning and implementation steps and several levels of analysis. An overall strategy, a comprehensive program plan, a group of sound individual projects whose progress is monitored on the basis of clear objectives and honest self-appraisal and mid-course adjustments are all parts of an effective program. One of the most difficult components for many organizations is the process of connecting goals, objectives and activities, strategies and tactics, program and projects in a rational framework which leads to accomplishing what an organization intends notwithstanding unforeseeable obstacles and variables.

One responsibility of the evaluation team was to develop a series of indicators by which to evaluate progress toward each project's goals. WWF and BSP had conceived of a group of six areas or "macro-criteria" which, if met, would indicate project success. These were: socio-cultural; environmental/ecological; financial/economic; technical; political; and institutional sustainability. From these and from their project knowledge, the team members developed a matrix of objectives, indicators and means of verification that can serve each project in the future as an instrument for monitoring their progress. Initially, it was hoped that this matrix could function as the basis for a performance and results evaluation. The team found that the projects were too new to have realized very many concrete and dependable results, so the indicators were used more informally as a guide to the issues to be raised rather than as a specific check-list. The team members from the projects also found the effort to employ the indicators too structured a process, and sought a more flexible method to respond more sensitively to the implementing organizations' capacities and planning methods.

It is strongly recommended that these indicators, now that they have been generated, be used by each project to help frame its planning process, serve as a guide to develop individually tailored objectives and indicators, and as an instrument for ongoing monitoring. The matrix also should be used as a tool for the final evaluation. In this way, project implementing organizations can know what will be expected of them by WWF/BSP and what to expect of their project staff. The indicators matrix in its entirety can be found as Appendix D.

b. Establish Realistic Goals and Assess Progress

In many cases, the implementing NGOs will be able to improve their capacity to reach their goals if they learn to analyze the choices of activities and techniques that *could* be promoted, by making strategic decisions based on this analysis, and by periodically reassessing these decisions. They also need greater clarity between goals, objectives and activities. Further, in many of the project proposals and reports, terms are vague and overlapping, giving the impression of cloudy thinking which would result in weak planning and/or deficient monitoring.

c. Technical Assistance in Project Monitoring Systems

WWF should offer on-site assistance in strategic planning and management, by means of workshops that include both central-office program people and field staff, including extensionists and promoters.

It is too much to expect people engaged in the everyday activities of implementing complex social projects to be able to step back and, with skill and objectivity, review and assess their work by themselves. The program would be well served by on-site, individualized outside facilitation of strategic planning and self-monitoring. Within this process, each team of implementers should review their original objectives and goals to test them against their experience to date, in light of their analysis of the social, economic and ecological needs of the geographical areas in which they are working. In some cases, there is a need to strengthen or supplement that base-line analysis, and in some cases, a harder look at their experience is recommended. Strategic planning and resource allocation analysis would be helpful inputs that could be provided by the WWF Organizational Development Program, by a locally identified resource or by an outside consultant.

d. Realistic Appraisals

The implementing organizations need help in establishing realistic limits. They need to assess honestly their record to date, compare results achieved with original expectations and establish further objectives on the basis of hard realism rather than ideal possibilities or what they think the donors (or the public) want or expect. These realities, constraints and/or possibilities need to be presented to the donor agencies, which in turn need to be more flexible in how the funding is spent, and adjust their own goals to the realities in the field. Some organizations appear too modest (such as IHN and Ecósfera) and might be able to reach more communities more effectively with more institutional commitment and the addition of resources and certain necessary skills. Others appear too ambitious (such as PPY), trying to expand into more communities before they have consolidated or proven the work they have begun. Others (such as Linea Biósfera and Maderas del Pueblo) may be tempted to be "all things to all people" and fail to focus effectively.

e. Transparency

Project implementers should be made aware that greater transparency will mean better results, and that WWF will not penalize participating groups for revealing their problems. This will enable projects to make better use of successes and failures than they have been able to in the past. There is everywhere an unavoidable tendency to hide problems and show ourselves and others only the best side of things (who among us enjoys admitting mistakes?). As good as the relationship is between donor (WWF/BSP) and recipient (implementing NGO) - and it is remarkably supportive - an inevitable temptation exists to obscure the mistakes and exaggerate the positive. When this has occurred, it has had the effect of depriving projects of learning from experience. Both successes and failures are important, especially since true successes are rare, as are complete failures. Project staff learning from their own mistakes should also look for others' successes as potential models for

experimentation. Predictably, the project representatives on the evaluation team were quicker to see the shortcomings in each other's projects than they were to see their own problems. Ideally, it should be the other way around.

f. Self-Criticism

Each implementing organization should learn constructive self-criticism methods that they can implement with regularity and without fear of negative repercussions. To assess their work, they need to measure how they are accepted (and resisted) by the communities and other organizations in the areas they are working, and to appreciate others' skills and knowledge. Without detracting from the efforts they have already made in self-appraisal, evident from overall improvements they have made since starting these projects, the implementing organizations would benefit from an honest self-analysis of their strengths and weaknesses, to determine what functions and roles are most appropriate, what they should not undertake, and which other entities should be called on to complement their strengths. Regular self-appraisal should include a questioning process: are the techniques they promote appropriate? Are they being accepted? Why and why not? Are there more urgent, or more important problems to confront? Are there other techniques, resources or promotional methods to employ? What impact is the project having on people's lives? On the environment? On community cohesion and continuity?

V. CONCLUSIONS

Since the start of the BSP/WWF Mexico Ecodevelopment Program in Mexico, integrating conservation of natural resources with human needs has undergone major changes, and much has been learned. Ecodevelopment evolved from an earlier strategy to provide subsidies to mitigate losses suffered by rural people who were denied access to resources as a result of the designation of protected areas. Over time, technical assistance replaced financial and material subsidies, in order to establish non-degrading land-use practices which would allow for the harmonious existence of human settlements on the edges of protected areas.

In its current manifestation, integrated conservation and development projects attempt to foster in rural populations a broader and deeper understanding of the relationships between land use, cultural and social norms and values, and protected areas. In the BSP program, these noble objectives are clearly and consistently maintained as guiding principles, much to the program's credit. Further, the program demonstrates considerable commitment to improving its practice in order that these principles continue to serve as a guide to the program.

The evaluation team readily acknowledged that many of the problems it discovered, such as those of integrating community development with conservation while maintaining indigenous socio-cultural values, are not unique to the MEP. Merging different perceptions of appropriate land use and incorporating social justice with control over natural resources is a challenge facing conservation programs throughout the world. What is unusual about the MEP is that it actively seeks honest assessment - both internal and external - of its strategy and progress. Both the overall program and the implementing NGOs have made adjustments as a result.

At the same time, the evaluation recognized that the ambitious objectives of the program are not yet matched by a practical, systematic and effective methodological approach. For example, with so much attention given to technical modifications (especially through the use of green manure [*frijol abono*] technology) the larger environmental picture tends to get lost. The Washington office of WWF became intensely focused on technical and financial matters, perhaps leaving some of the conceptual issues behind. So much energy was required to work with each implementing NGO that larger, more strategic institutional questions (such as strengthening relationships between environmental and development NGOs and producer organizations) tended to be neglected. Environmental awareness, an avowed priority according to stated goals, still appears to be a coincidental phenomenon rather than a systematically promoted process of incremental change in perceptions fostered consciously by the projects.

A number of general conclusions can be drawn concerning the overall program, all of which are implicit acknowledgements of considerable success and all of which carry implicit recommendations for continuation and improvement.

A. Unanticipated Results

A number of important advances were made by the overall program that may have been originally unintended but were important nevertheless; others are in the early stages and not well enough established to be sure of their desirability. For example:

1. Changes in NGOs

Significant changes may be developing in the world view of some Mexican environmental NGOs. This evaluation could not determine how widespread this phenomenon is, how much it is a result of the Ecodevelopment Program (compared to other forces such as a change in funding source requirements, trends emerging nationally and internationally, etc.), or how deeply the

organizations themselves are changing. In some cases, especially IHN, we strongly fear that if the ecocodevelopment funds ceased, ecocodevelopment projects and an institutional commitment to rural social change would end. In others, such as Ecósfera and Pronatura-Chiapas, we suspect that a combination of a scientific and "professionalist" bias and structural dependence on government research priorities may prove to be stronger than an incipient and only partially successful experiment in community socio-ecodevelopment. We hope not. Nevertheless, these organizations and their professional staff surely see the issues differently than they did before, and that must be considered a success from a strategic point of view.

In other cases, such as Maderas del Pueblo and Línea Biósfera, the relationship between government and ranchers, timber industry and communities has been well understood, and the mandate for support of land security struggles was clear. For them, introducing concrete changes in people's livelihoods via alternative, ecologically-sound agricultural practices is a relatively new idea and may offer a wide range of politically active Mexican NGOs and rural associations a practical component and focus.

Probably the greatest change came about in Pronatura-Yucatán, which over several years has significantly modified its procedures, refocused its priorities, changed personnel and altered its style and working relationships in the field. At first glance, the changes were institutional; but the dramatically positive influence they had on the quality of the field work demonstrates how closely the two are related.

