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Assessing Participation in Popular Environmental Education Workshops:

The case of Huitzilac, Morelos, Mexico

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November, 1999

**A thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfilment of the requirements of the degree of Master of Arts**

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Abstract

Environmental education faces special challenges in areas of acute conflict over resource use. This thesis assesses the role of popular environmental education workshops carried out by an external non-governmental organization in a forest-based community in Morelos, Mexico. Factors investigated as possible influences on the impact of workshops included: the pedagogy employed; local perceptions of environmental problems; obstacles to participation; and motivations of participants. The research indicates that the potential role of environmental education for collective action is enhanced when workshops not only increase access to, and sharing of, relevant information, but encourage organizational capacity and inspiration through group work. Furthermore, environmental education must be relevant to major local concerns and forms of communication. Initial workshops on the forest have demonstrated local desire for community management to solve deforestation problems. A political ecology approach could be useful in workshops for in-depth analysis of the decision-making levels affecting the local environment.

Résumé

L'éducation environnementale doit faire face à des défis particuliers dans le domaine des conflits aigus sur l'utilisation des ressources. Ce mémoire porte sur l'évaluation de la valeur des ateliers communautaires de l'éducation environnementale dispensés par un organisme non gouvernemental dans une communauté forestière de Morelos, au Mexique. Les facteurs à l'étude susceptibles d'influencer les répercussions des ateliers comprennent : la pédagogie utilisée, la perception locale des problèmes environnementaux, les obstacles à la participation et les motivations des participants. La recherche révèle que le rôle potentiel de l'éducation environnementale pour des actions collectives est bonifié lorsque les ateliers facilitent non seulement l'accès à l'information pertinente et son échange mais encouragent la capacité organisationnelle et l'inspiration par le travail de groupe. L'éducation environnementale doit, de plus, être congruente avec les préoccupations majeures et les formes de communication locales. Les premiers ateliers sur la forêt ont démontré un désir local de gestion collective pour résoudre les problèmes de déforestation. Une approche d'écologie politique pourrait être utile dans des ateliers pour effectuer une analyse approfondie des niveaux de prise de décision se répercutant sur l'environnement local.

Abbreviations and Acronyms

ACCES	Academic and Community Cooperation for Environmental Sustainability
CBTA	Centro Bachillerato Tecnológico Agropecuario
CED	Centro de Encuentros y Diálogos
CIB	Centro de Investigaciones Biológicas
CBCH	Corredor Biológico Chichinautzin
GEMA	Grupo de Educación para el Medio Ambiente
ENEPA	Escuela Nacional de Educación Popular Ambiental
EPA	Escuela de Promotores Ambientales
NGO	Non-governmental organization
SEMARNAP	Secretaría de Medio Ambiente, Recursos Naturales y Pesca
QPIRG-McGill	Quebec Public Interest Research Group at McGill University

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Chapter 1: Introduction

This thesis describes research on popular environmental education workshops in Huitzilac, a rural highland community with 3,235 inhabitants (Grupo Colibrí 1996), in the municipality of Huitzilac (13,589 inhabitants according to a 1995 census) (INEGI 1997:108). Huitzilac is located in the Mexican state of Morelos (central Mexico, south of Mexico City).¹ There are problems of land degradation in Huitzilac linked to a cycle of deforestation, erosion and changes in rainfall as well as waste problems. These are threatening not only to local people's well-being, but also other communities in the region. In fact, Huitzilac is part of the *Corredor Biológico Chichinautzin* (CBCH), a government-designed conservation corridor intended to protect an area of special importance for Mexico City and the state of Morelos in terms of biodiversity, forests, and the maintenance of aquifers (Ibarrola 1996:8-9). Unfortunately, this undertaking was without the full knowledge and participation of residents (QPIRG-McGill and GEMA 1998). While such reserve areas offer some environmental protection, they are often sources of conflict because they are established without consideration for the economic and social causes behind environmental degradation, and they are based on the principle of exclusion of local users (Painter 1995:15-16).

Huitzilac's economy is very much dependent on the extraction of forest resources such as timber and topsoil. While it is a long-standing forest-based economy, existing small-scale agriculture (by *campesinos* or "peasant" farmers) has been increasingly abandoned in favour of logging, due to a combination of ecological, economic and political factors. This has elevated pressure on the forest, along with population increase and changes in logging technology and traditional practices. The lack of community forest management combined with the illegality of logging has worsened the situation (Lebner 1998). Mexican federal authorities have clashed physically with local people over attempted enforcement of conservation corridor regulations restricting forestry (ibid.). There is thus a

pressing need for effective local participation in formal decision-making on these matters, in recognition of the importance of community-based management of forests (cf. Cabarle, Chapela and Madrid 1997).

My research was linked to an ongoing non-profit partnership project between two non-governmental organizations (NGOs), called Academic and Community Cooperation for Environmental Sustainability (ACCES), which began in September 1996. This project (funded for two years by the Canadian International Development Agency), links the Group for Environmental Education (Grupo de Educación para el Medio Ambiente or GEMA) with McGill University through the Quebec Public Interest Research Group at McGill (QPIRG-McGill). One of the major goals of the project is to integrate academic research into environmental education.²

GEMA has been carrying out non-formal environmental education in Huitzilac in order to increase local people's capacity to organize for environmental sustainability. GEMA is a small organization whose principal members are adult educators, a nutritionist and a biology teacher. Although GEMA is based in the nearby city of Cuernavaca, direction for the ACCES project is determined by ongoing participatory "diagnosis" (*diagnóstico participativo*) or assessment, based on documentation of people's concerns about local environmental issues in Huitzilac (QPIRG-McGill and GEMA 1998).

A large part of GEMA's work has been to hold workshops on specific issues as well as to train people to become "environmental promoters" (*promotores y promotoras ambientales*) or teachers in their community. A group of promoters called the Grupo Colibri had been working in Huitzilac on several environmental problems after participating in the *Escuela de Promotores Ambientales* (EPA), a "school of environmental promoters" held in 1996 in the city of Cuernavaca.³ Some of these promoters continue to work in the community, alongside new ones.

First created in 1994 at the Centro de Encuentros y Diálogos (Centre for

Encounter and Dialogue or CED), an NGO in Cuernavaca, EPA workshops were facilitated by an interdisciplinary team of educators from NGOs and other institutions. GEMA joined the CED in the design and execution of EPAs in 1995 and 1996. The EPA was initially conceived to help build the capacity of new municipal leaders in charge of environmental matters (in municipal environmental departments, or Regidurías de Ecología, in Morelos for example) to deal with the effects of encroaching industrialization and urbanization, as well as to support teachers and community activists who were increasingly looking for more training (GEMA 1999a, n.p.). Other motives behind the design of the EPAs were the lack of environmental education generally, the lack of programs oriented towards low-income populations on these issues, and the need for participatory methods (ibid.).

Based on experience with the EPAs, GEMA embarked upon a national scale project entitled the *Escuela Nacional de Educación Popular Ambiental* (ENEPA) ("national school of popular environmental education") along with NGOs from other regions in Mexico. Workshops were held in Huitzilac in July and August 1998 as part of the larger ENEPA project. GEMA wanted to hold the ENEPA in areas of strategic ecological and social importance (including the CBCH). While originally set to be held in Cuernavaca like previous EPAs, the first ENEPA was instead held in Huitzilac. This afforded a more local focus.⁴ The Huitzilac ENEPA project also included the participation of QPIRG-McGill members and researchers, including myself.

EPA and ENEPA workshops are based on "popular" environmental education. Popular environmental education, along with other branches of critical theories of environmental education, is based on the experiences and concerns of learners. The relation between educator or facilitator and participants is ideally horizontal in workshops, where both learn through a combination of theory and practice. One of the major objectives of popular education is to increase dialogue in order to promote organized action. Additionally - in order to support effective community organizing and action at the different levels of decision-making which

affect local resources - popular education ideally combines different sources of knowledge, from traditional or local ecological knowledge to environmental sciences. Unfortunately, there has been little ethnographic research done on how local ecological knowledge and perceptions of environmental problems are (or may be best) integrated into environmental education.

My research is focused primarily on participation in educational workshops, in particular the Huitzilac ENEPA. I used participant observation, interviews, and a small random survey in the community to investigate the potential role of workshops for promoting collective action on environmental problems. A comparison of interviews with workshop participants and promoters and with survey respondents was helpful to better understand obstacles and motivations to participation in workshops.

The objective of the research (decided by myself in consultation with GEMA members) was to compile recommendations to improve environmental education in the community of Huitzilac and in the region, based on the opinions of participants, promoters, community members, and organizers of the workshops. In addition to this applied aspect, a second objective of the research was to learn at a broader theoretical level about environmental education in areas of acute conflict over resource use, as exemplified by the Huitzilac case.

In this thesis, I first review some of the literature on environmental education, and then discuss my research findings on factors which may influence participation in workshops and workshop outcomes. These factors include: land degradation and conflictive conservation efforts in the community; the popular education pedagogy used in the workshops; local perceptions of environmental problems; obstacles to participation; and motivations of participants. In looking at these themes, I have employed political ecology theory in three interrelated ways: first, as a perspective on the macro-structural context of environmental degradation in Huitzilac, secondly as a framework for field research questions, and finally to suggest a potential pedagogical approach to environmental issues in

workshops.

According to Blaikie and Brookfield (1987:16), a major focus of political ecology research on environmental degradation is to understand the costs and benefits that a "land user" evaluates in making decisions about land use. This implies investigating the perceptions of environmental changes which affect resource use, since "degradation is perceptual and socially defined" (Blaikie and Brookfield 1987:26). However, Blaikie and Brookfield (1987:17) also maintain that the *circumstances* in which land users make decisions should be seen in terms of broader "core-periphery relations". Furthermore, it is important to note that the attention on smallholders has been critiqued since it has tended to neglect how much more land is degraded by corporations and an affluent minority (Peet and Watts 1996:7-8; Painter 1995:8-9).⁵

Political ecology studies include a focus on power inequalities in the global political economy as the basis for much current environmental degradation (Painter 1995:15; Durham 1995:252). According to Painter (1995:8), political ecology research has shed light on how environmental degradation linked to smallholders is a result of poverty, which has often occurred through violence and displacement at the hands of elite interests. Unequal access to land results in ecological, political and economic dimensions of marginality, which reinforce each other in a cycle of land degradation and impoverishment (Blaikie and Brookfield 1987:23; Gupta 1988:17-18).

According to Durham (1995), environmental degradation proceeds in a positive feedback loop, where the top loop of capital accumulation causes increased pressures on the bottom loop of impoverishment and its resulting effects on a decreasing resource base, including environmental degradation, conflict, and migration. However, Durham (1995:256) warns that this model does not reiterate the view of dependency theories where the loop is set in motion through foreign demand for commodities alone. Similarly, Painter (1995:11) argues that it is problematic to attribute all explanations of environmental degradation in Latin

America to U.S. economic domination. To do so would be to disregard the effect of specific, local conditions and how these are related to social organization and perceptions of environmental change.

Keeping these caveats in mind, decisions taken at different levels (for example, the household, municipality, state policies, international trade), need to be looked at as interrelated causes in land degradation cases. According to Blaikie and Brookfield (1987:14, 64, 69), the question of scale is important because it concerns the levels at which land use decisions are made (i.e. who makes the decisions), which seldom correspond neatly with geographical scale and the scale of effect of the decisions. As such, it is important to maintain a distinction between direct decision-making, and broader economic and political pressures, since

It is ... very common to find that *direct* decision-making is frequently local, for example, the manager of a sugar plantation or the peasant farm household, but many of the parameters of choice are determined by others, for instance locally by a landlord, centrally by corporate management of a group of plantations, or nationally by government parastatal boards. (Blaikie and Brookfield 1987:69)

Using a political ecology approach to environmental education research implies asking whether environmental education in a locality is relevant to people's concerns and the choices they face when making economic and land use decisions. According to Abella, Fogel and Mora (1997:30) and Barndt (1996), the content of environmental education must first be linked to the quality of life in a community and based on those local concerns, make connections to broader issues. In order for workshops to be of use to people who wish to undertake action on governmental policy decisions affecting their local environment, it is important that political economic bases for environmental problems be analysed within workshops.

In light of this theoretical framework, my interest was in examining whether the workshops were seen to be locally relevant, what were local

perceptions of environmental change, and the relation of these two factors to participation in workshops. Major research questions include the following:

What meaning have past workshops had for promoters in Huitzilac? For the community?

How are the workshops relevant to local environmental and resource use concerns? How do these relate to the pressures people confront in making a living?

What knowledge do the workshops integrate from academic disciplines, and what knowledge do they draw out of participants (local ecological knowledge, locally-defined concepts of the "environment" and perceptions of environmental problems)?

How are local resource use conflicts dealt with in workshops? What local analyses of the situation emerge from participants' discussions? How are local environmental issues linked to broader processes of economic and environmental change?

What are the outcomes or effects of workshops? Are solutions brought forward, possible actions suggested?

What are the obstacles to increased participation in workshops?

Exploring the causes of environmental degradation can be difficult - particularly by an NGO from outside the community - in an area where political conflicts concerning resources are primarily local. Up until the ENEPA workshops in 1998, GEMA's work in the community had been focused on issues that are less politically controversial for fear of imposing outside views. However, this changed because of a growing realization within GEMA that deforestation is a major concern both locally and outside the community, and one which could be discussed between villagers and outsiders.

Distrust is a significant obstacle to participation in environmental education in areas of conflict over resource use. Friendships between GEMA and community members have been essential to overcome this obstacle. Interpersonal relations are

also important for working out misunderstandings which stem from some of the negative associations attached to terms such as “environment” (as with anti-logging enforcement and the associated conflict in Huitzilac), which are also extended to workshops. This issue points to the imperative that environmental education be based on local concerns as expressed in local terminology. Ethnographic research which aids educators in this regard may have a valuable role within locally and culturally relevant environmental education.

People in Huitzilac hold a wealth of ecological knowledge on local environmental changes. However, my research indicates that while knowledge of environmental problems is significant in motivating people to participate in the workshops or take action on these issues, alone it is not enough. Of special importance for the participation of Huitzilac promoters in environmental education and community activism has been experiencing the benefits of group work initiated in workshops. A possible role of popular environmental education workshops is to support and encourage community mobilization on environmental issues. The experiences of promoters in Huitzilac indicate that this role is enhanced when education not only increases access to, and sharing of, relevant information, but also encourages organizational capacity through group work.

Finally, based on my research and the literature on both political ecology and critical forms of environmental education, I would like to propose a potential pedagogical tool. A political ecology approach in workshops may help in discussions of linkages between perceptions of environmental degradation and political, ecological and economic causes, since theoretically there are striking parallels with popular education theories. For example, in popular and other critical forms of environmental education, causes rather than merely symptoms are discussed. Ideally, the educator begins with the experience and then through a dialectical process the group discusses root causes. Both popular education and political ecology theories focus on the effects of power inequality on environmental degradation.

In theory, a political ecology approach to environmental education would be centred on participants to try to understand personal decision-making and environmental degradation from their points of view. It may help in getting past language barriers and misunderstandings by starting with people's perceptions of gravest problems and perceptions of changes in the environment, and moving from these "symptoms" to causes. It also includes moving from more local factors to looking at other social and economic pressures shaping local decision-making.

Chapter 2: Environmental Education and Popular Education

The role of formal and non-formal environmental education in inciting social change is highly debatable. For instance, what is the relation between education and awareness-raising and other motives that influence people to become involved in resolving environmental conflicts (as resulting from local and global economic changes, environmental degradation, etc.)?⁶ Some of the literature suggests that the role of education may have more to do with increasing capacity for effective action than actually inciting massive participation. Barndt (1991:10), a popular educator from Canada who worked in Nicaragua during the time of the early Sandinista government, notes that popular education is an important tool for organizing, but it does not on its own create a social movement:

Education alone could not provide the major force for ending the repression of the Somoza dictatorship in Nicaragua. That push required political leadership, grassroots organization, and, at a certain point, an armed population. But education was an important part of organizing people; it helped develop the knowledge, skills, and analysis necessary for the decisive actions.

While there are major differences between popular education for literacy within a revolutionary regime and small-scale community environmental education, there are also similarities. Environmental education is also "movement education" (cf. Paulston and Lejeune 1980), and it may be a tool which can help people to organize more effectively.⁷ There is also the possibility that when instances of change develop, existing community groups may offer needed solutions and alternatives to an environmental crisis. Thus the questions needed to be asked shift: In what ways can environmental education encourage effective organized action on environmental problems? What factors make it useful?⁸

The literature on environmental education ranges from policy documents, declarations, philosophical treatises, pedagogical manuals, to various forms of environmental education research. There is a continuum ranging from reformist or

“liberal” approaches to critical or “radical” ones. However, there is also wide consensus in the literature on some general characteristics and objectives of environmental education, which include the following: Environmental education is essential for the survival of the planet; it includes formal and nonformal education; it is interdisciplinary and holistic; it seeks to construct an “environment ethic” and values based on the interconnectedness of humans and ecosystems; it is participatory and grounded in the experiences of learners; it encourages critical thinking, hands-on experiences and problem-solving, thus linking theory and action (Abella, Fogel and Mora 1997; Keiny and Zoller, 1991; Orr 1992; Palmer and Neal 1994; UNESCO 1991, 1980; UNESCO-UNEP 1987; Schmieder 1977; Troost and Altman 1972; Smyth 1988; Stapp 1972).