To the extent that these organizations have collegial, fraternal or structural relationships with other environmental organizations in Mexico, their understanding of ecocodevelopment, its requirements and its benefits can be broadened and integrated into the work of many. There are no assurances that this will occur, but the seeds are there where they may not have been before.

2. NGO Approaches to Community Development

Mexican environmental NGOs with years of experience in scientific research, surveys, studies, formation of plans and preservationist management of resources now have the beginnings of experience in bringing social, cultural and economic realities into the equation. Regardless of the outcome of individual community interventions or individual organizations' involvement with the BSP/WWF Program, the range of environmental NGOs' involvement in protecting biodiversity has probably been permanently altered for the better. More realistic, broader in approach, more humanistic, and with greater political sophistication, they should be more effective at carrying out their distinct missions with greater commonality.

3. NGO Prestige

Prior to the BSP/WWF program, environmental NGOs in Mexico were anathema to the government. They received little serious attention and less respect; any formal role in management or planning of wildland areas was inconceivable. Through patient and diplomatic negotiation, WWF aided in legitimizing ENGOs' roles to the point where these institutions can participate in core zone management, planning and executing buffer zone development activities and mediation of buffer-core tensions.

B. Change of Attitudes

As a direct result of the ecocodevelopment projects, a number of communities have undergone real-life changes with the prospect of these becoming permanent. Although historically many, perhaps most, community development efforts have become "invisible" a few years after the implementing agencies depart (they cease to exist in their original form), the attitudes, values and practices of some of the people are fundamentally altered such that the effects are felt for a generation or more, in ways that outsiders often cannot see or measure.

Those communities which have success in applying standards of ecology, sustainability, greater self-reliance or permanent land security may well have long-term, far-reaching effects on entire geographic areas. Many recently-formed communities in the project sites came into existence as a result of colonization schemes or as laborers for timber extraction or cattle barons. Some of these communities have already begun to develop new attitudes toward the available natural resources that might not have happened without the project's presence.

C. Networking

Due to a confluence of historic and political phenomena, the implementation in Mexico of ICDPs has not materialized as the theoreticians expected. For example, the conflicts between conservation and development at both macro-strategic and micro-implementation levels have not been resolved; and the lack of collaboration and coordination of research and implementation is notable, causing duplication, reduction of momentum and loss of learning. However, given the geographic and institutional diversity of the BSP/WWF program, some opportunities and potential for collaboration now exist that did not before. With two offices in Mexico and many projects on the ground, WWF has the opportunity and the legitimacy to initiate discussions of ICDP strategy and experiences, to provide focus and to ensure social relevancy and responsiveness to rural community people. The potential partners include environmental and development NGOs, federations of popular organizations, and sympathetic academic, research and government agencies.

D. Conceptual Framework

An analysis of the program's goals, activities, results and limitations indicates that the conceptual framework has not been adequately tested. To compare natural resource degradation with key economic activities and to protect resources by altering the key behaviors still appears to be a sound strategy. To convert unsustainable natural resource exploitation to sustainable resource management still appears to be a solid methodology. And to help some of the resource users become effective conservationists in a way that serves their own economic interests still appears to be a sound approach.

The problems encountered by the implementing NGOs, especially the very limited acceptance received and very modest changes caused, seem to be due more to limitations in application of the model, strategy, and approach. To the evaluators, the primary causes of degradation did not seem to be the subsistence agricultural practices of the area's peasants, and the practices most affected by introduction of *frijol abono* and other soil conservation methods did not appear to be overly environmentally degrading.

The conceptual model may not have been comprehensively applied in any of the ecodevelopment projects, but more analysis is needed before it can be said that the framework is not sound. There is growing agreement throughout the program, however, that the conceptual framework needs to be reviewed in light of experience, and revised to be more applicable. It would be useful, for example, to determine if some of the most important threats to biodiversity are beyond the current purview of ecodevelopment projects, and if so, what (if any) additional roles should be played by WWF. It would also be important to include specific objectives and indicators of success, based on the framework, that each project and the MEP itself should achieve.

The evaluators hypothesize that the political economy and resource management policies of a region may be as important as resource management practices in determining how much degradation occurs and how effective conservation can be. Because it was beyond the purview of this evaluation to analyze these issues, we can only recommend that BSP/WWF and the implementing organizations, together with USAID's environmental office, look more closely at this subject and determine to what extent the overall program can address these larger questions. It is our further hypothesis that without a broader approach, the ecodevelopment projects by themselves will inherently have serious limitations and fail to accomplish many of the ambitious objectives that the program has repeatedly articulated.

E. Sustainability

The projects are all focused on introducing farming techniques that increase the sustainability of agricultural production in order to reduce the negative effects of migratory or slash-and-burn practices. The concept of sustainability (unfortunately, rapidly becoming a phrase so overused that it loses its meaning) now should be more broadly applied in the Ecodevelopment Program in Mexico. Rural community leaders need to be developed who can carry on the projects, in some form or another, after the BSP/WWF support stops. Other sources of research, experimentation and community promotion need to be identified and incorporated. Other sources of funding need to be brought in gradually and incrementally. Expansion to other environmental NGOs should be promoted, along with strategic collaboration with other support agencies. The project focus needs to be broadened to include activities other than food production, since Mexican peasants are increasingly requiring a variety of income sources to sustain and improve the quality of life. The program's focus also needs to include a broader sector of the population, so that the twin trends of capitalization of agriculture and rural-to-urban migration do not render altogether obsolete the ecodevelopment strategy.

F. Program Strategy

1. Integrating Development and Conservation

The MEP is part of a recent trend to establish Integrated Conservation and Development Projects, or ICDPs. By this means, the MEP seeks to mediate the previously competing imperatives of conserving natural resources and using those resources for economic development.

Within the MEP, different and sometimes competing approaches of economic development, conservation and community organization are being fused into a single strategy, by program designers and implementors with different skills and priorities. Of the many essential ingredients for ecodevelopment - including scientific knowledge, technical know-how, legislation and changed practices - the most important and difficult to manage effectively is the human element. Unless the ecodevelopment projects learn to work well with peasant communities, their techniques will not matter because they will not function. Unless they learn to work with ranchers, their modest positive ecological changes will lose ground to the spread of cattle grazing. Unless they learn to work with *caciques*, mayors, governors and national bureaucrats, improved environmental practices will lose out to human and environmentally destructive policies, political corruption and further environmental degradation.

The overarching challenge facing the MEP, and particularly the Mexican implementing organizations, is that both new concepts and new skills are demanded. Badly needed is a different understanding of development, measured in socio-cultural, economic and political terms, encompassing both the family unit of production and the community unit of organization. This understanding will respond to inequities with justice and to growth with sustainability. Also needed is the capacity to work effectively - and simultaneously - with academics and scientists, experimenters, extensionists, promoters and trainers, NGO administrators, political officials, competent and inexperienced advisors, farmers, ranchers and peasants.

2. Integrating More Sectors

The evaluation found less relationship than expected between the agro-economic activities addressed by the Ecodevelopment Program and the exploitation of natural resources in the core protected areas of the Reserves. In both El Triunfo and El Ocote, the areas designated as core zones are areas to which the local population has little or no access, either due to physical or legal impediments. Although the language of many MEP documents assumes a close relationship between activities in the core and buffer zones, the evaluation team found the situation of land use and conservation to be more complex than "use by proximity" to core zone resources. A much

broader sector of Mexico's population is implicated in destructive land-use activities and deforestation; of equal importance to geographic proximity are factors such as political power, government concessions, national or international commercial interests and land tenure arrangements.

3. Regional Land Use Planning

Wisely, the primary motivation behind BSP support for the ecodevelopment projects is the conservation of biodiversity in the broader, "lived-in" landscape, not only in the preservation of perceived "pristine" conditions in strict protected areas.¹ However, communities are selected based at least in part on their proximity to, and suspected or potential utilization of, resources of the reserves in question. Now, after three years of experimentation with encouraging sedentary agriculture in order to reduce deforestation, the MEP might begin to expand its philosophy even further. It should not be limited to protecting core zones by encouraging and providing the means by which farmers remain on the same plot of land. Rather, its approach should encompass a matrix of multiple land uses that include intensive and extensive agriculture, extractive areas, hunting lands and untouched resources held in reserve within a regional management system. The goal would be to integrate a conservation philosophy into all types of land use, rather than limiting it to the core zones of the reserves.

Finally:

This evaluation has corroborated what may be considered a truism: the greater the communication and collaboration, the more positive are the effects of ecodevelopment activities. Community collaboration in these projects has not been as strong as needed or intended, and collaboration with powerful and influential sectors was not contemplated. The second half of the five-year program should involve further development of the conceptual framework, a full test of the strategy, and integration of development, conservation and social change at various levels. This will demand more of the implementing organizations and more of the field staff on whom much of the experimentation falls.

The primary challenges for the Program now are: to deepen the work in targeted communities, becoming more effective there; to encourage momentum to build so that geographic spreading takes place naturally; to encourage more and more environmental organizations to join the process on their own, and to invite development organizations to incorporate into their activities a focus on environment and ecology; and to enter the policy arena to address other causes of deforestation specifically and environmental degradation generally.

¹ Some of the project implementers noted that the US model of national parks, which tries to preserve ecosystems by removing them from local control and access and guarding these areas through legal and authoritarian means, has met with little success in Mexico. Thus the focus of conservation efforts has shifted from limiting and guarding against human use to seeking the means by which human use is compatible with ecological sustainability.

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APPENDIX A

SCOPE OF WORK FOR EVALUATION

A. Purpose

To carry out a mid-term evaluation of the BSP-funded Mexico Ecodevelopment Program in southern Mexico. The general purpose of the evaluation is to assess progress towards achievement of the program's goal and objectives; identify relative strengths and weaknesses of the program's organization, implementation and methodological approaches; and to provide constructive feedback for future project implementation.

B. Background

The overall goal of the Mexico Ecodevelopment Program is to protect selected wildland areas in southern Mexico as healthy, diverse ecosystems by decreasing rates of deforestation in the surrounding areas through promotion and adoption of sustainable methods and levels of resource use. The four wildland areas selected for focus are: El Triunfo Biosphere Reserve and El Ocote Ecological Reserve in Chiapas, Calakmul Biosphere Reserve in Campeche and the Chimalapas region of Oaxaca. The Mexico Ecodevelopment Program is implemented by World Wildlife Fund, currently in collaboration with seven local Mexican partner non-governmental organizations ("NGO").

The Mexico Ecodevelopment Program was developed in 1990 as a joint effort of AID/-Mexico, BSP and WWF's Wildlands and Human Needs Program. The Wildlands and Human Needs approach seeks to harmonize the economic and social development of communities with the maintenance of diverse, natural ecosystems, by promoting development based on sound environmental management and conservation principles. The activities promoted by the Mexico Ecodevelopment Program are meant to be environmentally sustainable, socio-culturally sustainable, financially and economically sustainable, and institutionally sustainable.

The program's specific objectives, as outlined in the original proposal from WWF to BSP ("Environmentally Sound Community Development Around Key Protected Areas in Southeastern Mexico," dated 4/15/91) are as follows:

1. To stabilize and make sustainable land and resource use around these wildland areas. (Environmental Sustainability)
2. To improve the quality of life of the local population in a way that is noticeable to them and compatible with the conservation of the resource base. (Financial and Economic Sustainability)
3. To implant a process of technological innovation and adaptation among area residents. (Socio-cultural Sustainability)
4. To foster environmental awareness and understanding on the part of local residents. (Environmental Sustainability)

5. To ensure that the project's activities have a secure institutional or organizational base and can be technically and financially sustained through local and national resources. (Institutional Sustainability)

C. Terms of Reference

In cooperation with the WWF and Mexican NGO project staff, the Ecodevelopment Program evaluation team will develop a set of project performance and impact indicators that will be used to gauge the Ecodevelopment Program and the individual projects' success in achieving the objectives above.

Possible impact indicators include:

- changes in the attitudes and behavior of the various individuals and interest groups living in the project areas;
- changes in income or economic well-being for project beneficiaries;
- changes in the policies and procedures of key public and private agencies having rights and responsibilities for natural resources in the project areas; and
- changes in the magnitude or rates of deforestation, reforestation, or other land-use changes in the project areas.

Possible performance indicators include:

- organizational structure of Mexican NGO cooperators vis-a-vis their ability to effectively interact with community client groups, governmental institutions, other NGOs or donors;
- appropriateness of methodologies used by project staff to transfer technology, educate, and/or influence behavior of land owners in the project areas; and
- the appropriateness of the range and mix of technical and other services offered by project staff to cooperators and by WWF to project staff.

The team will undertake site visits for the purpose of gathering the information needed to address the agreed-upon indicators of project performance and impact. This information gathering will involve interviews with the project director, key staff members, individual project participants and non-participants, community leaders, and others knowledgeable about natural resources and land use at the four wildland sites. The team will review project documentation, technical materials, and other descriptions of services provided by project staff to assess whether the project's methods and technology fit the needs of client groups. The team will also visit selected communities and demonstration sites to assess the actual impact of the project thus far on the target population and the area's natural resources, focusing on deforestation.

After having collected the field data, the team will summarize and interpret all available information to evaluate the status and progress of each project, and of the program as a

whole, in attaining the project and program goals. A synthesis and analysis of all the information gathered will be prepared and presented to BSP, in the form of a written report, along with recommendations for how project and program implementation might be improved.

Specific requirements and duties to be performed by Ecodevelopment Evaluation Team Members include:

1. Coordinate all Mexico Ecodevelopment Program evaluation actions with the BSP Program Manager for Latin America and the Caribbean (hereafter referred to as BSP), WWF (Javier Castañeda), and Mexican NGO cooperators.
2. In consultation with BSP, WWF and Mexican NGO cooperators, ensure adequate logistics (lodging, transportation, meetings, interviews and site visits) for the Ecodevelopment Program evaluation.
3. Coordinate the process of defining project impact and project performance indicators.
4. Gather the data required to quantify/address the indicators developed, focusing on those indicators concerned with environmental/ecological sustainability, economic sustainability and socio-cultural and institutional sustainability and others, if necessary.
5. Prepare an outline of the draft report and assign evaluation team members with specific responsibilities for their contributions to the draft report.
6. Coordinate production of the draft evaluation report incorporating material provided by each team member in his/her area of specialty in accordance with the individual scopes of work and in a format agreed upon by the team and BSP. The team leader may assign additional duties to team members as necessary. The team leader is responsible for determining the satisfactory completion of each team member's work product and may request modifications in their work product as necessary.
7. Coordinate and hold an initial debriefing of USAID/Mexico and WWF-Mexico communicating the team's findings and recommendations.
8. Coordinate and hold an initial debriefing of BSP and WWF-Washington communicating the team's findings and recommendations.
9. Incorporate comments made by BSP, USAID/Mexico, WWF, and others, if relevant, on the draft evaluation report, to produce a final evaluation for submission to BSP. BSP retains final authority over submission of the final evaluation report to USAID/Mexico.
10. Coordinate with BSP and WWF to highlight and disseminate the evaluation's findings, if such dissemination is deemed to be appropriate.

APPENDIX B

EVALUATION ITINERARY AND CALENDAR

November 14 - December 15, 1993

<u>DATE</u>	<u>ACTIVITY</u>
November 14	Rusty Davenport and Andrea Kaus arrive in Mexico City.
November 15	Meet with Frank Zadroga, USAID, and Eric D. Fajer, AAAS Fellow. Meet with Martin Goebel, WWF/Mexico. Meet with Miguel Angel Garcia and Silvia Vásquez D., Maderas del Pueblo. Fly to Oaxaca; meet with the remainder of the evaluation team - Juan Antonio Hernández, Aurelio López, and Juana Cruz Morales. (Isaac Matus arrives on November 16) - and Javier Castañeda, MEP, Oaxaca office.
Nov. 16-17	Team formation meetings at WWF office (including an orientation meeting with Larry Ford and Jeanine Koshear, USAID Consultants for the IEE).
November 18	Drive to Matias Romero (6:00 a.m. - 3:30 p.m.). Orientation meeting with project staff of Maderas de Pueblo (Miguel Angel García, Anastacio Cruz, Felipe Tomás, Alvaro Roman, Hemerijildo, Chun, Mallory Baron, Isaac Matus).
November 19	Travel by pickup and boat from Matias Romero to San Francisco la Paz (7:00 a.m. - 7:30 p.m.). Group meeting with the Community of Sn. Fco. la Paz.
November 20	Team splits into three groups: a) <i>siembras de frijol abono #1</i> b) <i>siembras de frijol abono #2</i> c) women's group (approx.12 women) Return to Matias Romero (12:30 p.m. - 8:30 p.m.).
November 21	Individual interviews with Maderas del Pueblo staff (Felipe, Chun, Mallory, Isaac). Arrangement for transportation to Tuxtla Gutierrez.

- November 22 Travel by combi to Tuxtla Gutierrez (5:00 a.m. - 10:00 a.m.).
Orientation meeting at the Instituto de Historia Natural regarding El Ocote and La Encrucijada (for accompanying USAID evaluator).
Travel to Jaltenango (evening, 2 hours approx.)
Orientation Meeting (10:00 p.m.) with IHN staff regarding El Triunfo (Carlos Pizaño, Javier Jiménez, Roberto Escalante, Martin Castillo, Uriel Trujillo, Juan Antonio Hernández)
- November 23 Travel to Barrio Río Negro (Ejido Toluco) (6:00 a.m. - 9:00 a.m.).
Visit *siembras de frijol abono, cafetales*.
Group meeting with 12 men from Río Negro - members of the cooperative coffee growers association.
Return to Jaltenango; meet with IHN staff.
- November 24 Travel to Ejido Nueva Colombia (6:00 a.m. - 8:00 a.m.).
Visit *cafetales* and talk with eight men from the cooperative coffee growers association in the field.
Asamblea Ejidal in Nueva Colombia.
Return to Jaltenango.
Meet with IHN staff.
Return to Tuxtla Gutiérrez (approx. 12:00 a.m.).
- November 25 Presentation about El Triunfo in the Zoologico-Miguel Alvarez del Toro and presentation of IHN organizational structure.
Team meeting to debrief.
- November 26 Travel to Malpaso (8:00 a.m. - 1:30 p.m.) and continue debriefing.
Orientation meeting with Angel Gutiérrez and Juana Cruz Morales regarding El Ocote.
Team debriefing continued.
- November 27 Travel by boat and by foot to Alvaro Obregón (6:00 a.m.- 9:00 a.m.).
Visit *siembra de frijol abono, vivero, and hortaliza* site.
Meet with 3 promotores: Pedro Ara Ico, José Tuíz Utrerara, María Huacash).
Meet with 23 *ejidatarios* (all men) in the evening.
Stay the night in Alvaro Obregón.
- November 28 Hike to Valasco Suárez (approx. 1 hour).
Rusty/Andrea interview re: *fogones cerrados*.
Meet with 21 *ejidatarios* (all men).
Visit *vivero, parcelas, experimento alazar, hortalizas* of Dr. Nicolás.
Hike to Nueva Alianza (approx. 2 hours, arrive at dusk).
Meet in the evening with 17 *ejidatarios* (all men).
Stay the night in Nueva Alianza.