“Liberal” environmental education

The United Nations Educational, Scientific and Cultural Organization (UNESCO) and the United Nations Environment Programme (UNEP) have advanced environmental education as a vital force in the pursuit of “sustainable development”. UNESCO and UNEP founded the International Environmental Education Programme in 1975. The first Intergovernmental Conference on Environmental Education was held two years later in Tbilisi, Russia. Five main learning objectives for environmental education were instituted:

Building awareness of the environment and sensitivity to it in its totality, natural and man-made; assimilation of appropriate and relevant knowledge about the environment; development of attitudes of ethical concern about the environment, motivating active participation in its protection; acquisition of skills enabling identification, solution or anticipation of environmental problems; active participation of all. (UNESCO 1991:54)

The document *Environmental Education and Training: International Strategy for Action in the field of Environmental Education and Training for the 1990s* states: “It also falls to EE [environmental education] to define values and

motivations conducive to behaviour patterns and measures that are instrumental in preserving and improving the environment" (UNESCO-UNEP 1987:6). However, this is problematic because who should decide which values are to be taught? This "managerial" approach tends to downplay larger political and economic reasons for environmental degradation, when often there is little choice in changing lifestyles or behaviour for the majority of people. In discussing the challenges facing environmental educators in the Third World, Hickling-Hudson (1994: 31) states, "To try to envisage the action that students and teachers could take ... brings us sharply up against the realities of power which include the possibility of job loss and other types of victimization, the inadequacy of information, and the distance of Third World groups from centres of power."

According to Corcoran and Siever (1994:7), "most North American environmental education accepts the existing social and economic order as a given." In "liberal" approaches to environmental education, underlying political and ecological theories are not always laid out or openly questioned (Barndt 1995:93), such as the concept of sustainable development. This is unfortunate since the latter has often been used to justify corporate agendas (Dore 1996:9). Documents such as *Agenda 21*, the program for action signed at the Earth Summit in 1992, contains a multifarious combination of elements in which causes are contradictorily and simplistically posited as solutions to symptoms, as in the unjustified notion that trade liberalization will alleviate poverty and environmental degradation. As Escobar (1996:52) also notes, the sustainable development strategy is often more concerned with sustaining economic growth than with the effect of such growth on the environment.

The discourse of sustainable development presents a global managerial approach towards natural resources (Orr 1992:28; Escobar 1996). Orr (1992:28) argues that in this approach, education which truly encourages popular action is not desirable. Instead, participation is valued for motivating people to do what has been decided by others; a developmentalist notion which also fails to acknowledge

cultural diversity and local ecological knowledge (cf. Redclift 1992). According to Robottom (1993:1), although UNESCO-UNEP records indicate that the origins of environmental education were political in nature, the field of environmental education has later been dominated by didactic teaching of "technocratic rationality". This approach overlooks social, economic and political aspects of environmental degradation and perpetuates a belief in the superiority of scientific knowledge and divisions of labour in knowledge production (Robottom 1993).

Critical environmental education

Critical theories of environmental education, such as popular, eco-feminist, "eco-political", and critical adult environmental education, advocate participatory and "bottom-up" education, in which beginning with the experiences, knowledge and needs of the learners is fundamental (Abella, Fogel and Mora 1997; Arnold and Burke 1983; Barndt 1996; Clover 1995; Clover, Follen and Hall 1998; Corcoran and Sievers 1994.; Hall and Sullivan 1995; Hickling-Hudson 1994; LEAP/INFORSE 1997a; Orr 1992; Colón 1994). While such approaches begin at the local level, they also incorporate analysis of the power inequalities which drive environmental degradation (Hall and Sullivan 1995:98; Corcoran and Siever 1994:7). As Barndt (1996:26) notes, "Popular education also seeks to understand the broader structures (economic, political and cultural) that shape what is historically possible in our communities. While education and action are grounded in local realities, they both take into account and respond to the macro processes of globalization."

Critical approaches to environmental education draw from critical pedagogy and popular education such as elaborated, for example, by Paulo Freire (1970) as well as feminist pedagogies.⁹ Popular education mainly concerns non-formal education (i.e. education outside the official school system).¹⁰ Popular education has been widely used in Latin America (Vio Grossi 1984; Arnold and

Burke 1983:8), and in other parts of the world (LEAP/INFORSE 1997a). It is characterized by learning which is participatory and collective, and uses creative and cultural educational tools (Barndt 1995:95). Methods are often called "*dinámicas*" in Spanish and may include games, theatre, forums, and participatory research.

Popular education also represents a challenge to more conventional forms of pedagogy which do not explore fruitful links between theory and practice as well as "experiential" or corporal and playful learning (Clover, Follen, and Hall 1998:17; GEMA 1999b). For instance, GEMA (1999a, n.p., 1999b:9) argues that participatory pedagogical methods encourage group integration and interpersonal relations, the interchange of experiences, motivation to learn and self-confidence.

According to the theory of popular education, it is based on a dialectic which begins with local knowledge and practice, helps people develop a critical and theoretical understanding of their situation in a wider context, and is intended to lead to action based on this deeper understanding (Barndt 1991:19; Freire 1977:36; GEMA 1999a, n.p.; Walters and Manicom 1996:7). Through "problem-posing" dialogue, people reflect upon their lives and begin to question underlying hegemonic assumptions used to justify oppression (Freire 1977; Wren 1977:5).¹¹ This process is what Freire (1970) calls "*conscientización*". Inherent in this model is the idea that need (economic or otherwise) by itself does not necessarily lead to collective action if people do not have a critical awareness of their situation.

Popular education is thus a radical departure from the transmission model of education or, as Freire describes it, the "banking" or "'digestive' concept of knowledge" where passive students are "filled" or "fed" by an authoritative teacher (Freire 1970:58, 1977: 23). This is particularly the case when curriculums are designed by a central authority and have little relevance for the lives of marginalised people (Freire 1977: 24). Instead of top-down development, major principles inherent in popular education are participation, democratization, solidarity and documentation of experiences aimed at constructing local power

(Díaz 1994:56). The principle behind popular *environmental* education remains the valorization of local knowledge and power, though as the basis for organizing for sustainable communities (LEAP/INFORSE 1997a; GEMA 1999a). Barndt (1996:26) states that

Environmental education offers this tension to popular education, which has been charged (often justifiably) as being anthropocentric. A popular environmental education challenges the power relations underlying the dominant system of development and seeks to reframe and reestablish the nature-culture connection in the way we think and act with each other and the planet.

According to Vivian (1992:72-73), “disempowerment” results from people’s deprivation of access to resources they depend upon and abrogation of traditional tenure rights and local decision-making. Critiques of neoliberalism and alternative views of development as articulated in declarations of Indigenous, peasant and community groups and NGOs in international forums (for example, the non-governmental forums at the Earth Summit 1992 and the Earth Summit +5 1997, as well as others such as the Hemispheric Tribunal on Sustainable Development 1996) affirm the importance of community-based decision-making and local management of natural resources.¹² These points indicate valorization of local diversity as a basis for renewal of communities and social movements, and of resistance to the environmental and social impacts of globalization. As popular education is “movement education”, this focus on diversity is reflected throughout. Barndt (1995:94) states,

Popular education is aimed at ending economic exploitation, political domination, and cultural dependency. Its ultimate goal is to build a new, more humane and just society. In terms of ‘sustainability’, this would mean a human society that respects the diversity of both the ecological systems as well as the diversity of different social/cultural systems.

Popular environmental education is aimed at capacitating individuals to better participate in the decision-making which affects them. As Abella, Fogel and

Mora (1997:108) note, participatory environmental education is intended to promote development which is holistic, incorporates traditional knowledge and is based on the conscious participation of communities in the design and execution of these models. Thus the focus is on both environmental issues and mobilizing for political action. In this respect in particular it differs from conservative forms of environmental education. As Esteva (1994:16) emphasizes, since popular environmental education is focused on opening democratic spaces for the participation of civil society in defense of rights, it is a *political* act. The need for education for organizing is even more striking when one considers, as Abella, Fogel and Mora (1997:150) point out, that without social organization there cannot be adequate environmental management. Furthermore, authentic participation in the management of resource use needs to be most active at the local level (Ghai and Vivian 1992), which lends further support to the objectives of popular education for strengthening communities to have more power in the decision-making concerning local resources.

Role of the popular educator

Workshops are often used in popular education as they provide a space where environmental, political and social problems as well as action strategies can be looked at systematically (Esteva 1994:16). For instance, training people as promoters demonstrates this holistic approach. Workshops are also a forum for learning by doing, and for sharing knowledge and ideas (GEMA 1999a, n.p.). Indeed, popular educators are more akin to facilitators than teachers (Arnold and Burke 1983:13; GEMA 1999a, n.p.).

In popular education, the ideal role of the educator is one of "teacher-student" who enters into dialogue with "student-teachers" (Freire 1970:67, 1977:29, 36). As Vio Grossi (1984:313) notes, the contribution of the educator "is in promoting a particular dynamic, and in putting at the disposal of the groups

the technical instruments that allow them to have an increasingly more precise comprehension of this social and historical situation in order to begin to transform it". The best situation, as Abella, Fogel and Mora (1997:19) explain, is where the educator is simply an advisor on specific contents, as the group has already taken on their own process of teaching and learning.

It is important to note that the role of teacher as simply facilitator is very much acknowledged to be an ideal. Freire (1977:21) notes that *all* educational practice involves values and a theoretical stance. The role of teacher is complex because environmental education necessitates the integration of different forms of knowledge - including traditional ecological knowledge as well as ecological and policy sciences - in order to place local experiences within a larger framework of global economics and environmental change. The environmental educator cannot be "neutral" since, as Viesca Arrache (1990:7) explains, all education implies specific content and cultural practices in relation to nature. Thus, there exists a tension in the role of the popular educator, between facilitator of group analysis and transmitter of specialized knowledge as well as particular values concerning the place of humans in ecosystems.

Relying on local knowledge is not a simple issue in popular environmental education. Bowers (1995:9-10) cautions that the Freirean emphasis on learning from the experiences of the individual is problematic since not everyone has special knowledge about sustainable practices. As Ghai and Vivian (1992:11-13) note, many societies have retained traditional knowledge concerning resource use upon which to base resistance or rebuild self-reliant communities, while other traditional knowledge has been displaced by colonialism and neo-colonialism. Several popular educators advocate that an essential part of environmental education is to bring to light the existing knowledge people have about their environment since it is the local economic, social and ecological context that is the ideal basis for participatory environmental education (Abella, Fogel and Mora 1997; Colón 1994:44; Viesca Arrache 1990:34).

Abella, Fogel and Mora (1997) discuss the importance of recuperating traditional and indigenous knowledge in communities. Indeed, one of the major themes running through critical environmental education theories is the necessity to incorporate different knowledge systems (Clover 1995; Bowers 1996, 1995; Orr 1992). These approaches stress the importance of both valorizing traditional knowledge and also advocating education that creates “new” knowledge while drawing from a variety of sources including other cultures’ traditional ecological knowledge systems, feminism, “bioregionalism”, environmental sciences and other fields.¹³ Beginning with local knowledge also implies that popular educators should begin with the experiences of local people regardless of what kind of ecological knowledge they hold, and then help participants build up analyses from that basis.

Research and the integration of local knowledge

Based on their experience with participatory environmental education in Guaraní communities in Paraguay, Abella, Fogel and Mora (1997:14-15) state that it is of utmost importance that popular educators be informed about the problems people consider to be the gravest in their community. Otherwise, these authors (1997:30) argue, education is inoperant and its contents are quickly forgotten. As such, a first step in environmental education is “the recuperation of the experience, history and direct knowledge of people about their environment” (Colón 1994:44, my translation). This type of research is called a “diagnosis” (*diagnóstico*) by some popular educators (such as in the network of popular environmental education of the Latin American Council on Adult Education) (REPEC-CEAAL 1994). With participatory diagnosis, community members are actively involved in assessing local needs and resources to deal with problems.

The research aspect of popular education is essential even in cases where it appears redundant in terms of the cultural background of the educator.¹⁴

Workshops in particular demonstrate how environmental education carried out by NGOs for example, differs from the learning of local or traditional ecological knowledge, in that the former represents a formalized type of learning about the environment. In fact, Abella, Fogel and Mora (1997:13) state that all environmental education can be said to be dialogue of a cross-cultural nature, due to the role of educator which involves a particular body of knowledge. What this implies for popular education is that the educator needs to depend as much as possible on participants' concepts and perspectives, particularly if the educator is not from the community where he or she is working (as is the case with GEMA). According to Abella, Fogel and Mora (1997: 142, my translation) basic criteria of participatory environmental education involve the following:

- a) Environmental education is developed within a framework of specific projects oriented towards the reduction of poverty.
- b) The context of the educational experience is the local community.
- c) The instructor must be familiar with the... community in beginning his or her role.....
- d) Insofar as possible, an interdisciplinary and cross-cultural focus is used in the treatment of environmental problems.
- e) The environment is treated as system.
- f) Educational activities are developed as part of a process of action research.

Abella, Fogel and Mora (1997:17) discuss how in Latin American popular education theory it has often been insisted that a participatory methodology cannot have previous planning. Instead the authors (1997:17) state that what is needed is to understand planning as a flexible proposal, not as mandate. By consequence, popular environmental education cannot be "abstract" in the sense of being universally applicable in a theoretical form. It needs to be specific, based on local concerns and forms of communication. Language is important in this regard, because resource use problems are often not referred to as "environmental" problems by local residents (cf. Redclift 1992:36). It extends not only to local concepts and terminology, but also to local practices, rhythms and corporal forms

of expression (Abella, Fogel and Mora 1997:27; Margarita Hurtado of GEMA, personal communication, March 1999). The extent to which methods (*dinámicas*) are based on local cultural practices is of special concern in this regard.

Environmental education research methodologies

The primary purposes of environmental education research are for planning programs and learning about pedagogical practice. Environmental education research may be separated into three broad categories consisting of case study descriptions, ethnographic studies, and survey or psychometric research. Much of the literature documenting popular environmental education consists of summaries describing experiences in this field (for example, LEAP/INFORSE 1997b; REPEC-CEAAL 1994). It is research in that it is based on actual experiences using popular education. However, evaluation methodologies used are generally not outlined.

Summaries of environmental education cases are important for educators to be able to share experiences and learn. However, more detailed research which attempts to understand "the participant's point of view" would be beneficial. Educators are not participants and cannot fully understand the experience of participating as someone new to the whole field of environmental education.

There are a few documented examples of how ethnographic research can be integrated into environmental education planning. One example is a manual by Abella, Fogel and Mora (1997), based on experiences in Paraguay mentioned above. Viesca Arrache (1995:81) discusses an investigation carried out in Jiutepec, Morelos, Mexico, in order to put forth an educational proposal for the area. In the project she describes (1995:102), interviews were conducted on people's knowledge of the local environment and environmental problems, and views on participating in an environmental education program. A similar example

is DaSilva's (1995) study on the relationship between local ecological knowledge and school-based environmental education in four communities in Tanzania.¹⁵

There may be benefits to combining different forms of research, such as ethnographic methods with surveys on awareness of issues or social psychology studies of the attitude-behaviour relationship (cf. Petrezelka, Korsching, and Malia 1996:39).¹⁶ An example of the latter is questionnaire research on knowledge of environmental issues, attitudes towards these, and intended or current actions (Gigliotti 1994; Hausbeck, Milbrath and Enright 1992).

However, despite the need for detailed qualitative research as part of educational practice, environmental education has been dominated by survey and experimental research (Robottom 1985; Robottom and Hart 1995; Robertson 1994).¹⁷ This research is oriented towards assessing a population's level of environmental knowledge according to categories determined subjectively by researchers (Robottom and Hart 1985:8); problematic even within the field of psychometric research (cf. Gray 1985:21; Leeming et al. 1993:8, 18). Yet, designing a *universal* scale for measuring environmental attitudes is also problematic. For instance, Leeming et al. (1993:18) criticize the local character of many studies:

Individuals in a class or other intact group clearly do not constitute independent measures, and their responses may be affected by numerous confounding factors other than or in addition to any true treatment effect. Potentially confounding factors when using different classes include differences in teachers, different interactions among students within a class, different school characteristics, and so forth.

However, the presence of "confounding factors" points to a need for more qualitative methods. As Erickson (1985:49) notes, the use of predetermined coding categories and "process-product" educational research produce a reduced view of education, depicting one-way interaction rather than "reciprocal exchange of phenomenologically meaningful action". In this view, it is the variables which are seen to predict environmentally responsible behaviour of individuals that

matter, not collective processes (Robottom and Hart 1995:8).

Robottom and Hart (1995:6-7) argue that the deterministic character of this kind of "positivist" research contradicts a major goal in environmental education, which is to develop critical and independent thinking (or *conscientización* as discussed above). At first glance it may appear that this argument confuses the nature of knowledge and research with the uses of these. Rather, Robottom and Hart (1995:5) state that the question concerns which research practices correspond most appropriately with environmental education, as recent debates point to

a greater legitimization of alternative approaches to environmental education research; they also raise questions centered on definitions, what is desirable, and what research methods are most compatible with environmental education rhetoric and the new environmental paradigm that undergirds environmental education theory and practice.

It requires examining research not only in terms of accuracy, but in terms of ethics and process by asking who benefits from it.

According to Carr and Kemmis (1983, cited in Kemmis 1993), an adequate educational science needs to be based in practice, "in the sense that the question of its truth will be determined by the way it relates to practice". Participatory and action research (or "participatory action research") correspond with this theoretical orientation, as they seek to combine social inquiry with emancipatory change by involving participants in each phase of research (Lewin 1952, in Kemmis 1993:178; Hall and Kassam 1988; Park 1993). Educational action research is centered on concerns for self-reflection by practitioners (Kelly 1985:131; Kemmis 1993; Ebbutt 1985:156; Robottom 1985:33). Outside investigators with specialized training also have a role in participatory research, by building local capacity for analysis and action, in a process where they are committed participants rather than detached observers (Hall and Kassam 1988:151-152).

Ethnographic studies are important for the reasons discussed above, and in

light of wide variation in environmental concepts. A survey with predetermined categories intended to assess environmental knowledge runs the risk of being locally inappropriate, and may not reveal how people perceive and discuss environmental change. In a study on environmental perceptions of deforestation in the Lacandona rainforest in Mexico, Arizpe, Paz and Velázquez (1996) found that their concepts of "pollution" were not understood by local people to mean the same thing. The researchers thus used a variety of questions to understand how people perceive environmental change in ways that did not use the terminology of "environmental" problems and "pollution". Similarly, ethnographic methods may be better suited to understanding the cultural categories by which people talk about the environment in learning experiences, as well as variables that affect attitudes and behaviour. This is particularly important for evaluation of programs. As Viesca Arrache (1995:129) points out, it is important to appreciate qualitatively the successes of environmental education within specific social situations, and not try to prove the efficiency of a process based upon quantitative results isolated from the context.