- November 29 Visit *siembras de frijol abono* (6:00 a.m.).
 Hike to Presa (approx. 1 hour).
 Trip by boat up La Venta to see core zone of El Ocote.
 Return to Malpaso (approx. noon)
 Interview Angel, Juana, and Jaime Magdalena.
 Return to Tuxtla Gutiérrez (approx. 11:00 p.m.).
- November 30 Debriefing meeting with Larry Ford (7:30 a.m.).
 Meet with Miguel Angel Vásquez (Ecosféra) and Rosa María Vidal (Pronatura-Chiapas).
 Drive to Palenque (1:30 p.m. - 12:00 a.m.).
- December 1 Drive from Palenque to Xpujil (5:00 a.m. - 10:30 a.m.)
 Orientation Meeting in Zoh Laguna with Pronatura-Yucatán re: Calakmul (Eckart Boege, Aurelio López, Norma Poot, Roberto Delgado, Mariano Oichtitan, Cesar Álvarez, Eli Rodríguez López, Alvalardo Pastrano, Pedro Maldonado de Paz, Heriberto Camacho, Noé Posadas, Teodoro García Álvarez).
- December 2 Team divides into two groups:
 a) Rusty, Juan Antonio, Isaac, Aurelio to *siembras de frijol abono*, *ejidos* to the south of Xpujil
 b) Andrea, Juana, Bruce to *huertos familiares*, *siembra de frijol abono* to the north of Xpujil; meeting with women's groups in Nueva Vida and El Refugio.
 Return to Xpujil (approx. 7:30 p.m.)
 Interview with Pepe de la Gala (PPY)
- December 3 Rusty/Andrea meet with Bruce Moffat (7:00 a.m.)
 Rusty/Andrea/Bruce meet with Joann Andrews (7:30 a.m.)
 Rusty/Andrea meet with Eckart Boege (8:00 a.m.)
 Team divides in two groups:
 a) Aurelio, Juana, Juan Antonio, Isaac to visit beekeeping projects
 b) Rusty/Andrea/Bruce to Zoh Laguna: meeting with Consejo Regional (Deacundo Acopa, Eulalio López, Marcial Dzib, Eduardo Salinas, Manuel Velásquez, Edelmira Jiménez, Rafael Nería)
 General meeting with PPY and individual interviews (Pepe de la Gala, Armando Sastré, Norma Poot, Roberto Delgado, Aurelio López).
 Drive to Bakalar (approx. 11:00 p.m.)
- December 4-5 Team debriefing in Bakalar
 Rusty/Andrea debrief with Bruce Moffat
- December 6 Wrap-up session (8:00 a.m.)
 Drive to Chetumal, where Juan Antonio, Juana and Isaac return to their communities.
 Rusty/Andrea fly to Oaxaca (1:00 p.m. - 5:00 p.m.)

- Decemb. 7-11** Work on preliminary findings and report outline
Debrief with Javier Castañeda (MEP/WWF)
- December 13** Meeting/debriefing with Frank Zadroga, USAID.
Rusty meets with Christopher Briggs, British Council.
Meeting/debriefing with Martin Goebel, WWF/Mexico.
Meeting with Miguel Angel García and Silvia Vásquez D., Maderas del Pueblo.
Fly to Washington, D.C.; miss connection in Dallas and arrive at 1:00 a.m.
- Dec. 14-15** Debriefing/briefing at WWF offices
- December 15** Andrea Kaus flies back to Prescott, AZ.
Rusty Davenport stays in Washington, D.C.

APPENDIX C

LIST OF PEOPLE INTERVIEWED

WWF

Martín Goebel
Javier Castañeda
Bruce Moffat

Los Chimalapas

Project Staff:

Isaac Matus ¹
Felipe Tomás
Mallorie Baron
Chon Takatik Ik
Silvia Vásquez
Miguel Angel García
Teofilo Silva
Alvaro Ríos
Hemeregildo _____

USAID

Frank Zadroga
Lawrence Ford
Jeanine Koshear

San Francisco La Paz:

Juana García - promotora
Angela Mendez Gálvez
María Elena Gracia Ayala
Elizabeth Luna
Catalina _____
Isidro Simeón Martínez
Teofilo Silva
Alejandrino Andrades Perez
Florentino Vargas
Emiliano Margarito
Fernando Osorio
Sigilfredo Escobedo Méndez
Nabor Escobedo Méndez
José Silva
Feliciano Martín
Constantino García - Secio. Auxiliar Bienes
Comunales
Elías Ignacio Pedro - Suplente
Juana Hernández
Francisca _____

El Triunfo

Staff:

Juan Antonio Hernández - Extensionista ¹
Martín Castillo - Difusión y Cultura Ambiental
Ignacio Ruíz
Javier Méndez
Carlos Pizaño Soto - Jefe Dpto. Areas Naturales
Ricardo Hernández
Javier Jiménez - Jefe Oficina Preservación
Ecológica
Tomás Rodríguez
Alejandro Lopez Portillo
Gladys de los Santos
Ana Melí Torres
Juan _____
Roberto Escalante - Dir. de la Reserva
Uriel Trujillo - Coordinador del Campo

Río Negro:

Gabalier Alfaro - Pres. Regional, Asoc.
Cooperativas
Plutarco Pérez - Consejo de Vigilancia
Carlos Velásquez Lopez - Promotor comunitario
Oscar Arguello - Pres. Asoc. de Productores de
Café
Roberto Pérez Solís

Nueva Colombia:

Jorge Hernández
Armando Chacona
Edmundo Robledo
Espiridión Pérez
Miguel Pérez López
Navor López López
Jorge Hernández Agustín
Umberto Robledo Gómez

El Ocote

Staff:

Ecósfera

Miguel Angel Vázquez - Presidente
Angel Gutierrez Curiel - Coordinador de
Campo
Pedro Ara Icoc - Promotor Campesino
José Ruíz Utrera - Coordinador de Trabajo
Técnico del campo

Pronatura Chiapas

Rosa María Vidal - Presidenta - Pronatura
Chiapas
Juana Cruz Morales - Coord. Educ.
Ambiental ¹
María Huacash Santíz - Promotora Campesina

IHN

Ignacio Aguilar - Desarrollo Comunitario

Línea Biósfera

Jaime Magdalena - Director

Velasco Suárez:

Nicolás Pérez Pérez
Ruben Díaz Pérez
Bartolo Díaz Ortíz
José Pérez Pérez
Roberto Díaz Hernández
Juana Díaz
Patrona Hernández
Sebastian Díaz Gómez
Consuelo Hernández

Alvaro Obregón:

Antonio Hernández
Pedro Díaz Díaz
Lucas Pérez Díaz
Augustín Gómez Gómez
Mateo Pérez Díaz

Nueva Alianza:

Florencio Díaz Díaz
Andrés Sánchez Díaz
Leonardo Hernández
Antonio Hernández

Calakmul

Staff:

Joann Andrews - Presidenta, Pronatura-Yucatán
Aurelio Lopez Vargas - Coord. del Campo ¹
Eckart Boege - Coord. del Programa Desarrollo Comunitario
Armando Sastré Méndez - Administrador
José de la Gala - Gerente de la Reserva, Coord. de la Estación del Campo
Norma Poot - Coord. Educación Ambiental
Roberto Delgadillo - Coord. Proyecto Apícola
Mariano Oichtitan - Auxiliar Proyecto Apícola
Cesar Alvarez Salgado - promotor campesino - Nueva Vida
Alvalardo Pastrano - promotor campesino - La Lucha
Heriberto Camacho - promotor campesino - Heriberto Jara
Eli Rodríguez López - promotor campesino - Nueva Vida
Pedro Maldonado de Paz - promotor campesino - M. Castillo
Ediberto Umach - promotor campesino - Ricardo
Teodoro García Alvarez - promotor campesino - Valentín
Noé Posadas Mora - promotor campesino - 11 de Mayo

Consejo Regional:

Deacundo Acopa - Asesor
Eulalio Lopez
Marcial Dzib - ex-Presidente
Rafael Nería - ex-Secio. y Administrativo Proyecto Agricultura
Eduardo Salinas - Secio. Consejo Vigilancia
Manuel Velásquez - Pres. Consejo Vigilancia
Edelmira Jiménez - Administrativa Proyecto Agricultura

Ejidatarios:

Juan Hernández - Valentín Gómez
Domingo Hernández Reyes - Valentín Gómez
Eulalio López - Valentín Gómez
María Guadalupe Díaz
Norma Díaz - Pres. Grupo de Mujeres
Maurelio Méndez Méndez - El Chichonal
Santiago Lara - 11 de Mayo
Gregorio Sánchez - 11 de Mayo - Comisariado
Valentín ____ - 11 de Mayo
Miguel Javier - Polo Norte (Ejido Ricardo Pairóa)

¹ Evaluation Team Member/Miembro del Equipo de Evaluación

APPENDIX D

MONITORING: INDICATORS & MEANS OF VERIFICATION

<u>Objectives</u>	<u>Indicators</u>	<u>Means of Verification</u>
Socio-cultural Sustain- ability	Changes in attitudes	Changes in awareness of relationship between humans and nature Desire to manage natural resources sustainably Recognition and valuation of own conservation practices Community understanding of project Adoption of introduced practices Acceptance of project staff
	Multiplier effect	Demand for project assistance/services Incidence of voluntary promotion by participants Incidence of imitation by non-participants Innovativeness of participants
	Organizational development	Formation of groups, co-ops, associations, and multi-group associations Integration of project activities with traditional communal labor obligations Degree of dependence on external resources (human, technical, financial, material) provided by project Degree of participatory decision-making in the group Integration of men, women and youths in common activities
	Human resource capacity	Emergence of new leaders Training opportunities provided that meet organizational needs Active, vocal participation and acceptance of traditionally marginal sectors in meetings, group membership and community decision-making

**Environmental /
Ecological
Sustain-
ability**

Trends in forest clearing

Average annual hectares of forest cleared since project started
Amount of firewood used per family
Amount of lumber extraction from forest concessions
Amount of reforestation
Diversity of and number of participants in non-timber forest product activities requiring mature forest vegetation

Changes in land use

Conversion to or restoration of pasture lands
Amount of land (number of farmers) in permanent versus shifting agriculture
Establishment of ejido or community forest reserves
Changes in incidence of slash and burn agriculture
Changes in rate of colonization

Adoption of conservation practices

Changes in pesticide use
Change in amount of crop loss due to pests
Changes in soil nutrient content and depth of topsoil
Changes in soil erosion
Diversity of plant and animal species
Incidence of agricultural waste product recycling
Land area affected by project

**Financial &
Economic
Sustain-
ability**

Economic diversification

Number and variety of sources of income
Number and variety of crops
Diversity of and ease of access to markets

Changes in spending patterns

Utilization of investment and reinvestment strategies
Barter vs. cash exchange
Amount of disposable income
Amount of credit dependency
Presence of material goods and physical improvements

Labor

Change in amount of time at unskilled employment (*jornales*)
Change in labor requirements per unit of subsistence and commercial production

**Technical
Sustain-
ability**

Applicability of introduced techniques or activities

Ease of use of necessary tools
Degree of relevance to local agricultural or forestry patterns
Amount of priority placed on production-limiting activities
Degree of risk
Dependency on hand labor vs. dependency on capital
Potential environmental impact
Amount of field supervision required
Breadth of applicability of the technology

Acceptability of techniques or activities

Ease of understanding the techniques
Responsiveness to felt needs
Capacity to solve priority problems
Level of community understanding of how the techniques solve priority problems
Speed of obtaining successful results
Degree of "fit" with local culture

Accessibility of techniques or activities

Amount of dependence on resources currently in use or easily available
Degree of access to appropriately trained, skilled promoters or extensionists

**Political Sus-
tainability**

Impact on land use policies

Successful obstruction of negative policy or actions
Existence of agreements with government policy-making entities
Successful promulgation of environmentally sound policy

Changes in land tenure

Acquisition of secure occupancy rights for local farmers
Government recognition of a community or ejido's claims to property or access rights
Formal delineation and legal approval of community or Reserve boundaries

Empowerment of peasant groups or associations

Formation and legal recognition of peasant associations
Advocacy by project for peasants and groups' rights
Resource access and management formally governed by or carried out with input from peasant organizations

Institutional Sustainability

Rational, effective organizational structure

- Degree of verticality
- Communication between field and central office
- Communication between technical and administrative/managerial staff
- Degree of participatory decision-making
- Coordination between and integration of projects

Organizational stability

- Frequency of staff turnover
- Level of enthusiasm and commitment
- Convergent/divergent goals of members
- Effectiveness of problem solving, conflict resolution
- Amount of job satisfaction

Effective management

- Effectiveness of planning mechanisms
- Presence of monitoring and evaluation systems and procedures - and their implementation
- Diversification of financial base
- Generation of own funds
- Degree of administrative competence and consistency
- Appropriate application of professional skills
- Balance between infrastructure, financial resources, and trained staff
- Presence of ongoing staff development

Inter-organizational cooperation

- Existence of agreements with other organizations
- Mechanisms for regular communication
- Coordination of activities between institutions
- Existence of clearly delineated roles and functions of the organization
- Degree of duplication or competition with other organizations
- Application of learnings from other organizations to project activities

APPENDIX E

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APPENDIX F

NAMES AND ADDRESSES OF EVALUATION TEAM MEMBERS

US Team Members

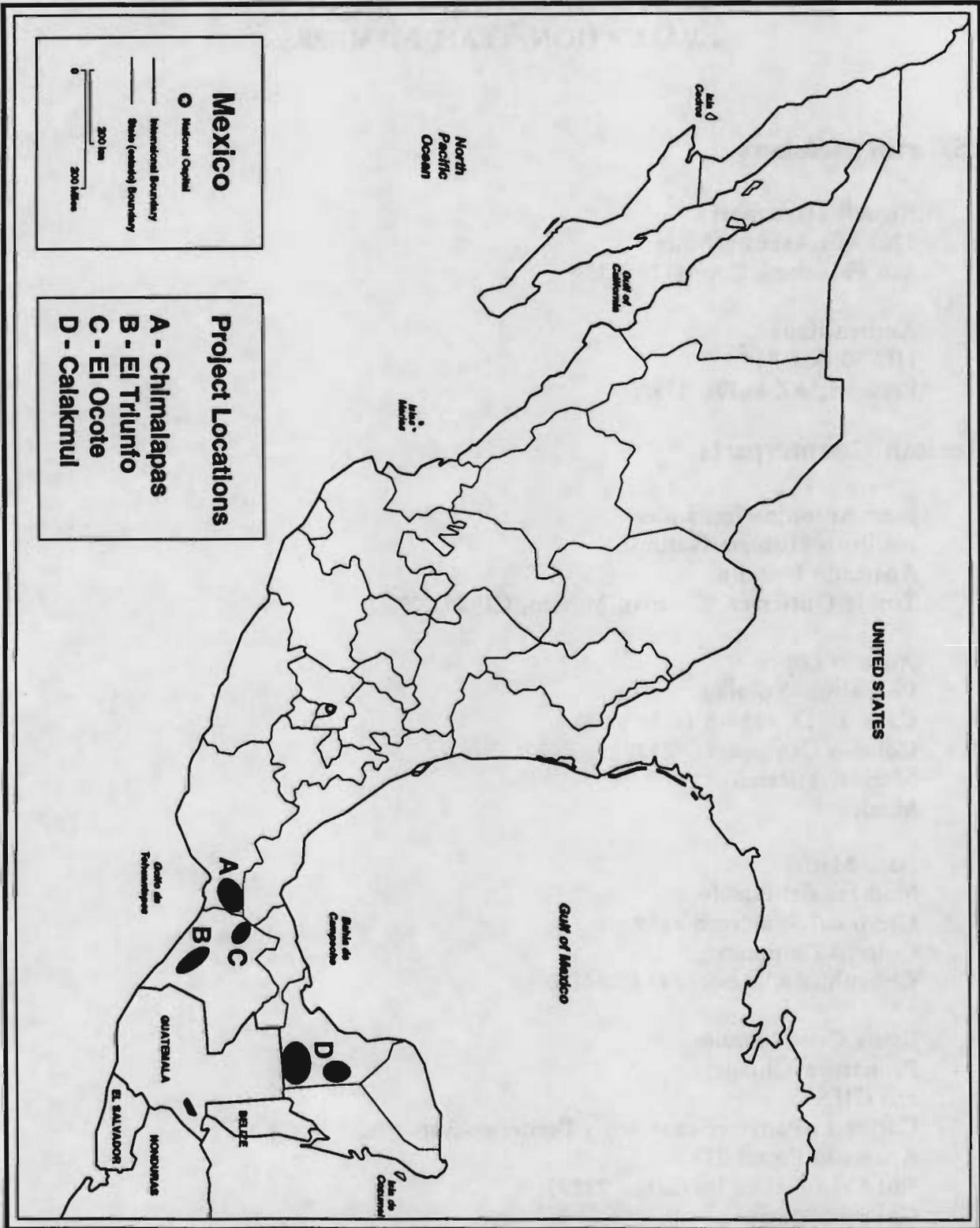
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Tuxtla Gutierrez, Chiapas, Mexico, CP 29,000
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Mérida, Yucatan
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5. Isaac Matus
Maderas del Pueblo
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Apartado Postal 219,
San Cristobal de las Casas 29200
Chiapas, México

APPENDIX G

MAP OF PROJECT LOCATIONS (project areas are not drawn to scale)