Even though participatory action research uses ethnographic methods, ethnography itself remains essentially an individual enterprise and thus poses both potential benefits and problems when it forms part of a participatory project.¹⁸ Yet ethnography and participatory research are not necessarily exclusive. As Escobar (1992:419) writes, "anthropology must move away from the organization of knowledge in which it exists - abstract, disembodied and disembedded from popular social contexts, accountable primarily to the academy - and start to participate more explicitly in local questions and activities." In Argentina, ethnographic approaches are increasingly used by teachers in participatory research (Batallan 1998:45). Berteley and Corenstein (1998:55) discuss how there has been little interaction between participatory and ethnographic research in Mexico, although critical ethnography may provide a possible form of interchange. Similarly, Gitlin, Siegel and Boru (1993:192) call for "educative research"; a

reconceptualization of ethnography where there is less separation between understanding and application, and between researcher and those researched, contributing to emancipatory change.

Chapter 3: Methodology

This research is based on four months of fieldwork. In February 1998, I visited the community with other McGill members of the project, to discuss plans with GEMA and promoters. I returned for three months in the summer to conduct fieldwork. I later went back in mid-February 1999 for a month in order to do some follow-up work, seek permission to use sensitive information, and visit people involved in the research to discuss the findings. I must note that this short period of fieldwork cannot do full justice to the complexity of issues concerning participation in environmental education workshops. Furthermore, as Viesca Arrache (1990:28) points out, evaluation of environmental education is always partial and indirect.

Methods used in this research include participant observation, interviews and a small random survey.¹⁹ I interviewed a total of fifty-four people. The interviews consisted of unstructured and semi-structured interviews with seven promoters, ten workshop participants (out of a total of thirty-two participants), and thirty survey respondents. I also carried out key interviews with agronomists working in the region, municipal officials, and community members with special knowledge of forestry. Evaluations held by GEMA were a form of (practitioner) participatory research and were important for recommendations incorporated into the research.

The research had applied purposes within the ACCES project. Of methodological concern generally was the issue of trust with interviewees and for taping workshops. It is also important to be reflexive about my role in doing applied research with the NGO carrying out environmental education in the area, which I discuss below.

Applied research in the ACCES project

The role of working with GEMA and doing research in the community creates interesting tensions. While my research was for the thesis, it was also “applied” since I worked directly with GEMA at different levels. Based on my research, I helped in the planning of workshops and in some of the coordination, particularly the evaluations. It was at first difficult to balance research and “volunteer” work, while simultaneously learning from and helping to plan the workshops. Yet it soon became clear that this dual role had many positive benefits.

Working closely with organizers helped me to understand further the obstacles to participation in workshops, and in particular to learn about popular environmental education methodology. Both I and another researcher (Gisela Frias, a PhD candidate from the McGill Department of Geography and the coordinator of the ACCES working group at QPIRG-McGill) were doing research and living in the community. We brought insights into workshop planning based on our research, for example concerning local ecological knowledge, forest use and reforestation, and problems with water and agriculture.

As such, the applied aspect of the research has been ongoing, during data collection in the design of the workshops and for final “products” in terms of (1) presentation of research results in the community, especially to promoters (in particular through a forum held in the community); (2) design of future workshops in the ENEPA project; and (3) creation of future documents intended to help educators in the area as well as continue the process of making research accessible in Huitzilac and other communities through GEMA.²⁰

There is a spectrum of degrees to which research is intended to directly or immediately contribute to social change. Ethical guidelines increasingly require researchers to make information accessible to the communities in which they conduct research. Participatory research moves beyond basic requirements to

advocating research based on people's concerns and which involves those affected throughout the research process. While I was not involved in participatory research exactly, I was able to conduct research linked to a project which uses participatory methodology throughout planning and activities. I feel this is important since, as noted in the previous chapter, it would be difficult to see how the role of the anthropologist in popular education could justifiably be one of "top-down" forms of applied research or of "detached" academic research.

Documenting the workshops

The workshops that were carried out in the community by GEMA as part of the ENEPA were divided into two parts. The first six sessions were done in two three-day periods in July, lasting from 10:00 am until 2:00 pm each day. These were done in the nearby *preparatoria* (post-secondary educational institution which roughly corresponds to a senior high school level). Sessions seven and eight were done several weeks later at the Parque Nacional Lagunas de Zempoala (part of Huitzilac is comprised of this national park) and were focused on the forest.

Workshop sessions were taped when possible. Before taping, Gisela or I explained that it was for our research and for creation of the workshop summary. We also explained that the tape recorder was not indispensable and encouraged people to turn it off at any time. Although no one objected to the taping in the early sessions, they may have been shy about doing so. I always feared that taping was intrusive, and sometimes did not tape just in case it inhibited more free discussion. In the sessions on the forest, taping was even more problematic because the subject is controversial. We taped the presentations of presenters and some of the ensuing discussions, but not an open forum which was held.²¹ We also did not tape most small group exercises.

In terms of observation, I took detailed notes of the sessions, either during or soon after. It is clearly difficult to sort out my own feelings and perceptions

from a more “objective” understanding of group processes, let alone try to understand what others are feeling. Some of my assertions about the workshops are based on the flow of discussion, including such aspects as laughter. I used both participant and GEMA workshop evaluations (at the end of each session written or oral evaluations were held) and interviews with participants to get a better perspective on what people thought of the workshops. As well, I made use of registration questionnaires which were distributed among participants in the first sessions. The questions included basic contact information, questions on occupation and participation in organizations, how people found out about the ENEPA and decided to participate, and knowledge of environmental problems (see Appendix A: Registration sheet questions).

It is clear that when I interviewed participants about the workshops they knew I was working with GEMA. It is difficult to know how much evaluations made in the interviews are limited for this reason, because participants may have been reluctant to express criticisms about the workshops to me. Nevertheless, some participants did critique aspects of the workshops and GEMA’s work, and they also gave recommendations concerning environmental education work in the community.

Promoters and participants interviewed

I interviewed seven promoters (five women and two men) who had participated in the EPA 1996 (except for one young woman who participated in the Grupo Colibri without having gone to the workshops). Five of the interviewees had been students at the time of the workshops, one was a teacher and another was a man in his sixties. Interview questions were on their views concerning the EPA, primarily why they decided to participate, what was it like for them, what subjects were most interesting and useful, and did they continue to apply things they learned. Questions about work in the community included views

on the group's work and obstacles they faced.

In terms of interviews with ENEPA participants, I conducted interviews with three people who participated in one or more of the early sessions, four who participated only in the sessions on the forest, and three who participated in almost all of the sessions. While the first group of questions to participants was similar to those put to survey respondents for comparison purposes, a statistical comparison would not be very accurate since I did not use a sampling procedure for interviewing participants. I interviewed participants of different ages, ranging from fifteen to about sixty years old (six women and four men). Participants are engaged in a variety of occupations similar to survey respondents. Some are housewives or do domestic work, some are students, others work in logging, earth extraction, charcoal production, artisanry, carpentry, sewing, farming and horticulture.

The most important aspect of interviews with participants was to get an understanding of how they view environmental education and participation in the community as well as to document their recommendations. Some of the open-ended questions I asked participants concerning the workshops included:

- Q. What subjects do you think are most relevant for local problems?
- Q. What subjects do you think are most useful and interesting?
- Q. Were these issues you had spoken about with others before?
- Q. Did the workshops give you ideas of things you would like to do?
- Q. Do you think others in the community would like to come to workshops like these?
- Q. Do you think the solutions that were talked about are possible to carry out?

Survey questionnaire

The main objectives of the survey were to investigate the reasons people participate or not in workshops; how the latter can be made relevant to local concerns; and how to integrate local knowledge and concepts of the environment

and environmental problems into workshops. The random survey consisted of semi-structured interviews with thirty people (fifteen women and fifteen men). Ages of respondents were evenly distributed, ranging from nineteen to seventy-seven.²² The small size of the sample does not lend itself to generalizations about the population of Huitzilac. However, taken together with other ethnographic methods, and work by other researchers in the community, it does provide a more concrete tool to examine participation rates in the community and related issues such as perceptions of environmental change.

The survey question guide was as follows (see Appendix B: Survey questions guide in Spanish).²³

Q. Has the person always lived here? This question was asked in order to see how much time the person has lived in the community, which may be related to knowledge of the area.

Q. What does the person think are the gravest problems in the community? The purpose of this question was to see if environmental issues are among problems of local concern.

Q. Does the person belong to an organization (such as being a *comunero* or another community organization or church group)?²⁴ This question was asked to see if participation in an organization may affect knowledge or participation in workshops or related activities.

Q. What occupation(s) does the person have? Q. Does the person farm? These questions were asked to learn about how occupation and farming may affect perceptions of environmental change.

Q. Has the person noticed changes in the rains (since the time he or she remembers)? Q. Changes in agriculture? Q. Changes in the forest? If so, what does the person cite as the causes of each of the changes? The main purpose of these questions was to research perceptions of environmental change.

Q. Does the person think the forest is presently, or can be, used in such a way that it is maintained? This question is from Gisela Frias' interview guide. In this survey, it was asked in order to investigate relations between views on forestry and other opinions.

Q. Does the person recognize the words “environment” and “ecology”?
Q. Does the person consider there to be “environmental” problems here and what are they? These questions were purposely asked in order to find out what the person defines as “environment”, “ecology”, and “environmental” problems, and the possible effects of this on participation in workshops.²⁵ The latter question was not intended to solely and directly measure perceptions of environmental change. Finally, I would also ask what the interviewee identified as the causes of the problems as well as possible solutions.

Q. Has the person heard about courses, workshops or activities on the “environment” or “ecology”? Q. Has the person participated in any of these? These questions were asked in order to investigate awareness and participation in existing programs.

Q. What does the person identify as impediments for participation in courses or workshops?

Q. What is the person’s age? Q. Years of schooling? Q. Sex?²⁶

For the purposes of this study, the perceptions of change are primarily examined in terms of how they correlate with knowledge of environmental problems and environmental education activities. However, the descriptions of people’s subjective perceptions are also measures of actual changes in the environment, with some conditions. It is important to note that there are difficulties in using people’s perceptions as accurate measurements of environmental change (cf. Arizpe, Paz and Velázquez 1996; Burton and White 1993). Nevertheless, I think that much of the information respondents discussed with reference to changes in agriculture, rains and the forest may be considered an important form of understanding environmental change in the region. People who have lived and farmed in the community all their lives have detailed knowledge of how things used to be and how they are now. The information is very consistent, as the observations were very similar across respondents.

In discussing the interview findings I have included many quotes. Editing the voices of others is inevitably a problematic task, but I feel that this is partly compensated by two factors. One is that people explain the changes much better

than I can ever hope to. The other is that the testimonies demonstrate the degree to which environmental changes are of deep concern to people in the community.

Mapping and sampling

The municipality did not have a census of the town with names or houses. Nor was it useful to ask for a phone list as most people do not possess a phone. The municipality did provide me with a map of the community. I asked a promoter who had participated in a waste management campaign which had involved going door-to-door, to accompany me as an assistant to count houses. We had to estimate for the lower portion of the highway since it is quite inaccessible on foot and dangerous due to dogs. However, I am confident the estimate is relatively accurate, as we both arrived at almost the same figure counting independently. In all, we counted 1,184 houses. After marking these on the map, we numbered them, going from left to right and down in order to number evenly across neighbourhoods. I divided the number of houses in the sampling frame by the number of interviews I could reasonably conduct (which unfortunately was only thirty). This gave a figure of 39.5, therefore I marked every 39th and 40th house as the sample. Houses were then marked on the map in terms of whether women or men would be interviewed.

The main purpose for using a systematic sampling method was the existence of some occupational differences between neighbourhoods. The benefit of using this method was that the sample was randomly selected and evenly spread out across the map in general. There were drawbacks however. First, the manner of numbering houses on the map does not ensure that houses close to each other could not be selected, and in fact two houses were selected in the same block. Another issue was that "non-residents" were included in the sampling frame. In the lower stretch of the highway, there are many vacation homes owned by people from nearby Mexico City. One of these homes was included in the sample (it falls

within Huitzilac). I interviewed the neighbour who was available (who himself had moved to the community only two years ago). This was one of the two households that were originally selected where I was unable to do an interview. Fortunately, there was only one case in which I was refused an interview, which is discussed below.

Distrust and assessing validity

The single hardest methodological obstacle to overcome during interviewing was distrust. Asking questions is difficult as an outsider, especially when it concerns forest use, due to the distrust which has been generated from conflicts over illegal logging. As well, in the last couple of years there has been an onset of kidnapping for ransom in the region. Huitzilac was of importance for this, since some alleged kidnappers were based there and some were recently arrested. One man for instance, who fell within the sample, apologetically refused to be interviewed. This man's brother had been kidnapped and he himself threatened.

Conducting interviews in this climate was often difficult. There were a few people who did not want to be interviewed at first. A major difficulty was in gauging whether someone was telling me the truth or not (out of shame or self-protection). There is of course no reason the person should divulge personal information to a student or anyone, if she feels it may harm her family. It worried me to think that I may be causing someone to feel a need to lie to me, or that the person may feel badly after the interview if he thinks he said too much. As Bernard (1995:220) states, "Informants who divulge *too* quickly what they believe to be secret information can later come to have real regrets, even loss of self-esteem. They may suffer anxiety over how much they can trust you to protect them in the community."

Some of the solutions I found to alleviate problems of distrust included not asking people for their names and switching to assuring anonymity, not just

confidentiality. Many times the person volunteered his name anyway. I would explain my research plans, show my university identity and would give them a means of contacting me. I would mention and sometimes read over the survey questions, explain how I would be taking notes and asked permission to tape. I would also take as long as possible to set the person at ease, by explaining how the research is independent of government or industry, and the reasons why I have been living in the community.

Sometimes I would be asked about my views, or I felt that I needed to express them in order for the person to understand I was sympathetic rather than out to condemn logging. This was something I found I had to do throughout the interview with people who were especially wary. While this presents some possibilities for bias, I believe the benefits far outweigh the negative aspects, as discussing my own views was something that people responded to positively. Furthermore, given the artificial nature of the interview, in that it is not the more natural give-and-take of conversation, interchange establishes more rapport.

A factor that may have also affected the interviews in terms of expectancy bias is that people in some cases identified me as an ecologist (usually not using the term though), due either to my link with GEMA or to the questions I was asking (since few survey respondents knew that I was working with an environmental education group). In a couple of circumstances, the interviewees used the words "ecology" or "environment" before I even mentioned them. These respondents are either genuinely concerned about environmental problems, or perhaps wished to present this image as a form of self-protection. Observation and cross-checking during and after interviews helped to assess this. The effect that my role had on interviews with participants is less problematic in terms of distrust than in the survey interviews, because participants know I do not hold anti-logging views (for instance, I became friends with several participants who logged but talked to me about it openly). Yet, my role may have had an influence in encouraging participants to focus on discussing environmental problems in interviews.

Chapter 4: Land Degradation in Huitzilac

In comparison to agriculture, logging and earth extraction are more economically gainful in Huitzilac. Economic hardship, population increase, degradation of agricultural soils and technology changes have resulted in greater pressures on forest resources. Deforestation, soil erosion and decrease in precipitation are inextricably linked and present serious problems for the region. Community forest management may be a beneficial solution, however current conservation efforts under the CBCH have increased distrust and conflicts, making open dialogue on such issues difficult.

Land degradation cycles in the community

Huitzilac, along with seven other municipalities in Morelos, is located within the 37,302 hectares of the CBCH (Benitez 1990:172). The CBCH was created in 1989 to protect natural spaces important for the recharge of aquifers and conservation of ecosystems, to regulate forest and agricultural activities, and to control urban growth (Benítez 1990:172). Subterranean water supplies are the major source of water for urban areas in Morelos and 85 percent of aquifers are recharged in the northern region of which Huitzilac is part (Ibarrola 1996:8-9). Deforestation and waste are significant problems affecting water in the region, particularly in light of increasing urbanization and industrialization (cf. Monroy et al. 1992:51-52).²⁷

Waste problems are recent in Huitzilac, since the introduction of non-biodegradable packaging for instance - one of the problematic results of a growing shift from the consumption of local foods to inclusion in the global food economy. Older people told me how previously they used household waste as compost but now there is much inorganic waste. At present there are no recycling facilities in Huitzilac, although the municipality had plans to create a small centre.²⁸

According to the director of the municipal environmental department (Regiduría de Ecología), about 75 percent of homes are serviced by the garbage truck (it is private and the municipality pays). There is only one garbage truck for the municipality and when it does not pass, especially in remote areas, some people burn their garbage or dump it in ravines, in vacant lots or by highways.²⁹ This increases contamination of water, in addition to the effects of sewage. As one young mother explained: "This is a problem I have always been against.... But you can imagine how many people do it, that take the ravines as dumps, as drainage, as septic tanks.... And what happens when it rains? All of that goes to the centre of the village.... That is a problem...."³⁰ Furthermore, the garbage dump in Huitzilac is a problematic site for waste to be dumped because of the permeable nature of the underlying rock and potential for groundwater contamination.

In terms of deforestation, the area is of special concern. The CBCH is home to 350 plant species (Benítez 1990:174). In the mountainous region in northern Morelos, vegetation is being replaced by agriculture and deforestation causes the removal of species with high nutritional and cultural importance (Viesca Arrache 1995:93). Deforestation in Morelos is altering aquifers and rivers, as well as causing erosion and desertification, and a notable alteration of the climate (Benítez 1990: 102-103, 111, 120-121; García-Jiménez 1992:145).

The temperate forests of northern Morelos are dominated by coniferous trees at the highest areas (rising up to an altitude of 3,480 metres), and a mixed forest of coniferous and oak trees in others (Benítez 1990:154-155). Communal forest resources have traditionally been an important part of livelihoods in Huitzilac (Lebner 1998; Monroy et al. 1992:41). According to Lebner (1998:28),

Communal land ownership in Huitzilac came to be built around a council of *comuneros* (communal property owners) which would meet to decide upon the use and care of the agricultural lands and the forest. One did not have to pay taxes, although to retain one's *derechos comuneros* (or common rights to the land), one had to perform *faenas* (tasks) like fighting forest fires, reforesting, cleaning the church, or removing trees when diseased. While generally family plots were distributed among community members,

forest lands remained within the jurisdiction of the council of *comuneros*, and the forest's resources were exploited according to their regulations.

Subsistence in Huitzilac had depended on small-scale agriculture and forest resource collection in the mountains (to complement agriculture or for some as a main source of income), especially until the construction of a highway linking the community to Cuernavaca thirty-five years ago (Lebner 1998:28). Lebner's (1998) study demonstrates the continued importance of a variety of forest resources in Huitzilac for sale and household consumption (such as timber, topsoil, firewood, edible plants, medicinal plants, and others).³¹ For instance, forty-two percent of respondents interviewed by Lebner (1998:36) indicated that "they relied heavily on the forest for their survival and twenty percent claimed that their dependence on the forest was moderate."

Lebner's research also documented people's cultural and emotive attachment to the forest and strong resistance by many in the community to anti-logging regulations. As she (1998:26) notes:

The knowledge and use of the forest in Huitzilac, unlike various indigenous communities in Mexico and elsewhere, is not influenced by spiritual norms which surround forest resource use. It is undeniable, however, that Huitzilactecos participate in a particular 'forest culture' which has both emerged and has been perpetuated by their very proximity to the forest -- a forest culture which can be distinguished by historical and contemporary dependence on forest resources, collective patterns of resource collection, intimate knowledge of forest products, and a profound love and attachment to the natural environment.

There exists much traditional knowledge (particularly among older people) of how to use the forest sustainably and encourage regrowth. For example, some of the techniques I heard about include careful selection of trees so that the forest does not become too thin; cutting the large mature trees instead of young ones; cutting sick or dying trees; cutting trees that regenerate limbs; and using all of the tree for a variety of purposes. At present, some loggers no longer carry out these measures and, as I observed and Lebner (1998:30) also notes, this change is not

approved of by many members of the community.

Lebner (1998) describes how increased economic and population pressures and changes in technology and logging practices have resulted in increasing levels of environmental degradation. Causes of deforestation discussed by survey respondents and ENEPA participants I interviewed include the following:

- Fires;
- Logging;
- No alternative jobs;
- Changes in logging technology (chainsaws, road access);
- Changes in logging practices (wood is wasted in logging as many trees are no longer used in their entirety, also small trees are being logged);³²
- Topsoil (along with seeds and nutrients) is removed for sale, thus preventing faster regrowth;³³
- Loggers do not care;³⁴
- Some loggers care, but others are doing it wrong so it is not worth it to conserve;
- Loggers do not have education for other jobs;
- Low price of wood (prices are cut as people compete for bids from buyers);
- Loggers are used to making a lot of money, thus prefer logging to other jobs;
- Less rain has negatively affected regrowth;
- Population increase has meant increased pressures on the forest (through both logging and more homes being built in the mountain).

Forest fires have made the situation worse. In early 1998 there were widespread fires in the region, which spurred increased governmental and non-governmental efforts to reforest burnt areas (unfortunately, there are many problems with the way reforestation is currently carried out).³⁵ According to everyone I spoke with in Huitzilac, there have never been fires like this in living memory. For example:

That I remember, and speaking with the men who are already old, for example, my dad - he is eighty-three years old - that in his life he had never seen a fire like that, never. Now you can imagine that I have also never seen such a huge fire, that included all that we have of mountain.... The ecology was finished, fauna was finished. Everything was finished.³⁶

Some of the causes of fires discussed by respondents included natural causes, intentional fires set by livestock owners for regeneration of grass, and loggers setting fires in order to be able to extract dry wood without legal problems. According to some informants, other factors which may have aggravated forest fires include topsoil extraction for sale and deforestation due to logging, since less humidity is conserved in the forest. As well, wood that is left in the forest may provide additional fuel for fires. In particular, the fires may have been aggravated by the dry conditions of the forest as well as the late start of the rainy season discussed by interviewees. In previous years when there were fires, these were extinguished with the first rains. As a middle-aged carpenter explained to me:

In this dry season, about twenty years ago it would rain in March, a few spontaneous rains we called them, that would fall one day and then the... heat would lift. But before this happened in March, in April it would already rain. So these rains protected the forest for us. There were fires but not of the dimension there has been in this period. Now it does not rain until June. So all of this is so dry that any little thing provokes a fire for us.³⁷

Survey respondents and ENEPA participants discussed how there have been major changes in rain patterns which include a late start of the rainy season, less rain (quantity of rain in terms of intensity of downpour and length of rain showers), hotter weather and increased weather variability. This affects not only forest fires, but importantly agriculture and water supplies. Water scarcity in the dry season mostly affects the more elevated areas of the community but the situation may worsen for everyone. There has been a significant drop in water levels (due to both natural and human factors) in the lakes of the nearby national park, Parque Nacional Lagunas de Zempoala, from which the community pipes in its drinking water (Benítez 1990:121). An official at the Regiduría de Ecología told me that due to the 1998 fires, these lakes went down about 40 percent from the previous year.

The downfall of agriculture in the region (García-Jiménez 1992:145) is another pressure on forest resources, as more people need to turn to logging. There are both ecological and economic factors affecting the viability of agriculture in the region. Historically in the area, *campesinos* have cultivated corn combined with beans and squash (*calabaza*) (Viesca Arrache 1995:93). However, corn cultivation is decreasing among small-scale farmers due to decreasingly favourable conditions caused by pricing, subsidy and market policies (Oswald 1992:94-96). Presently *campesinos* are being displaced by large agribusiness, who have substituted multicropping with monocrops for export such as oatmeal and wheat, a trend that in addition to decreasing self-sufficiency, negatively affects biodiversity, increases risk of plagues and causes erosion (Viesca Arrache 1995:93; Monroy et al. 1992:46). The destitution of farmers is something seen throughout Mexico as a result of an agrarian crisis which has gripped the country since the early 1980s.

In Mexico, state policies after the 1940s drove the reorientation of agriculture into meeting the needs of urban development and industrialization, and into an increasing dependence on credit in order to meet these needs (Hewitt de Alcántara 1980:28-30). The agricultural growth that began in the 1940s stagnated in the 1970s, and has deteriorated into a crisis that continues today with new dimensions (Barry 1999:30). Effects of the increasing national debt took their toll in rural areas through a reduction in subsidies, inflation, high interest rates for credit, low official prices for staples and rising costs of production (Gates 1993:184-185). During the 1980s, producers were hit with a "cost-price" squeeze crisis, in which real guaranteed prices for maize fell by 43.7 percent during 1982 to 1988, and for beans by 50 percent (Gledhill 1995:15). At the same time subsidies were reduced, resulting in a situation where cultivators became unable to cover the costs of credit (*ibid.*). The effect of NAFTA and neoliberal policies heightened the agrarian crisis in Mexico, as cheaper imports flooded Mexican markets and competed with Mexican produce (Gledhill 1995:16).

In Huitzilac, survey respondents mentioned the following changes in agriculture:

- Less people farm now (due to factors listed below);³⁸
- There has been a decrease of farm lands due to sale of lands;³⁹
- There has been stealing of crops when less people farm;
- There has been a decrease in crops and produce size, which is in turn due to a decrease in soil quality and a decrease in rain;
- There has been a decrease in soil quality due to erosion and the use of agrochemicals;
- There is a high cost of production and low crop prices;
- There have been late starts to planting due to changes in the rainy season;⁴⁰
- There have been changes in climate which negatively affect crops;
- There has been a change from maize to oatmeal (mostly exported for livestock feed) as the major cash crop.

Fourteen people out of the sample of thirty do not farm. Reasons that people gave include:

- Agriculture does not produce enough;
- The decrease in rains;
- Recently moved to Huitzilac and know little of farming;
- Do not have land to farm;
- Work out of town;
- Hold other occupations such as business (one person said this);
- Widowhood and old age with dependence on children who do not farm.

Sixteen people out of the sample of thirty farm usually every year. Out of these sixteen people, seven people farm for household consumption only, and only nine people farm for both sale and household consumption. Twelve people (out of the sixteen who regularly farm) farmed the year I conducted fieldwork. Reasons for not farming that year among those who usually farm include one person who cited a surplus of corn leftover from last year, and three people who cited the lack of rain. The delay of the rainy season also meant some did not farm in time.⁴¹

For those small farmers who continue to cultivate, erosion is a major problem. I spoke with three agronomists working in Huitzilac who told me that the soils are acidic and the use of acidic agrochemicals worsens this condition. As one agronomist explained, there is a need for investment in soil quality (such as

treatment with lime). The soils in this region are very susceptible to erosion (Viesca Arrache 1995:93).

In Huitzilac, exploiting forest resources has dampened the poverty which would otherwise accompany the deterioration of agriculture. As Lebner (1998:35) notes,

[In Huitzilac] people do experience economic hardship – but nevertheless, Huitzilac as a whole is relatively well off because of the resources which people can depend on to generate income, or to cut local expenses. Huitzilac, it must be said, is especially well off in comparison to other states in Mexico, like Guerrero, Puebla, Yucatán, Oaxaca and Chiapas where large sectors of the population live far below the poverty line, and malnutrition is a serious problem.

However, there are few other options as Lebner (1998:33) also points out: “even the economic possibilities beyond agriculture, as described by my informants, is (sic) poor, overall.”

The decline in agriculture is linked to the increased dependence on forest resources, although it is uncertain which has the greater causal effect on the other. Investing in agriculture (for example, soil quality) may be neglected in favour of logging since it is more economically viable in the short term.⁴² Some survey respondents stated that people have left agriculture for logging because the latter is more viable.⁴³ A rural development engineer who works in Huitzilac told me that due to a “cost-benefit” analysis, people saw that it generated more income to work in the forest than in agriculture (so that agriculture is more to supplement a forest-based income than vice-versa). Indeed, everyone I asked in Huitzilac has told me that it is no longer possible to make a living from agriculture alone.

Problems with erosion, deforestation and the declining water supply may reinforce each other. As agriculture requires larger inputs and is not viable for small producers, many have turned to the forest. By doing so, there has been less invested in agriculture, which further decreases productivity, which may further increase economic need and pressures on the forest, and so on. This represents a cycle of land degradation which also includes water problems: as forest cover

decreases, rain and water levels drop, making agriculture more precarious, as well as providing less moisture for forest vegetation and to protect against fires.

Conservation and conflict

Clearly it is not accurate to describe a community in terms of one aspect of its politics. Huitzilac is made up of different people with different views on politics, philosophy, and ecology. There are many instances of cooperation and celebration, such as with festivities and church events, parent involvement in schools, work at the local health centre, fire-fighting and more. However, a prominent aspect of life in Huitzilac that has negative consequences for environmental education and organizing is conflict. Some sources of conflict (and resulting distrust and disillusionment) include:

- Confrontations between loggers and their families with federal anti-logging authorities;
- Disagreement between loggers and some non-loggers over logging and related activities;
- Corruption such as bribing and extortion involving loggers, and within government;⁴⁴
- Repression of both loggers and anti-loggers;
- Divisions between families and over political parties;
- The sale of communal lands by the municipal government;
- Water supply (problems between private landowners and municipal authorities, and within the community).⁴⁵

Current conservation efforts in the area are problematic. The creation of the CBCH was not done with public participation. In fact, 73.8 percent of CBCH residents and 80 percent of Lebner's sample had not heard of the CBCH (Galindo et al. 1995 in Lebner 1998:19). The focus on safeguarding the northern forests of Morelos so that the rest of the state can have water is important but also troublesome since it does not acknowledge that benefits accruing to industry and unequal economic power are at the heart of environmental degradation in the region (cf. Ibarrola 1996).⁴⁶ The creation of the CBCH has also not improved the

environmental situation in Huitzilac. Lebner (1998) argues that the illegality of logging forces it to be clandestine and therefore more exploitative due to unequal power relations, as some individuals have taken advantage of the situation to profit from illegal trade. Thus, the illegality of logging has contributed to a deterioration of local governance and control over resources, and logging has become a source of conflict and distrust in the community.⁴⁷

Some anti-logging authorities routinely practised extortion against loggers.⁴⁸ As one man stated, "There is corruption, on the part of these authorities. They are called '*Forestales*' ... They are the ones that detain [loggers] and take them to the attorney general's office and there, commit extortion".⁴⁹ One man told me how his brother has been forced to keep giving large amounts of money which he does not have. This is a frustrating situation for loggers and their families. There have also been secretive cases of repression and intimidation of people who have tried to block logging contracts granted to outside companies by government.

Confrontations between loggers and their families with federal authorities in the last decade have included blockades and violence. Some respondents told me that currently the federal authorities do not bother to carry out drastic measures of enforcement, thus the community has been said (in the media) to be without laws.

There have been attempts to organize for community management of forest resources which have not worked, including the *Unidad Económica* in 1989 which failed after a year due to corruption within management. I have been told by people involved in this project that after it failed, moderation in logging was largely abandoned. As one survey respondent (involved in logging) explained, things are getting worse: "Frankly, I see it this way; like a flock without a shepherd.... That is the damage we are causing for ourselves. The government can no longer organize us, they have lost control... of authority, they no longer apply the law."⁵⁰

As noted above, there are also different views within the community over logging and who benefits. I have been told by non-loggers that there are disagreements over who should fight fires. For instance, one woman told me that her husband felt all loggers should go fight the fires before he does since he does not log. The conflict over responsibility also applies to reforestation campaigns. As this woman explained: "The money is only for them and they do not reforest.... Some say that those who live from logging should reforest. Others say that we should go because we need air, to make sure it is pure, and so that there will be more trees. But some say they will not go... if they are paid yes, if not no."⁵¹

While there are non-loggers who sympathize with the fact that logging occurs because there are no alternative jobs, not everyone accepts this. Some respondents I interviewed thought loggers are overstepping the boundary beyond need. Some interviewees showed fear and anger over such consequences of deforestation as a declining water supply. As one woman told me "They are putting us in danger.... They are finishing with the mountain and then what will we do?"⁵²

One informant explained that on the one hand it is positive that most of the community unites to defend loggers, but on the other hand it is negative in the sense that there is no community effort to regulate the use of forest resources. He said that while people recognize it is a problem, they say solutions lie with the creation of jobs, and there is no collective effort. Some interviewees have stated that the creation of jobs would be a tenuous solution since loggers would be faced with a decision between minimum-wage jobs and higher incomes from logging. However, as two interviewees also told me, jobs offer benefits (peace of mind and security) over risky illegal logging. Nevertheless, as it was discussed in an ENEPA workshop, many factories are also damaging to the environment and it is difficult to know which ones would be allowed in this conservation zone.

Community forest management offers the best option for generating income and for long-term sustainability. This must include not only improving the

price of wood through collective agreements (which does not guarantee that the amount of trees felled will decrease), but a comprehensive management plan which includes controls determined by some equitable process in the community. As Lebner (1998:53) argues:

Pursuing a participatory community forest management scheme emerges as a possible method to approach the sustainable use of the area's natural resources. Yet neither the state, nor the village itself has the monetary or political potential to embark on such a project alone. There have to be strong supports from other institutions -- non-governmental, academic, commercial, in order to build and foster a plan that suits Huitzilac and the people's needs. The cultural and economic realities of the villagers must be taken into account: how the forest and resource collection itself plays an integral role in the family's recreational and economic activities, how both men and women contribute to resource collection and, to the domestic economy, and how various forest plants have traditional and economic applications within the home. A participatory educational program, much like the work that GEMA is pursuing, must establish its presence in the village to promote environmental awareness, generate debate, and mediate and foster government-village, and inter-village cooperation.

To be useful for the community, workshops should promote the harmonization of local economic and cultural interests with goals of resource management. In addition to this challenge, popular education which seeks to initiate open dialogue of environmental issues faces special conditions in areas of acute conflict over resource use. In light of the conflicts in Huitzilac, promoting participation in workshops is tempered by the difficult challenge of overcoming distrust. Yet, in light of local resistance to enforcement of centrally-planned conservation regulations, popular education also has the potential advantage of assisting the community to enlarge its strategies to include the protection and sustainable use of locally important resources.

Chapter 5: Huitzilac ENEPA Workshops

The workshops carried out by GEMA are done using popular environmental education methodology. Both the planning of the ENEPA and the workshops reflect the importance of the focus on local concerns, and the joining of local ecological knowledge and academic information. The outcomes of the workshops were generally quite positive, although limited by some obstacles to organizing in the community.

Planning

The Huitzilac workshops were a learning experience for the larger ENEPA project, which at the time had not been fully planned. As presented by GEMA's coordinator, Margarita Hurtado, in one of the early planning meetings with other academics and some government officials working in the area, the ENEPA

... is a project to strengthen and develop organizational, theoretical-methodological, and technical capacities, in community leaders so that they understand the local environmental situation and its link with the global (especially through the interchange of experiences both national and from the north of the continent) and undertake concrete transformative actions that improve the quality of life.⁵³ (my translation)

Theoretical aspects of the proposed ENEPA curriculum included subjects such as ecology and environmental science, sustainable development, legislation and environmental management (GEMA 1999a, n.p.). Technical aspects included reforestation, organic agriculture, "dry toilets", composting, rainwater collection, solar heaters and others. Finally, methodological aspects included familiarization with popular education, action research, evaluation and follow-up methods (ibid.).

The focus of the ENEPA curriculum is not only on "environmental" problems isolated from the social and political spheres, but on issues of justice, equity, gender relations, and integration with the natural environment (GEMA

1999a, n.p.). As GEMA's coordinator (Hurtado 1999, n.p., my translation) notes, "The curriculum of the ENEPA seeks to achieve a profound transformation of social, economic, political and cultural conditions that give origin to the environmental problems we are experiencing. In this sense, its fundamental orientation is emancipatory."⁵⁴

While there are different levels at which educational events reach people, one of the central objectives of the ENEPA is to train promoters (GEMA 1999a, 1999b). The proposal for the ENEPA has strategies focused on the mobilization of resources for strengthening civil society, including facilitating cooperation between community groups, NGOs (including international partnerships), schools, academic institutions and government (GEMA 1999a). As such, the focus on methods which promote group work and collective action is important, as it was for the EPAs (GEMA 1999a, 1999b).