APPENDIX H

PROJECT REPORT ANNEXES

1. **CHIMALAPAS: MADERAS DEL PUEBLO**
 - a. **Organizational Structure - Operations**
 - b. **Organizational Structure - Statutory**
 - c. **Matrix of Project Activities**

2. **EL TRIUNFO: INSTITUTO DE HISTORIA NATURAL**
 - a. **Organizational Structure**
 - b. **Matrix of Project Activities**

3. **EL OCOTE: ECÓSFERA**
 - a. **Organizational Structure**

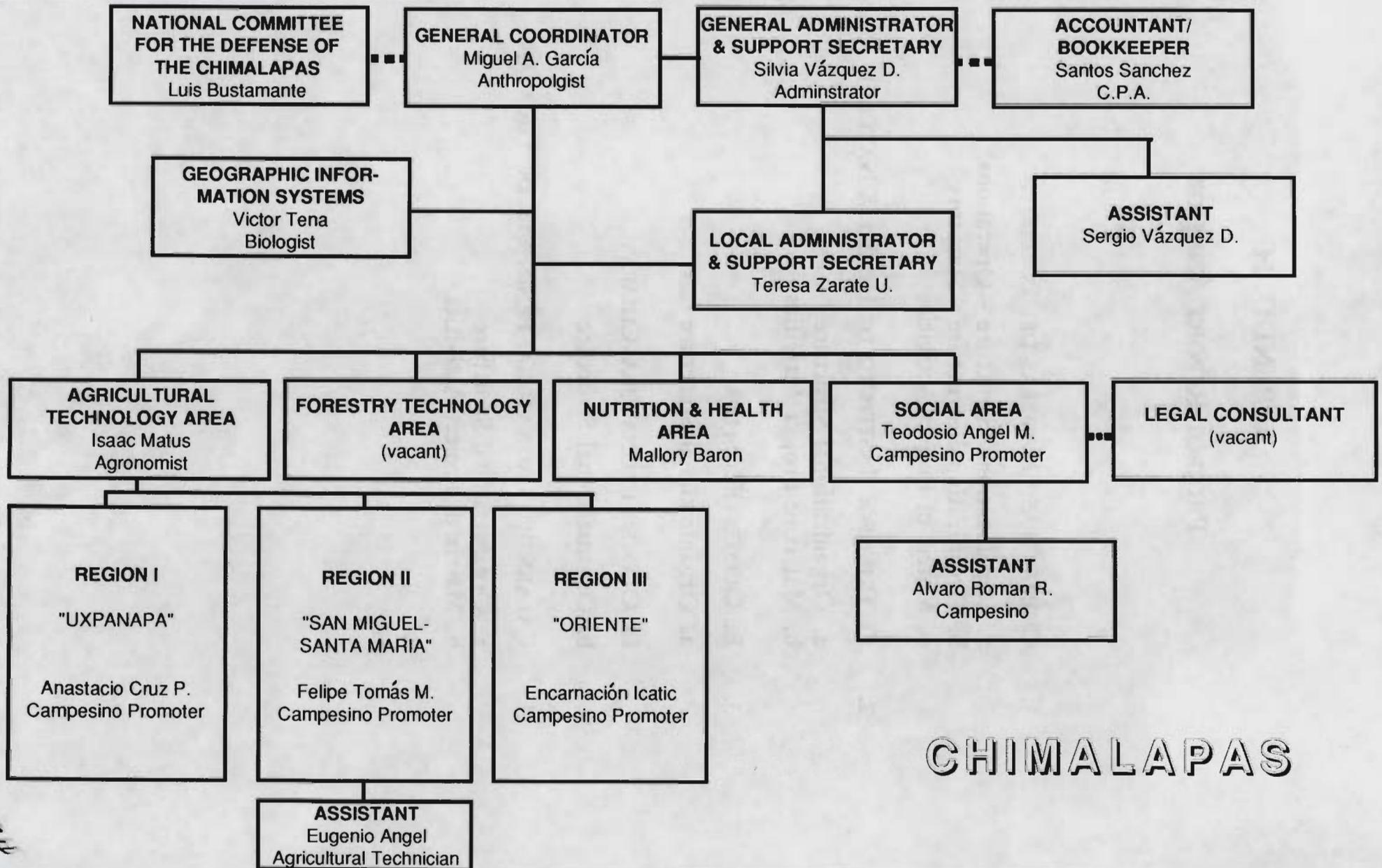
EL OCOTE: PRONATURA-CHIAPAS

 - b. **Organizational Structure**

4. **CALAKMUL: PRONATURA, PENÍNSULA DE YUCATÁN**
 - a. **Organizational Structure**
 - b. **Matrix of Project Activities**

MADERAS DEL PUEBLO DEL SURESTE, A.C..

ORGANIZATIONAL STRUCTURE FOR OPERATIONS (SEPT. 1993)

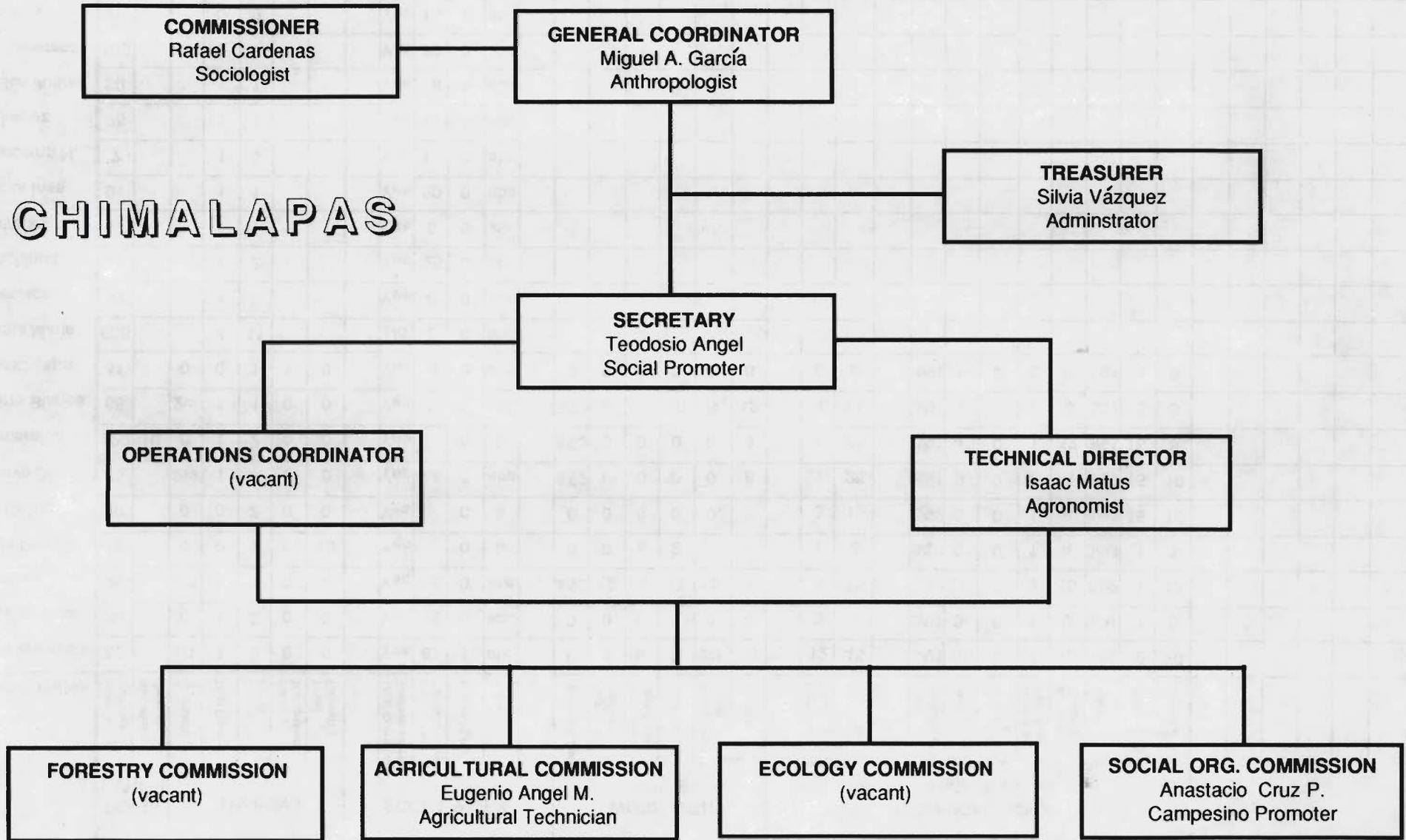


CHIMALAPAS

1993

MADERAS DEL PUEBLO DEL SURESTE, A.C..
LEGAL ORGANIZATIONAL STRUCTURE (1991-1993)