In addition to the goal of training promoters, there was also a need to decide which specific subjects of local concern would be dealt with in the Huitzilac workshops. These were decided based on the participatory diagnosis done in the community and on the need to look at forest problems. In the past, GEMA workshops in the community had focused on waste management, water and other general environmental issues. As noted above, the forest issue had not been approached because of fear in GEMA that it would be too intrusive for outsiders to talk about this issue. In addition, earlier workshops GEMA had conducted as part of the EPAs had been carried out in the city of Cuernavaca, counting with participants from different regions. The focus on the forest in the Huitzilac ENEPA came after a period of time learning about local circumstances through work and research in the community.

Further planning was done during the sessions as well. Of special importance were meetings held with some community members to discuss activities to be undertaken and presentations. These were essential in order to make the workshops a community affair and emphasized the close relations

between organizers and participants as well as the respect for local knowledge and initiatives. As Hurtado (1999, n.p., my translation) notes, "In the ENEPA we have searched for paths that generate dialogue, to recover knowledges, to validate the word of young and old, of men and women, of literates and illiterates."⁵⁵

The design of ENEPA workshops is based on popular education theory and practice, and on the need for combinations of knowledge. As the coordinator of GEMA noted one day to another organizer, it is important to present new information but always based on a diagnosis of problems in the community, and always making sure it is done respectfully with the knowledge that the community best knows local environmental problems. In doing so, she added, the role of the educator is to be a facilitator - to promote discussion with key questions - without going in with the impression of knowing everything.

Participation rates

While at times it appeared there were few participants, there was a total of about thirty-two people who participated in at least one session (see Appendix C: Participation rates in sessions).⁵⁶ Of these, twenty were women and twelve were men (eight were not Huitzilac residents), indicating a gender imbalance. In the first six sessions there were no men from the ages of sixteen to about sixty. There were more participants in the later sessions on the forest (seventh and eighth sessions), with sixteen people participating in the forest sessions and not the earlier ones. There were also more men at these. In total, there were more *new* male participants in the last sessions with a total of eleven men and nine women who participated in both forest sessions.

In general, people did return for more sessions. Not counting the eighth session because it was the last, there were thirteen people who did not return for another session. This is small in comparison to the numbers of people who did return:

16 people participated in two or more sessions
9 people participated in three or more sessions
7 people participated in four or more sessions
6 people participated in five or more sessions
4 people participated in six or more sessions
2 people participated in seven sessions⁵⁷

One of the negative comments made by several participants in the evaluations was that it was too bad that more people did not attend (see Appendix D: Compiled responses to evaluations from sessions one through six). This was also a source of disappointment for the organizers during the first sessions. Yet during GEMA's evaluation meetings, we discussed the fact that although there were fewer people in the workshops, those who came appeared dedicated and hopeful. In a community where there are major obstacles to community organizing it may be difficult to have many participants. Thus they are a minority that needs to be supported.

Subjects

In the Huitzilac ENEPA there were sessions on general subjects such as on ecosystems ecology and on how to carry out a participatory diagnosis, as well as specific ones including alternative technologies, waste management, soils, permaculture, water (scarcity and contamination), and the forest. In relation to the forest, there was discussion of reforestation, fires and forest management. As noted previously, beginning with the needs of learners is a vital aspect of critical environmental education. According to the participants I interviewed, most subjects were of interest to them and corresponded with what they think is important for the community. Of particular interest were logging, forest fires, garbage, composting and organic gardening.

As popular education workshops, sessions included a theoretical aspect, discussion, and action. A variety of methods were used, including presentations as preludes to discussion, *dinámicas*, or putting techniques into practice. Most

sessions were given by GEMA members, but guest facilitators were also involved (in particular for the sessions on the forest). Presentations ranged from theoretical issues such as what is a participatory diagnosis, to more visual concepts such as recycling. For the session on soils and permaculture, practice was the most important aspect, as participants (children and adults) together created an organic garden plot. Movement and enjoyment are important considerations. For example, during the first six sessions, participants said they especially enjoyed *dinámicas*, group learning, sociodramas and practical activities, and recommended there should be more of these (see Appendix D: Compiled responses to evaluations from sessions one through six).⁵⁸

“Playful” and experiential learning were important throughout the ENEPA, such as when participants were asked to draw a postcard of their community while waiting for others to arrive. Many of the participants illustrated the mountains and forest as the major features of importance. Games were also part of the workshops. During the session on waste management, participants played a popular education game called “*Ecojuego*”, which is a tool designed for participatory diagnosis uses in communities with regards to waste, soil, water, air and other aspects of the environment.⁵⁹ Another game used was the “*Baraja de la Planeación*”; a card game where the objective is to place in order planning steps for people in a community to organize to solve problems.⁶⁰

Group work and discussion - essential to participatory education - were important throughout the workshops. For example, one method was group lectures where participants read from a text on how to do a participatory diagnosis. In the group I was in, one young promoter in particular took a strong role in facilitating discussion and making sure everyone understood the text. Her presence was also important for making links between the theory of the text with actual practice in Huitzilac. All the participants in the group I was in had questions and comments on the obstacles and aids in the community for working on issues.

Two of the group exercises that were planned were a mapping of the

community (for example, in terms of physical features, environmental problems and human and natural resources) and a chronology of important historical events and changes. There was animated discussion during the workshops about this work, but little was done outside the workshops despite planning meeting times. At later evaluation sessions GEMA members said that this probably was too much of a "homework" task, with all the attendant negative implications. This was different from earlier experiences in assigning group tasks with the EPA carried out in the city of Cuernavaca, where many participants were NGO members or teachers.

Sociodramas

The sociodrama is a *dinámica* used to represent conflictual issues and social situations in a form which is more direct and striking. Above all, it draws from and conveys the experiences of learners. A basic example is that after discussion of an issue, groups quickly plan a skit and play it out, which hopefully generates further discussion. It may be difficult at first for people to participate because it is an unfamiliar form of communication (which is a problematic issue for popular education theory and practice). In my experiences with sociodramas however, they have always turned out to be a highlight of workshops, and here was no exception judging by the conviviality, the issues that were discussed, and the evaluation held after. In the Huitzilac ENEPA, sociodramas generated much discussion and sharing of local ecological knowledge, leading to proposals for action.

Sociodramas were used during one session to discuss problems with water contamination and distribution problems, and in another to illustrate problems with reforestation and with fire-fighting. In the latter instance, the facilitator explained the concept of a sociodrama and invited "actors" to come forth. Volunteers came forward encouraged by others. Finally, almost everyone participated as the

remaining people became integrated during the skits. There was much laughter throughout as the actors made jokes and puns.

A first group enacted problems with current reforestation, such as lack of training or interest in adequate planting methods. After the sociodrama there was discussion about what kinds of trees are being planted and about the importance of using native species. It was an opportunity to discuss local knowledge about trees and regrowth. A young man named José Juan explained what he had learned from an elder concerning problems related to the compression of roots in the seedlings (wrapped in plastic) used for reforestation:

The *ocote*, *oyamel* [coniferous] and *encino* [oak]... are those which have roots that not only go upwards, but also downwards, trying to find humidity in the earth as well as nutrients. And what I have seen is that the plants they use for reforestation come with the roots really compressed. So I think that people need to be trained so that they can know how to plant these compressed roots, and that way the tree could reach a more notable development. One of the principal things would be, I think, that these roots, when opening those bags, should be extended, and the length of the root should be compared with the depth of the hole so that the root would not have so much difficulty...." ⁶¹

The second sociodrama group represented fire-fighting. A woman was organizing support in the town to provide food and drinks for fire-fighters. The men were in the forest opening breaches to stop the advance of the fires. They showed the problems they faced such as lack of organization and adequate gear.⁶² There was a soldier who stood up on a rock giving orders.

During group discussion, people stated that villagers were badly-equipped and many injured. The soldier had been a source of jokes during the sketch, but some said that the actual role of the military had been problematic since they had largely watched over people more than helping. This was not the only inequality issue that was raised. The problem of whose responsibility it is to fight fires was also brought up. One woman said: "I was seeing in the town that the people who work most in logging and cause destruction, were doing no more than watching

from there.... In other words, they don't help."⁶³ Group discussion led into suggestions about what could be done (including reforestation, training, reinstituting the *Unidad Económica*) and how GEMA and other organizations or institutions could be of support.

The sociodramas were a good tool to analyse collectively problems and solutions of forest fires and reforestation, but also to articulate values according to GEMA's coordinator (Hurtado 1999, n.p., my translation):

All of the participants experienced in some form the fires, directly putting them out, opening breaches, bringing food, attending the injured. Representing this disaster in sociodramas permitted the realization of an analysis. In commenting upon what the people recreated, we were able to appreciate many of the values present in the community. Faced with catastrophe, the people responded with bravery (sometimes daringly) ; cooperation, unity, organization, responsibility, without doubt motivated by love for the forest, which is part of their lives, their history, their landscape.⁶⁴

Sharing knowledge about the forest

The forest sessions are an example of how local experiences and ecological knowledge were combined with academic information in workshops, and how this also led to discussion of political and economic causes of local environmental problems. These sessions had the benefit of providing new environmental and policy information to participants (which ideally can help build local capacity to take action on governmental policies), while also affording them the opportunity to share their knowledge and discuss their frustrations concerning forestry among themselves and to outside academics and a few government representatives. For example, in the seventh session, participants discussed the problems with illegal logging, the designation of the region as a conservation area, the failure of government to provide jobs and the dilemmas this alternative entails.⁶⁵

The seventh session began as organizers and participants gathered in front of the church early Saturday morning to board the bus to the national park. The

first activity that was carried out was coordinated by two biologists from the Centro de Investigaciones Biológicas (CIB) of the Universidad Autónoma del Estado de Morelos and a biologist from the department of the environment, natural resources and fisheries (SEMARNAP, Secretaría de Medio Ambiente, Recursos Naturales y Pesca). It consisted of a rally where groups had to answer riddles concerning the local environment. Participants hurried to stations located throughout the park to discuss answers with facilitators.

Before and after the rally, we gathered in a circle and the facilitators explained the purpose of the exercise as well as giving small presentations on key issues including water cycles and contamination; the need for protecting forest cover to prevent erosion and maintain water supplies; the relation between altitude and temperature; and the link between fauna and vegetation. While there were instances of language used which was a bit technical (such as "ecosystem"), most of the language was accessible.⁶⁶

The rally was useful for sharing knowledge between local people and the biologists concerning the regional environment. For example, at one of the stations, participants had to identify medicinal plants in the region, find three specimens and discuss their uses. The group I was in spoke about nine kinds of medicinal plants in the park which are used to treat coughs, sinusitis and liver problems. Facilitators provided additional information, for example, on soil types and the relation to vegetative growth.

There was an appreciation for local knowledge on behalf of the biologists. Instead of simply transmitting information, the facilitators asked questions. After the rally, one of the biologists talked about the things that people had noticed such as algae, snakes, soil types, medicinal plants and more. He noted, "With respect to the vegetation I was very impressed that you have this fresh knowledge of medicinal plants, that you give it such importance, and you have had such good vision to see what is around us."⁶⁷ The biologists commented on the connection of humans to the forest, and the need to conserve the forest in order to keep using its

resources. One of them asked an elderly man which are the trees that are most important for his community, and later noted,

Mr. [name omitted] has told us something very important. The vegetation is the sustenance of life for much wildlife, but we cannot separate what is vegetation and what is the social part of this ecosystem. We bring in the social part, it is a source of employment... Many benefactors can be extracted from vegetation. We can get food, we can get medicine, we can get construction materials, we can get firewood. It is a part that should not [be minimized], and thus it is a reason... to protect it. If we use it up quickly, then quickly in addition to how we will strip the earth, quickly we will have to resort to other kinds of sources, perhaps more harmful, not so much for us but for the environment.⁶⁸

The presentations by the biologists created a supportive climate instead of a critique of logging.⁶⁹ The ensuing discussions among participants reflected this openness. In the circle, participants were asked what we thought of the activity. There was a lot of discussion about use of the forest, problems with illegal logging, the failure of current forest programs, and the lack of alternatives. As one woman stated, "I think that as long as there are no other sources of employment in Huitzilac, always the people will be here [in the forest] and it's because there is no other way".⁷⁰

The focus of solutions raised was decidedly on community forest management. For example, one man commented on the need for solutions to be community based, so that legally organized groups could cut trees, instead of contractors to come in for a few months and then leave. As a biologist then remarked, "And to the community they leave nothing. What is important is that the community itself make use of its resources".⁷¹

Discussion of forest management continued in a forum held later in the session. The forum began with an "open" interview which led to further group dialogue. Fifteen-year old José Juan asked questions to Don Wulfrano, a man in his eighties who has extensive knowledge of the forest. The questions included what are the gravest problems and changes in the forest, and how is it possible to

log in a rational manner. Don Wulfrano spoke about natural reforestation, the regrowth of tree species, and how the source of work here is the forest. José Juan explained that he thinks the forest can be worked but with moderation. This means extracting topsoil, but leaving areas to rest, and with logging, to cut trees that are sick and use dead wood, avoid wastage, and reforest.

A discussion took place on these issues, as well as the importance of being able to work legally so that people can organize appropriately, and loggers receive good prices for wood and other products. The forum was also an opportunity to discuss how the community could work with other institutions such as the CIB and SEMARNAP. One of the biologists from the CIB talked about a proposed tourism, education and management plan for the park, which would create jobs and draw on the skills and ecological knowledge of local residents.

The forum ended on a positive note as a participant said "Today we begin to organize". People who were interested agreed to go to the home of one participant to have a meeting there in three days. Unfortunately, no one showed up at this meeting except for myself, Gisela, a GEMA member and the woman whose house we were in. It was raining heavily at the time; however, the lack of participation may also have been indicative of difficulties in surmounting the obstacles to organizing which exist in the community. I will return to this point below.

Evaluation and outcomes

The last two sessions reflected much of what had been learned in the first six sessions and evaluations (for promotion and pedagogy). In particular they reflected what was desirable in workshops on major local concerns. The Zempoala sessions may have been better for organizing because there was more exchange of ideas and proposals for action, and there were more *comuneros* present. There was more integration of "local" and traditional knowledge with

academic. In the early sessions, while the problems discussed were based on local concerns, at times the content was more controlled by facilitators. Partly this had to do with the subject matter. For example, during the session on water, local problems and solutions to contamination and scarcity were discussed and represented in a sociodrama. In other sessions such as the one on garbage, the information came mostly from government and NGO sources (although the information was always linked back to the experiences of participants in Huitzilac).

The opportunity to share as well as learn was present in most activities. However, there were problematic moments. In the evaluations later held between GEMA and QPIRG-McGill, there were discussions of improving educational practice in workshops to reflect more the principles of popular education (GEMA 1999b:56). Despite the focus on popular education, it takes a lot of work to achieve an increased exchange of knowledge. For example, one participant explained to me that she did not feel qualified to talk about things in workshops; that she was there to learn. As Hurtado (1999, n.p., my translation) notes:

What is not easy is to achieve that a group of humble people from a community speak their words after having been quieted for generations and generations. Our people have been accustomed to keep silent, to not ask questions, to be a receptacle that receives information, orders, instructions, threats, predigested opinions.⁷²

There were also instances where information presented was not fully accessible nor relevant. In particular, during the eighth session, student presenters from the CIB facilitated an activity which consisted of measuring indicators to assess the impact of fires.⁷³ GEMA members and I felt that the activity had been too complex and of little practical use to participants. It is important to note however that two participants I spoke with after said they had enjoyed the activity.

A related issue is that workshops should provide an opportunity for people to learn about interesting information related to their concerns. This observation is supported as well by comments made to Gisela by some loggers who said they did not want to attend workshops to be taught what they already know about

deforestation. In light of this, it is also clear that workshop participation is not a measure of political participation in general. People who are active in community organizing may not know that popular education workshops are intended for organizing. Their lack of participation in workshops may stem in part from this perception.

Workshop evaluations indicate that participants think the workshops are important and useful, and that there is interest and inspiration to take action on the problems discussed (see Appendix D: Compiled responses to evaluations from sessions one through six). As seen above, the sociodramas and group discussions led to proposals for action. For many participants, "*la convivencia*" (conviviality or social interaction), was a very important part of the workshops. One older woman told me about how she had not wanted to go initially because she was afraid she would feel out of place, but her daughter convinced her to go and she enjoyed herself. She told me: "I did not want to go because I felt bad... because I thought I would feel badly among all of you... Like me, an older person, is often placed on the sidelines.... [But] it was very good. It was good because one interacts in the talks."⁷⁴ Another woman explained how she appreciated seeing the support and efforts of other people for her community: "How good it is that people come and keep giving orientations, not abandoning this village that for now is rich, that perhaps can still recuperate before it is too late in terms of the logging. And that one keeps learning more. Those that live from logging to realize... that the mountain is not just for a little while."⁷⁵

While social interaction is a positive aspect of workshops, it is limited by conflicts among people in the community which are not likely to be left aside for a workshop. Through an interview I learned that in the last session, there were underlying disagreements between some participants. It is a serious problem in this community where there are divisions along family lines, political parties, and livelihoods. According to the interview, this person felt inhibited to speak about certain things because it would have caused conflict. Community divisions in

workshops may be a difficult problem to resolve. The outsider may provide a semblance of a neutral space on the one hand which may help to work past differences, but may be blind to how these may cause more resentment or impede dialogue, and may be unable to do much about it.

Despite not having led directly to community meetings, the workshops have heartened some people to work towards more concerted action. Due to the high turnover in workshops, not all participants learned about working as promoters per se, but this does not mean that promoters were not formed. One of the most encouraging things I heard when talking with a participant some weeks after the ENEPA was that she was enthusiastic about plans already underway to get together with "the group" to work on waste management issues. As a result of the ENEPA more people are working in Huitzilac on such issues as waste management, composting and organic agriculture. Several participants had become involved with GEMA before participating in the workshops and continue to work with them. Others, like a young student who also works in forestry, have become involved through participating in the workshops. Some are participating in productive projects for generating alternative sources of income (such as a collective composting project and a women's agricultural micro enterprise) that GEMA is helping to establish in the community.

Chapter 6: Perceptions of Environmental Problems

One of the main questions in trying to understand participation in organized grassroots initiatives aimed at resolving environmental problems is why people become interested and involved. Part of this question concerns people's opinions on what are the biggest problems and perceptions of environmental changes. Most respondents showed a great depth of knowledge about what is happening with environmental changes in agriculture, rains and the forest. Knowledge of solutions, such as community forest management, is also prevalent. However, there are people (especially elderly people) who do not know the words *medio ambiente* (environment) and *ecología* (ecology). For respondents who recognize these words, many refer to garbage and only a portion refer to the forest. Two major concerns emerge. One is that there are different understandings of the terms "environment" and "ecology" which have consequences for environmental education. The second is that simply perceiving environmental change, being concerned with the problems entailed, and having knowledge of solutions, do not necessarily mean that a person is motivated to participate in workshops on the environment.

Gravest problems

As many survey respondents cited lack of jobs and economic problems as cited deforestation, in response to an open-ended question regarding what are the gravest problems in the community (nine people each). The problems next most cited were disorganization and conflicts over logging, and a "lack of justice" related to forest use and conflicts (seven people). These included views both against and for logging. In total, for seventeen people out of thirty, the gravest problems are directly related to the forest (deforestation, conflicts over logging, and fires).

Other problems discussed by respondents include crime such as robberies and assaults (three women); water scarcity (one woman and one man); and insecurity over the sale of communal lands (two men). Two elderly women (seventy and seventy-six years old) said they did not know and preferred not to comment. However, these women did have strong opinions on issues such as water, deforestation and crime. Other problems discussed by respondents to be of major concern included fires (one woman), lack of rains (one man), and low quality of education in the schools (one woman). Two men said that problems are minimal.

A comparison between survey respondents and workshop participants shows just a few differences, which may suggest that participation in workshops is not necessarily due only to a concern with a particular set of problems. Major problems identified by participants I interviewed include deforestation (six out of the ten interviewed cited this problem); conflict over logging and lack of organization (three); crime and corruption (three); lack of jobs and economic problems (two); water scarcity (two); insecurity over sale of lands (one); environmental pollution (one); garbage (one), fires (one). I must also reiterate that differences may be associated with the problem of expectancy bias as participants may have been more attuned to tell me about environmental problems because of my link to GEMA.

Perception of changes in agriculture, rains and the forest

Twenty-five out of a total of twenty-six respondents said there have been changes in agriculture.⁷⁶ Testimonies reveal to what extent the changes are problems for agriculture in the community. For example:

Before here - about thirty years ago - we were not self-sufficient, but we did have enough to eat for the whole community. Now we depend on other communities, on other states. Now for example, corn is no longer produced... no longer do we produce what we produced thirty years ago.⁷⁷

Well before it was very productive, the earth, for ... corn, beans, *haba* [a broad bean].... But unfortunately no longer.⁷⁸

No longer does anyone want to work..... Now everyone wants to make money more easily, but then not having [local] farming everything also becomes expensive. Beans are expensive, corn, everything really expensive.⁷⁹

When I was a little girl, and I lived with my parents, the lands gave abundant crops. Beans, *haba* and corn grew well. And all [lands] were farmed. All the plots, there was not even one piece of land that was not farmed.... Yes, and by this period it has all changed. Now the lands do not give crops like they should. [a 39-year old woman]⁸⁰

The decrease in viability of farming is seen throughout Mexico. However, as noted above, there are also local factors which make agriculture less viable, in particular, a decrease in soil quality. A major effect of the latter noted by respondents is a decrease in crop size and quantity. For example, one respondent and his brother explained to me how they previously harvested about five tons of corn from a hectare of land, and now only two and a half to three tons. A seventy-six year old woman stated:

- Before I used to gather fifty loads of corn....
- And still?
- No. Before corn used to grow really well, beautiful ears of corn, and big! Now they grow like this... even if you apply chicken fertilizer. Sometimes it is more what is spent than what grows... Now it is not like before, that the same soil of the earth produced corn.... It would give three, four ears of corn but not anymore... It doesn't grow like before, that it was a pleasure to see the large ears of corn....⁸¹

One farmer explained that for him, soil degradation is not a problem because he has livestock which fertilize the ground with manure. Another farmer said that the soils need adequate fertilization to produce and that what is needed is adequate technical support. Similarly, another respondent discussed the need to analyse his land since "Without fertilizer nothing is produced - that is why we want a fertilizer for our lands that will be effective."⁸² Other respondents discussed

negative changes they had seen as due to use of agrochemicals. For example:

- No longer do they apply chicken [manure]. Now it is pure chemicals. That is why I say that the lands have become infertile because of the fertilizer. Chemical fertilizers make the soil lose strength.....
- Have you seen the effects of chemical fertilizers? Are the effects on soils known?
- Yes, yes they are known because applying chemical fertilizers to the earth, let's say this year you sow with chemical fertilizer, then if the next year you do not apply chemical fertilizer to the earth, the earth does not produce. You must keep applying that fertilizer.¹³
- Before, only one year that you did not farm a piece of land, or two years, and the crops would grow very well without fertilizers.... Today the change is that only by applying fertilizer.
- Before they also let the land rest?
- One or two years without farming so that it would rest.
- And not now?
- Now they also let it rest but it does not produce, only with fertilizer....¹⁴

Respondents also spoke about the decrease of rains as another factor making agriculture less profitable. Changes in the rainy season are apparent to almost everyone I spoke to in Huitzilac. All respondents except one said that there have been changes in rain (the exception is a nineteen year-old man who has lived in the community for eight years). There does not appear to be a correlation between respondents' ages and perceptions of changes in the rains (although length of residence does matter). For instance, both young and elderly respondents said they remember changes in the rains compared to the time they were children, and some elderly respondents said they noticed changes only one or two years ago.

Some respondents told me that changes in rains were more noticeable this year (probably due to the effects of "El Niño" in 1997 and 1998), but changes had been coming for many years previous. This may help explain also why some noted changes in the last one or two years, while others noted changes from the way things were ten, twenty and thirty years ago or since childhoods upwards of forty years ago. There is much evidence in the memories of people in Huitzilac that

indicates long-term changes that exceed the recent effects of "El Niño". For example, here are some of the observations of respondents I interviewed:

- Well, it has been noticeable more this year, but what is it now, about two, three years changes have been presenting themselves. And now it has been very notable... the difference with other years.... About ten years ago it rained substantially here... yes it rained a lot here.
- More than now?
- Yes, more, more. Now the heat has also been very intense....⁸⁵

- Before it was not like this. Before in the month of June it would rain more. In this month there were times when the rains would not lift. The day would begin raining, and night would fall raining, and the rains would not stop. But not now - the water has been lacking.
- How long has it been that it changed this way?
- That the rainy season changed? Well, about six years ago.⁸⁶

- Has it been long that changes in the rains have been noticed?
- They started to change in 1970...
- 1970?
- Yes, 1970. In 1970 it began to change more, until today that it has all changed a lot.
- Each time less [rain]?
- Yes, each time less.⁸⁷

Well the times have changed a lot.... I remember when I was little... I remember that sometimes day and night, day and night... it was raining. Now it no longer rains like before. No more. Now the rains have been greatly delayed. And sometimes when it rains little, the corn cannot develop.⁸⁸

Yes, the rains have changed. This year it rained in July... Because before when I was a girl or young woman, when I grew up, I tell my children that there used to be downpours. It started from the month of May to rain, and the people farmed... in the month of March... April. Already in this month there was corn... But not now.⁸⁹

Now the rains are not the same as before.... Yes, even the climate here has changed. Here it is not cold as before. The temperature has gone up.⁹⁰

No longer are there stable rains, sometimes it rains, sometimes it doesn't. It's variable.⁹¹
For some, the variability of the rains does not reflect a trend, but just the

way things are. Thus, in this view there have not been changes in the rains, since every year is different. As a young man explained, last year the rains came sooner, but this year they came late and there were high-speed winds and hail storms he had never seen before.

The decrease in rains is a serious issue in the dry season, as reserves become depleted faster. One couple described how about eight to ten years ago one of the lakes in Zempoala would flood the nearby road during the rainy season. The woman described seeing that the lake is now almost dry and worriedly stated:

Well, I tell you that with the trees they are also finishing with the water because the lakes have gone down a lot. We think sometimes what are we going to do when the lake water disappears? What will become of this village? What will happen to the children? They are the ones that will stay. That question... stays with me, because who will answer it? There is no one who can give me an answer to that question.⁹²

The causes cited for the changes in rains were: deforestation (five women and seven men; more than a third of the sample); unknown causes (three women and five men); pollution (*contaminación*), ozone layer depletion or global warming (two women and four men); fires and smoke (six women); the advance of time (a biblical reference) (three women and one man); and "El Niño" (one woman and one man).

Respondents discussed clear links between deforestation and the changes in rain and water supply. These testimonies demonstrate the rich knowledge that people in Huitzilac possess about their local environment and the extent to which deforestation and associated problems are of worry. For example:

When a mountain is dense with trees, when it is luxuriant like it should be, I have found that the clouds arrive faster and soon comes the time for rains. But today the way the mountains are greatly logged, very scarce of trees and all that, it is how the rains have been increasingly delayed.⁹³

The forest suffocated the heat, for there were so many trees. The climate here was cold, cold. And now the truth is no. The rains have also changed a lot. Before it was pretty rainy here in Huitzilac, and not now.⁹⁴

When I grew up it would rain fifteen days, eight days, day and night, day and night. But there were sufficient trees... lots of trees. Not anymore. Where we used to go for mushrooms, there used to be many trees, and now you go and it's all flat. There are no more trees.⁹⁵

Before the forest was more full, there were more trees, but since it has been greatly logged, the rains are slow because of that.⁹⁶

When the trees are finished the rains also go, the vegetation is finished, the animals are finished.⁹⁷

For the same reason that there are no trees I imagine that is why it no longer rains like before. The climate is changing as a consequence that the vegetation is ending.⁹⁸

If it does not rain, with what is the tree maintained? Now with the little ones they planted, like children - if to a child you do not give water, isn't he thin? The same with trees... Yes, everything is dry... Like the water spring. Before there used to be lots of water, lots of water. We would go there to bring water.... It was enough for the whole village. And see, they cut the trees and now... there falls little water, only for the use of those who live there.⁹⁹

Sometimes [I think] that as long as they are not robbing, it's okay. But other times, no, because they certainly decrease the strength of the rains. Almost because of the trees we have water. Because if they are bare mountains they don't have water, they are dry.... From where if they do not have vegetation, they do not have what will maintain the humidity below?¹⁰⁰

I think the government should put a limit to all those people who are going up [logging] and has to bring them down. They have to bring them down because [the forest] is the lungs of Morelos and any other state we have around us. And for the water more than anything, that one day we will run out because the mountain is being depleted. From what will we survive?¹⁰¹

I am aware that vegetation attracts the rains. Here it used to rain fifteen days and fifteen consecutive nights. And not anymore. One hour, an hour and a half, two hours, and that's it.¹⁰²

Through the vegetation it would rain more... there was more water, more food. Farming was better, there were better crops.¹⁰³

The year will come when there will be no mountain, there will be nothing. Neither water nor mountain, nor nothing will there be, and what will we do here?¹⁰⁴

Only three respondents out of the sample of thirty thought the forest is worked in a way that results in it being maintained. These three respondents said they do not see changes in the forest (i.e. deforestation), and another respondent stated likewise, although adding that it is because he has only lived here for two years.¹⁰⁵ Twenty-seven respondents discussed how much the forest has changed due to logging and fires. These figures are similar to Lebner's (1998:29) findings, in which "eighty-eight percent of informants affirmed that forest resource use had changed significantly. Seventy-four percent of those who attested to this change emphasized the current over-exploitation of forest products, in specific reference to lumber harvesting."

The statements made by the respondents I interviewed demonstrate how striking the changes are. For example:

For me it is no longer the same because before I would see the mountains full, dense. Not anymore. Now it is, in a way, bald. The mountain is depleted, there is no more vegetation. The change is considerable... they have logged it greatly, it has been burned...¹⁰⁶

There are many from this side whose occupation is that... making timber. So, they go and cut, cut trees, and leave things bald. Yes, and those trees are needed... I think more than anything for the water, for hygiene.¹⁰⁷

And now with the fires, it's worse. It ended up like a desert.¹⁰⁸

It is very deteriorated because it has been greatly logged, and more than anything I think would be the fires.... The logging can be fixed with reforestation, but the fire comes and takes everything.¹⁰⁹

Now almost all of the mountain is depleted.¹¹⁰

When I came here it was full of trees, really full. They were very pretty forests, and with all kinds of wood. But just with the arrival of the fires... and it ended.¹¹¹

The boys of fifteen, twenty years old, live off the timber. They go and fell the trees, little trees... For what? It is like a child they cut... Now all those that were planted from before, those they have already cut....¹¹²

Quickly they are depleting the mountain... It will be seen that it was wrong not to make good use.¹¹³

Although there are divisions over logging, there is knowledge of possible solutions, some of which require community organizing and cooperation. Solutions that respondents discussed were: the establishment of factories for alternative employment; stricter law enforcement; logging but with reforestation; forms of community management; education and training. Out of the twenty-seven survey respondents who did not think the forest is being maintained, twelve people (four women and eight men) have heard of local intents to organize forest use.¹¹⁴ Community management methods discussed by respondents include the control of trees cut and earth extracted (e.g. through parcels), use of dead wood, compulsory reforestation and price controls. Some of these solutions were based on experiences respondents had witnessed in other states or in Huitzilac.

Knowledge of "environmental" issues

A section of the survey dealt with knowledge of the terms *medio ambiente* and *ecologia*. This was adapted in part from the study by Arizpe, Paz and Velázquez (1996) on perceptions of environmental change in the Lacandona Rainforest in Chiapas. An important aspect of this study was terminology. While the majority of Lacandona interviewees perceived significant environmental changes associated with deforestation, only a minority considered it to be a major problem.¹¹⁵ Furthermore, Arizpe, Paz and Velázquez (1996) found that the majority of people they interviewed associated the "environment" with air pollution of Mexico City (due to information on television). In Huitzilac, there is a similar situation.

Twenty-five people in the sample recognize the terms *medio ambiente* and/or *ecología* to some extent. Seventeen people of the sample both recognize these terms and identify local "environmental" problems (*problemas ambientales*) as such. In response to the open-ended question of whether there are "environmental" problems in the community, fourteen (out of the seventeen people that both recognize the terms and identify "environmental" problems in the region) cited garbage as a major problem; eleven people cited deforestation; and one woman cited fires.¹¹⁶ Thus, among people who recognize the terms *medio ambiente* and/or *ecología*, a large number (twelve out of seventeen) associate the terms with the forest.¹¹⁷ Overall however, this represents only twelve out of thirty people in the sample who associate the term environment with the forest. This means that for many, the words leave aside the forest, which is of great importance for the community as seen above. This has negative consequences for environmental education. If "environmental" problems are seen to be distinct from livelihood problems, activities on the "environment" may be seen to have little importance. As one woman noted in an interview, rather than being interested in the environment, people are interested in having work, even if garbage is flying around in the street.

Respondents who did not recognize the terms *medio ambiente* and *ecología* were certainly not lacking knowledge of environmental problems in the region. For example, one woman who did not recognize the terms expressed strong opinions about the forest and garbage. Another woman has a great depth of knowledge of the connection between the water cycle and the forest, as well as garbage, but she also had never heard the words *medio ambiente* or *ecología* before. Her knowledge of problems with garbage came from experience when she noticed that a nylon in her yard had not decomposed in five years.

Age is a factor for knowledge of the terms *medio ambiente* and *ecología* among women in the sample. Of the five oldest women in the survey, four did not recognize the words and one had a very limited notion of the words. Yet, the

participation of older people in workshops is important due to their extensive ecological knowledge (as GEMA members emphasize). Elders have knowledge about the local environment and traditional practices which are more sustainable in forestry (for example, the selection of trees for logging, regrowth rates and proper reforestation techniques) and agriculture (for example, uses of organic fertilizers and means of erosion control through *zanjas* or irrigation channels).

Education may also be a factor. Two people out of the total four in the sample who had not received any formal education, did not recognize the words *medio ambiente* and *ecologia*. The others who did not recognize the terms had not finished primary school. Of the eight people (from different age groups) who recognize the terms but do not identify local “environmental” problems as such, only one person completed secondary school. Five people went to the *preparatoria*, out of seventeen people who both recognize the terms and identify “environmental” problems in the region (the same and only five people in the sample who had entered into post-secondary studies) (see Appendix E: Education levels of respondents).

For some respondents, it was not clear what *medio ambiente* or *ecologia* means, although they had heard the words before. Different meanings or confusion over the terms may also be the reason more people do not recognize problems in the region as environmental ones.¹¹⁸ For example, one man had talked to me about problems with deforestation, yet he made different associations to the words (including anti-logging law enforcement):

- Is the word environment known? Do people here... use that word environment or ecology?
- No, almost none, not that I know of. Because ecology and that, only in Cuernavaca are there offices of all that. They are those that take care of the mountain, no? Fruit trees and trees of the mountain. Here there are none, or only if it is that which is in the municipality, that there is a representative.... I think if it's not of ecology, it ends up being a job almost the same. It's the one that gives data on the reforestation, of when the trees arrive, when it is time to plant...
- What does the word environment mean here...?