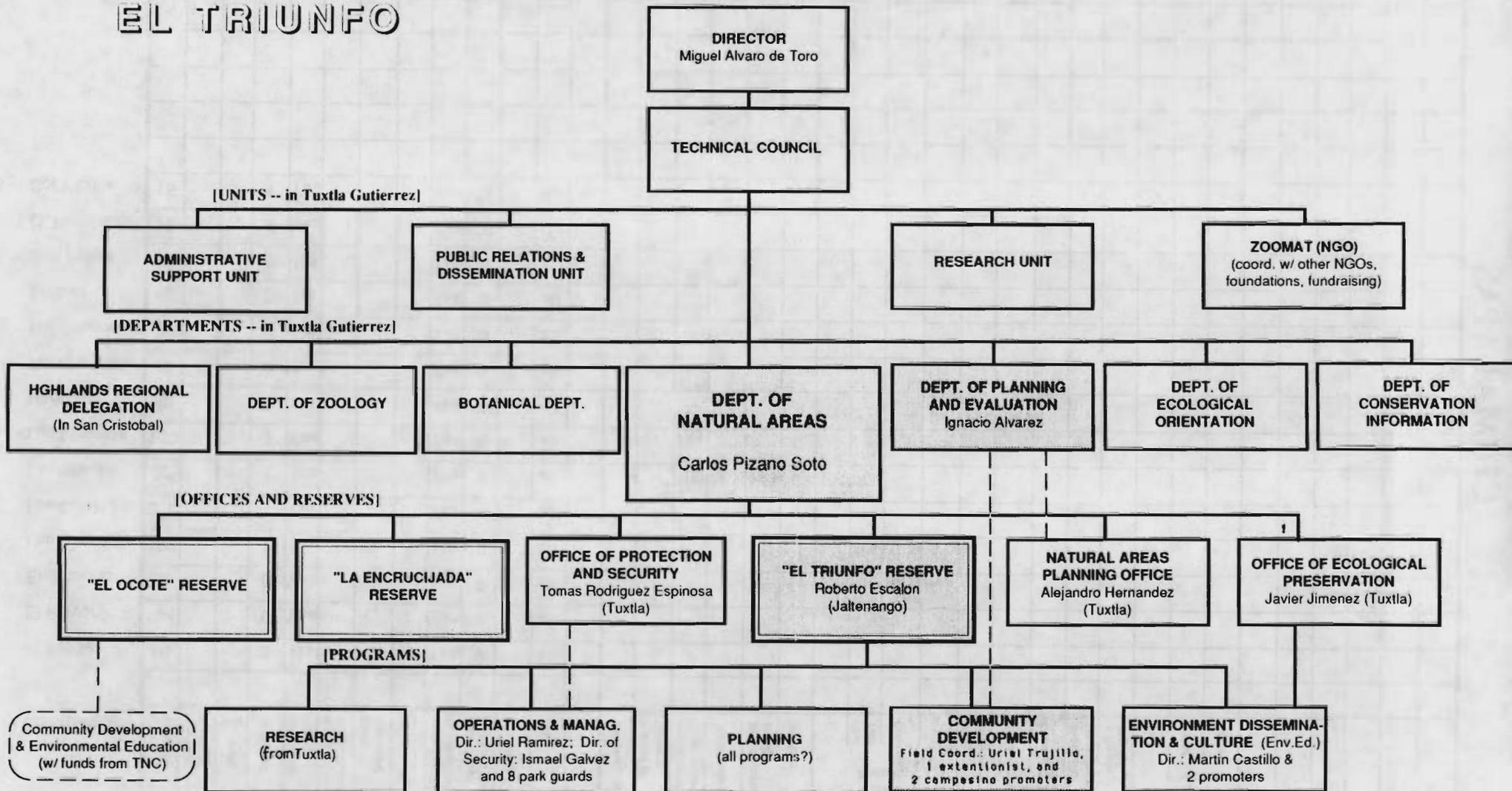
CHIMALAPAS



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INSTITUTO DE HISTORIA NATURAL ORGANIZATIONAL STRUCTURE

EL TRIUNFO



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PRINCIPALES ACTIVIDADES REALIZADAS POR EL PROGRAMA DE DESARROLLO COMUNITARIO EN LA RESERVA DE LA BIOSFERA EL TRIUNFO, CON UNA ESTAMACION APROXIMADA DE LA GENTE QUE LAS PRACTICAN

EJIDO	POBLACION (Ejidatarios)	CAFE ORGANICO				ABONOS VERDES		HORTALIZAS ⁴		ORGANIZACION CAMPESINA ⁵			
		Compostas ¹		Conservación de Suelos ²		Frijol Abono ³				Asambleas Regionales		Registro Legal de la Sociedad	
		# Inicial	# Actual	# de Asistentes	# Actual	# de Asistentes	# Actual	# de Asistentes	# Actual	# de Delegados	Asistencia (Promedio)	# de Socios	Documentos Tramitados
Toluca	120	12	12	21	20	20	12	22	20	24	12	75	45
Nueva Colombia	280	24	27	38	35	35	15						
Laguna del Cofre	240	17	10	25	15	26	17						

- ¹ Curso-Taller sobre Elaboración de Compostas
 Fechas: Toluca (10-12 marzo 1992); Nueva Colombia (22-23 abril 1993); Laguna del Cofre (20-21 abril 1993)
 Las compostas son por lo gral. de 2 m³
- ² Curso-Taller sobre Conservación de Suelos
 (incluye construcción y manejo del Aparato A, elaboración de terrazas individuales y de banco)
 Fechas: Toluca (7-9 mayo 1993); Nueva Colombia (5-6 noviembre 1992); Laguna del Cofre (18-19 noviembre 1993)
 Compromiso de trabajo = 625 m² (actual) -> 1 ha. de café orgánico (a futuro)
- ³ La capacitación a los campesinos no se ha dado a través de un curso-taller formal sino directamente en sus parcelas.
 Superficie de maíz con frijol abono/persona = 625 m²
- ⁴ Esta capacitación sólo se ha dado en Toluca, falta en las otras 2 comunidades.
- ⁵ En este aspecto, los datos son generales para las tres comunidades.
 El total de delegados incluye representantes regionales y locales.
 Las asambleas regionales son mensuales, la primera se llevó acabo el día 11 de mayo de 1993, contabilizando hasta la fecha 8 asambleas realizadas.
 Los documentos tramitados se refiere a la corrección de las actas de nacimiento de los socios.

Observaciones Generales

Se han impartido otros cursos de capacitación campesina a nivel regional (involucra a las tres comunidades), como son:

1) Control de calidad en café orgánico

Fecha: 27-29 diciembre de 1993

Lugar: Ejido Nueva Colombia

Impartido por: Centro Agroecológico San Francisco, A.C.

2) Planeación para el Desarrollo Sostenible

Fecha: 12-14 abril del 1993

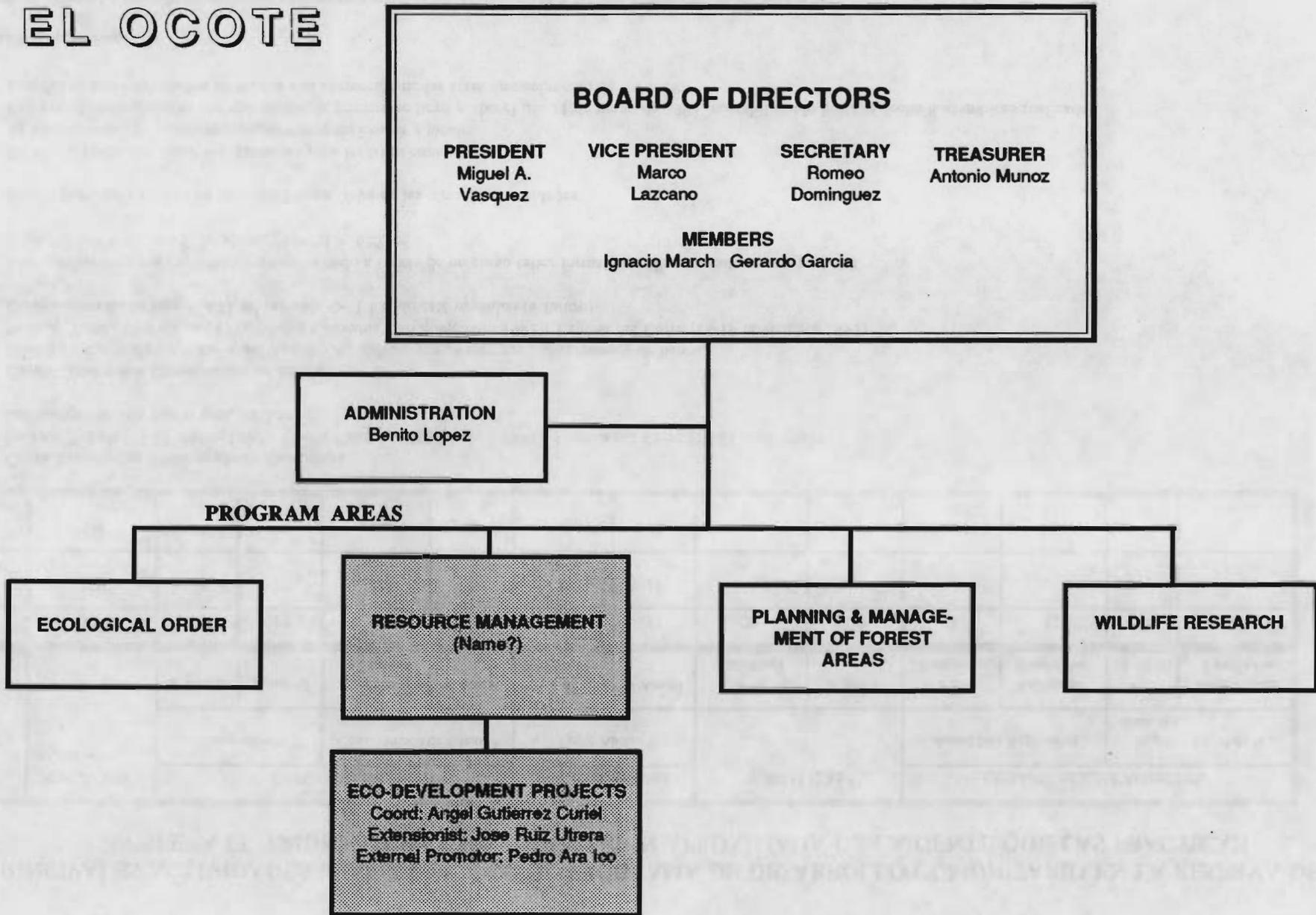
Lugar: Ejido Toluca

Impartido por: Centro Agroecológico San Francisco, A.C.