- The truth is that of the environment I do not comprehend well what it is... Like what would it be?
- Or ecology?
- Well, what I have told you, that here there is that representative, it is all.
- And are there problems considered to be of the environment?
- No, not that, not that I know of.¹¹⁹

In some cases, respondents consider certain issues as environmental, but not as local problems, such as with smog and soil contamination. Yet it is also the case with garbage and the forest for a few respondents. For example:

- Is it known here what this means ["environment" and "ecology"], are they words that are known here?
- Yes... ecology is like a tree, the planting of vegetables, of garbage... [...]
- Are there environmental problems, ecological problems... of ecology?
- Like what?
- I don't know, you tell me [laughing]!
- No, that I have seen, no... Now, I having been raised here, born here, have almost not seen that...¹²⁰

Similarly, when I asked about the words, another couple told me about how SEMARNAP came up to see how the mountain was after the fires. However, when I asked if there are problems here that he considers environmental, the man said no, his wife adding there were not problems like the smog of Mexico City. There were two other cases of people who associate the forest with the term "environment" and believe the forest is not being maintained, but do not feel it is necessarily an environmental problem now (although they think that it could develop as such if things continue as present).

Knowledge and participation

There are very few differences between survey respondents and participants interviewed in terms of perceptions of environmental changes, the problems these entail, and possible solutions. The only exceptions are that *all*

participants interviewed noted environmental changes and no participants from the forest sessions I interviewed were in favour of a complete logging ban, but instead favoured forest management techniques. Similar to survey respondents, solutions to the problem of deforestation given by participants I interviewed included creation of alternative jobs, use of dead or sick trees, better use of wood, and forms of community forest management. Participants noted many of the same changes in agriculture, rain cycles and the forest. Views on deforestation among participants I interviewed ranged from frustration at loggers' destructive practices to sympathy because there are no alternative jobs.

It seems that participation is not only an issue of perceiving environmental problems or knowledge of their solutions. As Meredith et al. (1994: 14) discuss, as people become more sensitive to cues of environmental change they may be more likely to modify their behaviour. Part of the willingness to act may be due to perceiving more fully the extent of environmental problems. However, it appears that the cues are different for different people, even in similar socio-economic conditions in the same community. According to Arizpe, Paz and Velázquez (1996:93) "*the perception of ecological changes has no intrinsic content but is, instead, superimposed on positions held previously in a context of existing sociopolitical relationships*". In the case of Huitzilac, what makes one person participate while another does not even when both may hold very similar views of local environmental degradation and may be similarly concerned? Personal experience and values held may have an important effect on willingness to act which goes beyond purely "economic" motives. As Meredith et al. (1994:15) state,

Understanding environmental change is a prerequisite to the capacity for purposive response. The interplay of biophysical, economic and social measures provides an indication of the urgency of societal response. But the interpretation of the interplay depends partly on the quality of information available and partly on the value predisposition of the decision maker.

While perceptions of environmental change are not by themselves a reason for people to participate, there may be some correlation between knowledge of “environmental” problems as such and participation in the workshops. Participants had higher knowledge of problems linked to the concepts of “environment” and “ecology”. Two women of the ten participants I interviewed did not know what the terms mean (despite this, they had extensive knowledge of environmental problems such as garbage and the interdependence between forest, water and air).¹²¹ However, out of the participants I interviewed who recognized the terms, all recognized environmental problems in the region, and all identified both garbage and deforestation as environmental problems in response to the question (other problems mentioned by interviewees included water, air and soil quality). When asked during registration to mention two environmental problems considered most important, thirteen out of sixteen participants responded both garbage and deforestation.¹²² I will return later to this important issue of terminology in discussing obstacles to participation.

Chapter 7: Obstacles to Participation in Workshops

One of the major obstacles to participation in workshops is distrust, something which is also related to different interpretations of “environmental” terminology. Other effects on participation rates may include scheduling problems, gender divisions, adequate promotion, and misunderstandings. Based on participants’ views on the matter and on interviews with survey respondents, it is clear that interpersonal relations between organizers and community members are very important to increasing participation in workshops.

Promotion and participation

At the end of the first workshop, participants and organizers discussed together why there had been a low turnout. Later there was an evaluation meeting held among organizers as well. There was a general consensus in the evaluations that there had been a lot of promotion done by promoters and organizers. One of the most troublesome issues was not knowing which was the problem: whether there had not been enough promotion, whether it was inconvenient scheduling, the time of year (due to planting and vacations), or if people are not accustomed to participate in such events.

The problems of scheduling and time constraints are difficult to resolve because of requirements in terms of school, work, and even weather (showers start in late afternoon during the rainy season). For instance, two young participants had to quit after an initial session because of work. One participant who had been inviting people to the event told me “I see that some people are interested, yes... but sometimes because of their work and all they really cannot participate.”¹²³ Some participants suggested that it would be better to have short meetings in people’s homes in order to both make it easier for people to come and also to make it more personal (this is something GEMA has also been doing).

There was also another environmental education program being carried out by an NGO called Luna Nueva in the nearby community of Tepoztlan concerning environmental issues in the CBCH. Gisela and I knew of men from the Huitzilac municipality who heard of both programs but were attending the Tepoztlan workshops. The two were scheduled differently, but another reason may simply have been greater interest in attending regional workshops than local ones.

Gender may also enter as a factor, since the person who was inviting people in Huitzilac to the Tepoztlan workshops was a man. It is possible there were more women participants in the Huitzilac ENEPA because women were doing the promotion. Both men and women educators or promoters need to be involved in building personal relations with people who may participate. The attendance of both men and women is a necessity when discussing the forest, since men are the ones that work in the forest and are *comuneros*. As Lebner (1998:44) also points out, "the interests of *madereros* [loggers] have significant economic and political clout in the village; they both contribute to the local economy and shape local political attitudes *vis-a-vis* state policies."

As seen above, there were more participants in the forest sessions, including more men. This may have to do with better scheduling but also with the fact that promotional activity focused on the forest. The efforts of promoters were also important. One young woman who had worked in the Grupo Colibri previously, invited over fourteen people (family and friends) who said they would attend. Gisela and I also invited people we knew were interested in forestry issues and asked them to invite others. Indeed, all participants had heard about the workshop by word of mouth, from workshop organizers directly or from friends and family who have contact with organizers.¹²⁴ Posters were put in central areas, but appear to have had little effect in terms of direct participation for the ENEPA (although there may be other effects).

Most people have not heard of environmental education events, with a few exceptions. For example, promoters told me they heard of plans to create a

recycling centre. Another participant told me that he heard about a workshop on organic composting. However, other participants interviewed had not heard of other events, workshops, or courses on the environment. Only eight out of thirty survey respondents had heard of such activities.¹²⁵ Participation in other workshops on the environment has been very limited. None of the new workshop participants and only four survey respondents had participated in any activities, courses or workshops on the environment.¹²⁶

Distrust as obstacle to participation

While there was a larger turnout in the last sessions, the balance of gender remained a problem. This was commented on by one participant during the evaluation of the seventh session, when she said that she had liked the workshop but she wished there had been more men since they work in the forest. One participant told me in an interview that the reason for the low participation of men is *machismo* which makes it difficult for men and women to participate together. However, another reason is linked to livelihood. One woman said men do not like to participate in meetings or reforestation because they work in the forest. I also raised this issue with some survey respondents. A male respondent said that it has to do with work in the forest: "Sometimes women have more time than men. The men go to work. And even more is that it is not convenient for them to talk about the recuperation of the forest, when their activity is the contrary, its destruction."¹²⁷ One participant, while he was sympathetic to the reasons deforestation occurs, expressed his view bluntly: "There are none [men] because they are not interested. What they want is to make money."¹²⁸

A participant told me about how she tried to invite some men to the forest workshops, but they did not want to come because they feared criticism. Another participant whose family works in logging told me about a conversation she had with a logger concerning the workshop:

- When they tell me hey can you invite someone, yes, but since I myself was invited I couldn't.... And I commented to a guy, I told him 'Oh, it was really good', and he said 'And why didn't you invite me?', and I told him 'Well, actually I wanted to, and well you have many friends, I wanted to. But I couldn't, I couldn't because I said how will we do it, how do we go?'. And then he said 'They would not have accepted me because they would have told me that I log the mountain and they would have kicked me out', and I told him 'No, actually no, according to what they talked about it was not against you'.... And he said, 'For the next one invite me, okay?', and I said 'Really? Okay, then I'll let you know'...
- So he said that he thought that since he works in the mountain that -?
- Even more if they see what you were commenting, no? They think that it is from government... In other words, there is no trust. That's why I tell you, that we realize who they are, and if someone comes as a representative ... well then according to the trust we have in this person.¹²⁹

For this reason, it is also important that workshop organizers be independent of government and be seen as such by potential participants.

Part of the obstacles to participation may be linked to terminology. As one participant suggested, people were not interested in coming because (just like her) they do not know what *medio ambiente* means. Different definitions of the term may be a source of misunderstanding and alienation. A participant told me that loggers know what *medio ambiente* and *ecologia* mean but associate the terms with anti-logging regulations. She said these words have only very recently been recognized:

- The truth is that those words were very recently known, not too long ago. The people that talk with you, talk about the mountain and all... but not of environment... these are new things so that's why people don't. They are things that we still have to learn.
- These are new words everywhere.
- Yes.
- So, for example, someone who works in logging and sees 'resolve environmental problems' [a reference to the poster for the ENEPA], will he become defensive?
- Yes, he becomes defensive, because I think that he foresees that it is something they don't want [loggers] to do.... that it's something that will be stopped by means of the government. Like SEMARNAP was commenting, it's where logging of the mountain is totally stopped, and

[loggers] foresee this... As they said, 'What has Julia Carabias come to do here?'¹³⁰ Well, she came so that there will be no more logging.' That is what - well the people who did not go see her - that is what they believe. In reality, it is not so, but we have to make these people conscious so that they do not think that. But the truth is that these are words that arrived not long ago and since they are logging the mountain that is what they feel, that everything will be stopped.¹³¹

Not all loggers feel the same though. Among participants were some people who log as part of their livelihood, or people whose close relatives are loggers. It is important to note that relations of trust have been established between these people and organizers. They also are people who want to see some form of community forest management created. My personal observation is that the majority of ENEPA participants did not feel threatened by participating. Participants knew or learned that workshop facilitators promote learning based on community concerns and especially favour community management. For those people who do not know this, workshops may seem threatening at worst or irrelevant at best. As Abella, Fogel and Mora (1997:148) note, environmental education cannot be done without first establishing mutual trust.

As seen in the above testimonies, problematic consequences arise when the terms "environment" and "ecology" are associated with anti-logging law enforcement only. Even if many people associate forestry with the "environment", there is little reason for people to assume on face value that an environmental education workshop would *support* logging. Clearly, the issue of language is not simply a question of terminology, but concerns the associations attached to the concepts of ecology, environment, environmentalism and environmentalists.¹³²

Taking care of the "environment" is not synonymous with "community-based forest management" although it may mean this for some people. For others it may mean anti-logging, based on their previous experiences. In this sense, the terms are like codes. For people with a similar definition there can be a shortcut for mutual understanding. For those with different views it may be a source of conflict and misunderstanding, even though both people may share the same

appreciation for health, a sound economy and the quality of water, air, soil, and food. This is an unfortunate consequence. Unless explicitly understood to be inclusive of social and economic spheres, the concept of environment by itself implies a distinction between nature and economy. Yet it is difficult to argue that “environmental” problems are distinguishable from most “economic” problems; economies are inextricably tied to the use of natural resources.

During one of the GEMA’s evaluations of the workshops, we discussed the problems of language used in the main poster, which says “Are you interested in environmental problems?” (“¿Te interesan los problemas ambientales?”) (although later supplementary posters did not say “environment”, but “the forest”). Gisela noted that it is important that people have knowledge of the terms in order to be able to better assess and act on decisions taken by the government concerning the region, as that is the language being used at that decision-making level. An important point made by Abel, Fogel and Mora (1997:20) is that learning the use of governmental, academic and even NGO terminology (or “jargon”), should not be a goal in itself, but a tool for the purpose of being able to organize more effectively. However, they add that from the point of view of environmental education, the language and the principal contents to be worked are in the people and not the educator.

Citing the specific subject to be addressed in a workshop as well as using “environmental” terminology may help both to be specific and to increase the use of the new terms. This may be especially important for older people, who would like to participate because of specific subjects such as organic gardening, but who do not know what the other terms mean. It also may be a way of integrating specific subjects with more “theoretical” ones such as community organizing through the work of promoters and participatory diagnosis.

The problem of terminology as an obstacle to participation requires breaking down terminology outside of actual workshops as well (and making clear to potential participants that the workshops are concerned with both the

environment and economy as interlinked). Deeper interpersonal relations have been key to creating interest in environmental education and getting past some of the problems mentioned, especially distrust and misunderstandings. This is something that GEMA has always emphasized, as well as the importance of their long-term commitment to working in the community.

Creating personal relations also means understanding social networks and local customs. For instance, as part of her broader research Gisela is investigating how divisions along family lines are played out in terms of participation in community organizations. This is an important consideration. One promoter told me that when she would invite people to events, they would ask her who was going and decide accordingly: "Almost always that you invite people to something they ask 'And who is going?... Oh it's that so-and-so, I don't get along with her'."¹³³ Community divisions are not only an obstacle to participation, but also within workshops as noted above.

Chapter 8: Motivation to Participate in Workshops

Until now I have mostly discussed obstacles to participation, yet it is vital to also look at other factors which may be considered to be motivations. Certainly, trying to understand motivation is as onerous, elusive and humbling as it is fascinating. However, I will venture some factors that I think have been motivating for workshop participants and promoters. In the case of the workshops, motivation concerns two aspects: the decision to initially participate in a workshop; and the decision to continue to participate or take action as a result of a workshop (for example, to become a promoter).

Promoters have participated in GEMA workshops in the past. Their interest in participating both initially and as promoters provides cases for understanding why people participate in environmental education. Some of the main themes that participants and promoters discussed are the great importance they see to solve environmental problems, and they emphasize the need for community organizing as the best path to accomplishing this goal.

Participants' motives to participate

In response to the registration sheet question "Why did you decide to participate in the ENEPA?", most answers concerned interest in learning more about the environment and helping to protect it (see Appendix F: Compiled responses to the ENEPA registration sheet for the first sessions). In response to the question "What would you like to learn in the ENEPA?", six out of the twelve participants from Huitzilac who filled in the sheet answered they would like to learn more about the environment, five said they would like to learn more about how to decrease logging and use resources without damaging the environment, and one said she would like to learn about vegetable growing. I asked people why they decided to participate during the interviews and received similar answers.

During introductions of the forest workshops, people were also asked to give reasons for why they decided to participate (registration sheets were not used), and the majority replied that they are interested in the environment and/or the forest.

Participants had many positive views on the usefulness of education for awareness-raising and organizing. For example, I asked a participant if she thought the solutions that were talked about in the School could be brought about and she replied "Yes, by ourselves promoting it now, well now I count myself as a promoter. Promoting also so that this way people will have the energy to keep going."¹³⁴ Other participants had similar comments:

Yes it can help, because the people who go to the workshops can commit ourselves to bring another person, another five, so that it will be bigger and there will be more community.¹³⁵

Principally that [environmental education] be given to the children, so that they would have an ecological conscience from the time they are little.¹³⁶

Because seeing that the mountain is deteriorating, and that the trees have no earth and are falling, we have to create consciousness.¹³⁷

Well I say that everything could be solved by organizing ourselves, in groups, and giving people talks so that they learn, so that they understand....¹³⁸

The responsibility belongs to everyone, because we all live here in this place. We all have to help.¹³⁹

I say [it is important] to raise awareness because we are not the ones who will see this, but our children, our grandchildren. They... will no longer have air, there will no longer be any of that.¹⁴⁰

Such views are not limited to participants however. While most survey respondents said they would participate when asked hypothetically, it is difficult to know if a person would actually do so in practice. Nevertheless, a few respondents strongly supported environmental education efforts, despite the fact they had not

heard about such events in the community.

A factor related to views on organizing is past experience. I was amazed to find that the majority of participants I interviewed (eight out of ten) are participants in and/or are organizers of community organizations such as school and other committees; are health centre volunteers; work with GEMA (teaching others about recycling, composting and organic gardening), a women's group or political parties; belong to a group of honey producers; and include *comuneros* and a *comunera*. Some were involved formally in organizations, or took action as individuals on problems such as garbage disposal. One woman explained how she would like to be able to dedicate herself to her community full-time: "There is much to be done in the community.... I would like to have a form of support, like from government - I do not know what department - to really dedicate myself to my town, what it needs."¹⁴¹ One of the participants I interviewed had been involved in the organization of the *Unidad Económica*. Thus, they have a wealth of knowledge concerning community organizing and education.

It is difficult to know if a high rate of participation in community organizations may indicate that participants were already more disposed to participate in the ENEPA, but it is a possibility. In terms of some comparison with the survey respondents, it may be meaningful. There were only four men in the sample, who, apart from being *comuneros*, participate in organizations in the community. Two women in the sample participate in organizations in the community (the majority of women have *comunero* husbands). None of the three men in the sample who are not *comuneros* participate in organizations in the community. The three respondents who had moved to Huitzilac from Mexico City commented on how difficult it was to participate in community organizations because they are seen as outsiders by other members of the community (and thus they did not).

Promoters

In 1996, the EPA held in Cuernavaca included participants from Huitzilac, mostly students from the local *preparatoria* (the Centro Bachillerato Tecnológico Agropecuario or CBTA), who were encouraged by a teacher to participate as part of their *servicio social* (a social service requirement for graduating). The teacher invited about nine youths from Huitzilac. As part of their group project, the students organized themselves as the Grupo Colibrí, and continued to do work in the community for a period after the EPA 1996 was over (until June 1997). The Grupo Colibrí broke apart after graduation from the CBTA as members left, people began to work and had less time for the group, and also due to personal disagreements between a few members. Graduation may have meant the disappearance of a unifying element (i.e. doing one's social service and being students). As well, disillusionment over not succeeding in creating a recycling centre may have played a role. Nevertheless, many promoters continue to consider themselves as such. Five promoters from the group still work with GEMA; some occasionally while others are paid a monthly honorarium.