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ECOSFERA Chiapas A. C.
Center for Natural Resource Conservation Studies
ORGANIZATIONAL STRUCTURE

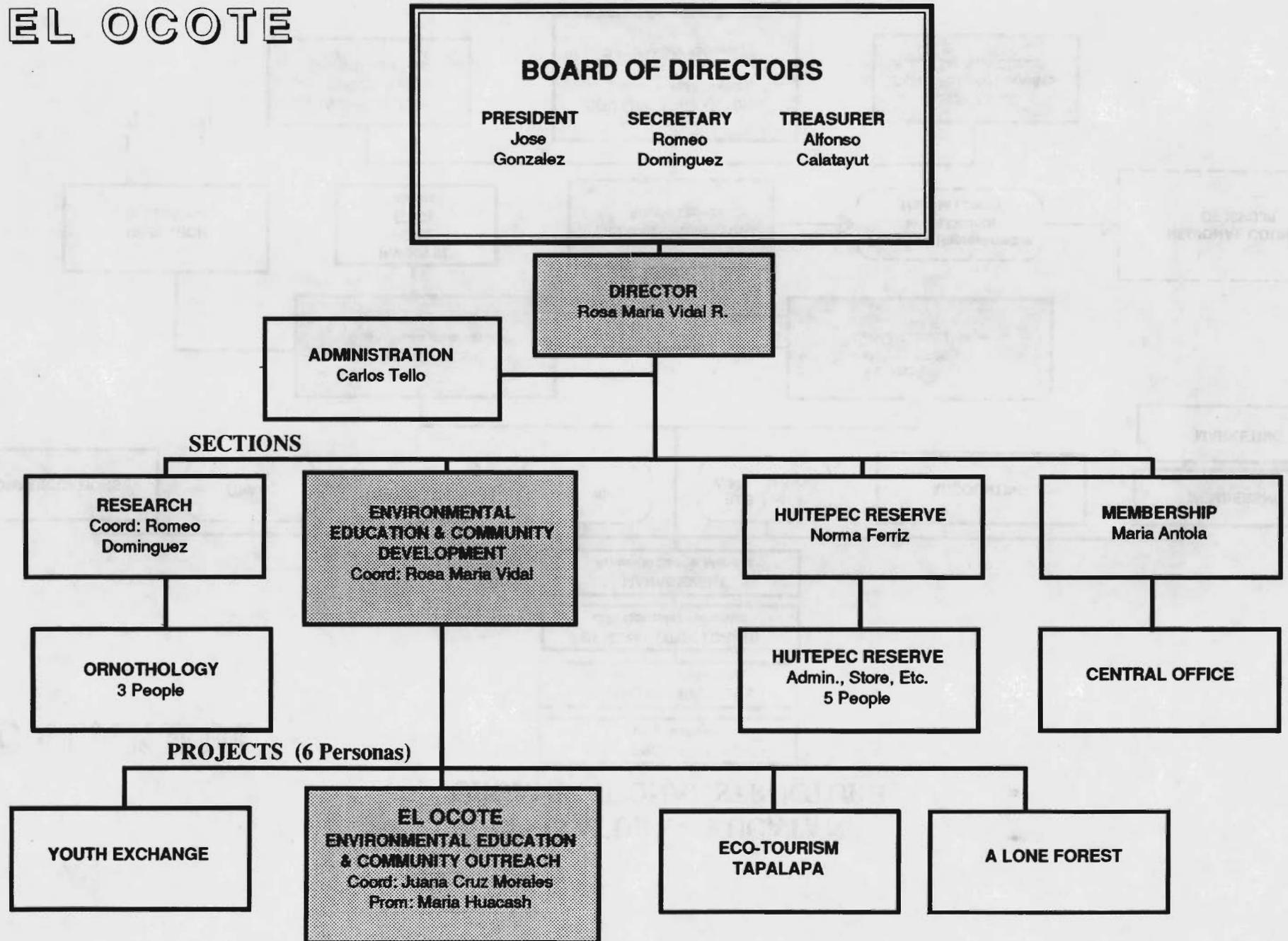
EL OCOTE



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PRONATURA Chiapas A. C. ORGANIZATIONAL STRUCTURE

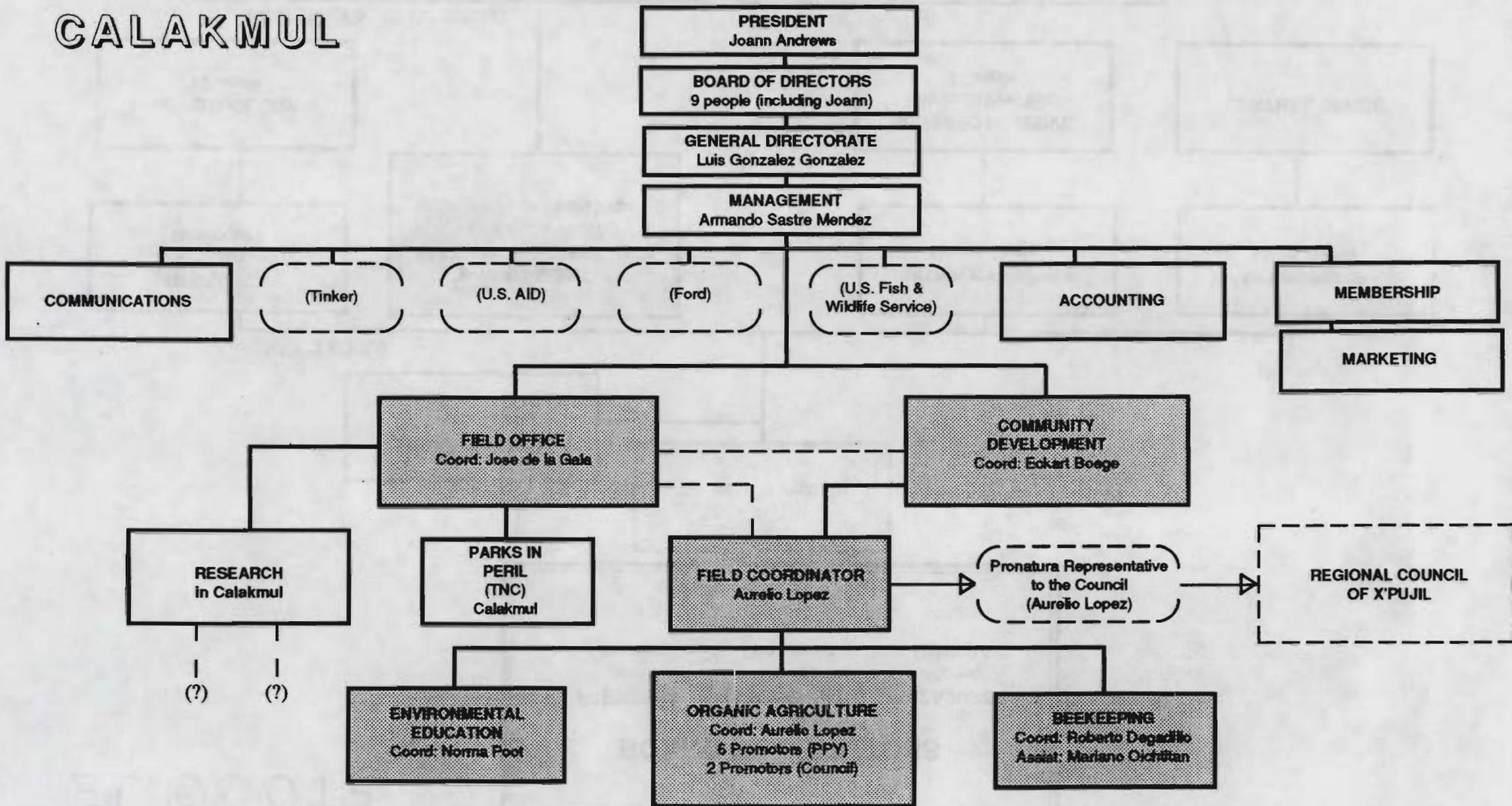
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PRONATURA - YUCATAN ORGANIZATIONAL STRUCTURE

CALAKMUL



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