What struck me most about these individuals was their appreciation for the natural environment, their sense of both hope and frustration, and their emphasis on community organizing as the solution to environmental and other problems. As one promoter commented, "The first thing is to organize ourselves... that we have consciousness of working on this.... We cannot lose that hope that it can be done... The first thing is to have that sacrifice, that struggle...." ¹⁴² He added that if the municipal authority does not have awareness, the organization must keep insisting: "If we do not organize ourselves nothing can be done. Then already organized we can go to the authorities." ¹⁴³

The Grupo Colibrí did various environmental education activities in the community which included a participatory diagnosis (by means of the "*Ecojuego*" and a survey), workshops, a mural near the town square (painted by people in the

community), and house visits.¹⁴⁴ Workshops and visits were focused on waste management (recycling and composting). As mentioned above, the group also tried to get a recycling centre opened.

One of the obstacles that promoters faced was a lack of support from both government and the public. As one promoter told me, "Yes there are barriers... We are few and a few cannot really do much because not everyone helps us. If there were more people [who helped us] there would be fewer obstacles to doing the project we have in mind."¹⁴⁵ Promoters told me about the problems they had faced in getting support for the recycling centre. At first the group gained support from some government officials for the project, but it was neglected due to political upheaval (as the municipal president was removed from office by a portion of the community). As one young woman explained, "They did not support us. We began with much desire to do it but we ended up very disillusioned... It's that in that time there were political problems, well with the president that was taken out."¹⁴⁶

Problems with creating a recycling centre made it difficult to encourage recycling, since the materials accumulated in people's homes with nowhere to go. In addition to this problem, visits to homes have been difficult. The student promoters spoke to me about how they were sometimes run out of people's yards and faced other problems such as not being taken seriously due to their age.

Despite the obstacles and frustration, and even though the Grupo Colibri is no longer intact, according to the promoters I interviewed the experience of participating in the EPA and the group was very positive. Above all, especially for the young promoters, it was a very good learning experience. For instance, four of the promoters told me how at first they were only marginally interested in environmental issues, but later became more and more interested by participating and learning about things in the EPA. One promoter said she knew about the problems since they are visible, but what was seen in the EPA are the connections between the problems. The students had first heard about environmental issues in

school. One of the promoters I interviewed had participated in a prize-winning project designing a model of the garbage dump in Huitzilac, and this is where her interest first developed. For others, a deeper interest for the issues came during the EPA and working with the Grupo Colibrí:

In reality I was not very educated on what is ecology.... It grabbed my attention and then I decided to enter.... But I was not too convinced, I thought I would not be able to endure... But after, the more you get into it the more and more you like it... I liked it and that is why I am there. And also to help people.... It gives you awareness on all that you do, all that can harm you.¹⁴⁷

The most interesting thing, well I think it was everything, in reality it is everything. Because they taught us more than anything to have consciousness of ourselves towards nature. For example, when I used to live in my aunt's house... I would go to the [public] washing place because there was no water. I would see that the women would leave the garbage from their detergents and bleach, in other words they would just leave them on the ground. And so if they left them on the ground, then I too. That was my idea. If they do it, why not I? And then after I began going to the *Escuela de Promotores*, my idea changed...¹⁴⁸

In the beginning it all started with getting my social service [requirement], but then after you start getting into it. Perhaps you also had not realized all the problems there are. And then when you are practising, carrying things into practice, you start to realize in reality what had been happening.¹⁴⁹

When I asked about speakers who had visited the schools, one promoter said that few of them took the same interest as their teacher, and that the form of explaining (i.e. popular education pedagogy) made all the difference: "I don't know if [the speakers at her school] did not know how to explain or if I did not understand them, but I think that I liked it more how they did it in the *Escuela de Promotores Ambientales* than how they gave it - well it was totally different... They have their differences in speaking, in explaining."¹⁵⁰

This may be a testament to popular education. As the teacher who got the students involved noted, a strength of the workshops was that everything was learned first-hand and there were people of different backgrounds. As well,

promoters explained to me that in the workshops they were able to discuss obstacles they were facing doing work in their community and possible solutions. As this promoter explains, the focus on experience was important:

For example, they asked us to write about what are the environmental problems in your community... They gave us more than anything concepts... like about dirty waters. But... we had to come to our own conclusions on the subjects discussed.... In other words, to give your own point of view. For the subject of garbage, what did we think. For every subject you had to take an opinion. What I thought was of most importance is the issue of water....¹⁵¹

For two promoters I interviewed, their interest in environmental issues, which deepened with this work, has led them to decide to study related fields. One would like to study to be an environmental engineer. Another is studying to be a teacher: "I tell you I am a great lover of nature. So, if I can do something - perhaps not much - but if I can do something, well then onwards... Including for that reason I decided to become a teacher."¹⁵² She added that this interest is not just to teach about the environment, but to make other positive changes in society.

Practical applications of what the students learned continued after working with the group. All promoters I interviewed continue to use waste management techniques in their homes. The teacher explained to me how she has integrated popular education techniques into her teaching. Furthermore, working in the community carrying out workshops and visiting homes was also a learning experience for promoters in terms of *organizing* (what is sometimes referred to as "empowerment"). As one promoter put it, what she liked most about the EPA was learning about the participatory diagnosis since it taught her about how to carry out projects. Promoters learned about popular education methods, for example with the mural:

We would guide them... 'Well, what do you think?... Then, draw it' It was great because it was all children, the majority. It was really fun. After, with so much paint, we all ended up painted! There was a lot of

socializing, people I did not know, I got to know, even if only a little bit. Sufficient to know about the knowledge they have about our community. Yes, and later chatting with the people, the elders, what they think, how they wanted to participate.¹⁵³

Also, as two promoters explained, as they worked in the community they felt more at ease talking to people about the issues. They were able to use their experiences for further work. For example: "At first it was that we were scared, but after with the passing of time, we got used to it, and we managed more at ease. And all the ideas we had we would propose them and we would see which were good and we would put them in the project to see if we could make it more easy."¹⁵⁴

One of the most important elements of community work is being part of a group, which suggests that solidarity should be as important a consideration as "*conscientización*" in popular education theory. For promoters, having participated in the EPA and the group was inspiring because of interrelating with others:

I don't know, I liked it.... I can't explain what it is... you interact with more people, they give you more encouragement. And later when I went to the *Escuela de Promotores Ambientales* then more.¹⁵⁵

- You worry, but it's like you don't know what to do.... And then with that [the group work] they started telling you 'Look you can help in this', 'You can do this', 'You can collaborate with this.'
- And did you feel you could do something?
- Yes, I *still feel* I can do something [laughing]!¹⁵⁶

Promoters spoke about how important this association was to them, how when they are alone they feel little can be done, but being with others helped them feel they could carry on. Two promoters explained how after the group dissolved, it was difficult to continue the work:

Not anymore, because since they see that you don't belong to anything and we were just two people. No, really we couldn't do anything because we were not supported. Now that we are supported again [by GEMA], once again yes.¹⁵⁷

You can never understand people. Not even if the world is being destroyed do we pay attention. I include myself as one of those people... that don't want to understand. Ever since I left the Grupo Colibri it's like I started to say once again 'Well, now there's no point. I can't do anything anymore.' With so many people I just can't. I don't have enough character to - for example with my neighbours - talk to them and tell them what I would tell them before when I was in the group, not anymore. One possible solution that there could be in the group would be fellowship.¹⁵⁸

Another promoter I interviewed said that what matters most is a commitment to the issues:

It's more for interest because it's not really that much fun... To participate as an environmental promoter is in reality to have much desire to work in this because it is pretty tiring... You have to have much will... Participating in workshops or in this is easier, but to go raising people's awareness or explaining to people is very tiring... There are people who tell you I have too many things to do to be listening to you. You feel bad. It makes your morale go down, it brings down all your desires to go out to help or to work - perhaps it can be said that way - that day. And you have to say, I do it because it is needed to be done and you keep walking. Because if in reality you do not have that strength of will to do it, at the first slamming of a door - even if five people have received you well - you leave. You leave in the first place because they aren't exactly paying you to do it, no? You were giving a support to the community. Nobody is obliging you to do it, and when you wanted you could grab your things and leave.¹⁵⁹

The perspectives of promoters on environmental education reflect nearly three years of working on environmental issues in the community. I asked promoters if they thought that the solutions they discussed in their group or in the workshops were possible. Promoters discussed education and organizing as key avenues toward solutions. Promoters have learned about popular education and have seen which methods work better first-hand, such as group work in workshops. As one promoter explained, workshops are good because "[participation in workshops] creates consciousness, people become more interested I think, in the workshops than when you go give talks in their homes... Because you see that people work more when they are united."¹⁶⁰

On the other hand, one of the older members of Grupo Colibri told me that there needs to be more education and personal visits to homes for people to participate. He said that the problem is lack of knowledge of what is creating problems for ourselves, which stems from a lack of both formal and non-formal education. Another promoter also said that what is needed is persistence since changes do occur, but slowly: "Everything can be carried out, it's that everything is long term...."¹⁶¹ She said that some goals are taking longer, such as setting up a recycling centre, but other goals have been realized such as awareness-raising on the potential of waste separation and recycling.

While acknowledging the importance of education, one young woman said that in her experience she learned that people know a lot about problems in the community, but what is lacking is motivation and action:

Well, the people more or less know. I have talked with some people, and even more in meetings... It's like the people more or less do know what they have to do, it's as though they lack the impulse to do it. Since they do not see anyone who does it, it's like they are waiting that others take initiative... Many times it is despairing... because you go to give a talk and you expect them to tell you 'no, I knew nothing of this', no? But no, instead they begin to tell you even other things that you were not even aware of But they don't do it. So what is the point that they know it if they do not bring it into practice? They search for some pretext: 'Why separate my garbage, if it will all be thrown in the Tezontle? [the garbage dump]' 'Why do this if the neighbour doesn't?' and 'Why do...' Since they see that everyone does the same, well then they do not see the point to begin with themselves.¹⁶²

As noted above, people in the community have a great deal of knowledge of problems and of possible solutions. We need to look beyond the transmission of information as the primary task of environmental education and instead look to ways people can become inspired to take action despite the obstacles.

Chapter 9: Conclusion

The potential role of environmental education workshops in Huitzilac is limited by the obstacles to participation and organizing caused in large part by conflicts over forest resources. These obstacles are significant despite the knowledge people have about local environmental problems. The motivation of individuals to participate and/or become promoters has been due not only to their knowledge of environmental problems, but also to experiencing and envisioning the potential of group work. The Huitzilac ENEPA workshops were an initial approach to the issue of forestry, made possible because of the development of relations of trust between GEMA and many community members. These workshops demonstrate strong hopes among participants for community forest management. A political ecology approach could be useful in workshops for deeper analysis of the decision-making levels affecting local resource use; knowledge which is important for concerted action at these levels.

In the workshops, especially those focusing on the forest, it was useful and necessary to create spaces where people could share experiences, discuss problems and their political causes, and learn of solutions known to people in the community, as well as how organizations from outside the community could be of support. These dialogues (the basis of popular education) made the workshops a good place to formulate solutions, based on local knowledge and the input of biologists and other academics. As noted above, all participants to the Zempoala sessions I interviewed believe in some form of community-based forest management. Discussions in regard to the forest indicate the existence of a desire to create solutions collectively which can continue to provide for the forest-based economy as well as conserve the forest.

However, it is important to note that while proposals were made by participants during the workshops, and much action has been taken in tackling waste management and other issues, little immediate action was taken in regard to

forest problems, and it is difficult to know at this point what the long-term effects will be concerning the latter. Addressing waste problems in the community has been less conflictual than tackling deforestation. Unfortunately, the type of pedagogy used in workshops cannot by itself compensate for problems that inhibit participation and organization; problems of conflict and repression concerning the forest, political and family divisions, and disillusionment from seeing the failings of governmental agencies. It is also difficult to know if popular education workshops in Huitzilac have helped support more *effective* organization, in the absence of a more considerable local movement for environmental sustainability. The workshops have however, given strength to individuals who are seeking ways to organize with others to effect changes.

In Huitzilac, people have a great deal of ecological knowledge and know about problems accompanying environmental changes. As seen above, deforestation and conflicts over the forest are major concerns in the community. Most respondents are familiar with vegetative cycles, reforestation, the effects of logging and earth extraction, and the link between deforestation and the rains. However, knowledge and concern about environmental changes do not by themselves motivate people to participate in workshops, although they clearly play a role. I suggest that what needs to be made known is that participating is rewarding both immediately (i.e. conviviality, learning) and also in terms of potentially leading to community organizing. The strength of the educational experiences for promoters and participants has been in the development of organizational capacity and inspiration through group work and mutual support. These observations affirm the need for good popular education, because its strong point is the creation of spaces to organize collectively.

Of particular importance to increasing participation is understanding the obstacles. People must first be informed about workshops. However, other barriers are more daunting. Distrust is a major obstacle to environmental education in areas of conflict over resource use. Some solutions lie in the

development of close interpersonal relations between educators and promoters with other community members, and the “deconstruction” of environmental terminology. The words “environment” and “ecology” are not neutral, but threatening to many because they are associated with vigilance against logging. This should be of concern in promoting events with an “environmental” label. This obstacle affects the makeup of who participates, and thus also what can actually be planned in workshops to resolve problems collectively. Thus, environmental education must be relevant not only to major local concerns but also adapted to forms of *communication* about social, economic, and environmental issues. The goal is increased usefulness of workshops as well as increased comprehension for participants, and enhanced sense of “ownership” of these forums.

Relevance to issues of local concern is crucial, and it is the reason that popular environmental education is important. This is something that GEMA has worked on extensively, in its use of participatory diagnosis tools, for example. Creating education which is grounded in local reality also means understanding local customs, political relationships, social networks and possible conflicts between participants.

The idea of always beginning with the local does not mean group analysis is limited only to local relationships. It is critical to examine the political economic bases for environmental problems as part of environmental education workshops. In Huitzilac, deforestation is done primarily by people within the community. However, it is important to discuss causes related to structures of capital and state power (such as the national agricultural crisis and its global economic links; the effects of the state and workings of the Mexican government on the failure of community management efforts; as well as lack of municipal services such as recycling facilities, proper sewage and water treatment). In particular, the failure of community management and the unjust exclusion of the community in decisions over their resources (i.e. related to the legal framework of the *Corredor Biológico Chichinautzin*) are political problems that need to be analysed in workshop

discussions.

This research supports the pedagogical approaches described by Abella, Fogel, and Mora (1997) as well as Barndt (1996), for beginning first with local problems and extending outward to an exploration of regional, national and international linkages (and then back again to local action). A political ecology approach to environmental education may be a good basis for making these linkages explicit, by looking first at the experiences of individuals and then the broader economic, political and social factors that shape the “parameters of choice” of local decision-making. As such, it could be useful in connecting local experiences with broader analysis of economic and political structures. The dialectic process in popular education theory is intended to promote “*conscientización*” or critical awareness, leading to collective action. Ideally, critical awareness of the links between local problems and root causes may also support more effective grassroots action at different levels of power. However, the focus on the local is also of foremost importance in workshops since it is at this level people may feel they can take the most immediate action, which may be the most inspiring of any facet of environmental education.

Given the importance of being locally relevant, research must be an integral part of popular environmental education. The Huitzilac ENEPA case supports observations in Abella, Fogel and Mora (1997) that identify as basic criteria for participatory environmental education, flexible planning, local specificity and the integration of research. This reinforces the positive aspects of cooperation between researchers, popular educators and other community activists. The joining of research in the community, popular education and the work of promoters was very important for tailoring the workshops more closely to local concerns and cultural realities.

In concluding, I must explain a personal transformation that is relevant to the research and thesis. When I went into the field, I had a long-standing skepticism about the real possibilities of education in community organizing and

social change. What I learned, particularly from promoters, is that popular education can be useful and inspiring. Education has a "multiplier effect" whereby those who learn later teach others either explicitly as teachers or in their daily lives. The people who participated in workshops and are continuing to work with GEMA have found a source of support and are introducing more people to the work.

In the summer (1999) following my fieldwork, the municipal leadership of Huitzilac was forcefully removed from office by a faction with a large base of support in the community, under charges of fraud. During this political upheaval, there were assaults and even murders (Gisela Frias, personal communication, October 1999). Later this same summer another ENEPA was successfully held in Tres Marias, Huitzilac, with the participation of thirty-two adults and about twenty-five children (Margarita Hurtado, personal communication, October 1999).

The Tres Marias ENEPA included a session on environmental policies and resource management (involving analysis of public participation within the CBCH). Presenters at the Tres Marias ENEPA were asked by organizers to make connections between local environmental problems and global trends. In addition, each week, participants were asked to write down actions they have been undertaking at different levels: at the household, organizing in the community, or actions which have consequences beyond the community. This *dinámica* brought about discussions about the issue of having a voice in the decision-making on policies which have an impact at the bioregional level (Gisela Frias, personal communication, November 1999). The latest ENEPA demonstrates a movement towards deeper analysis in workshops of the kind of factors emphasized in political ecology.

Civil strife with its tragic consequences represented a deterioration of conditions for peaceful community organization. In this context, the participation in the Tres Marias ENEPA is very positive; displaying how alternative forms of organizing for economic autonomy and environmental sustainability are

increasingly being elaborated and encouraged by promoters.

Endnotes

1. Unless otherwise noted, in this thesis the use of the name Huitzilac refers to the community and not the municipality.
2. In this thesis, I have focused on the activities that take place in Mexico as part of this partnership project. However, it is important to note there is an important Canadian component. Through the QPIRG-McGill and the efforts of people like Professor Thom Meredith of the Geography Department as well as Gisela Frias (the coordinator of the ACCES working group at the QPIRG-McGill), McGill undergraduate students have produced research essays linked to GEMA's work in Huitzilac (used for example, to create education materials). Some students also came to Huitzilac and conducted fieldwork (for example, on medicinal plant use by elders, and on forest use), producing research more directly connected with the reality in Huitzilac. My participation in the project was possible based on these antecedents and from the encouragement of Gisela Frias, herself conducting graduate research in Huitzilac. The ACCES working group of the QPIRG-McGill (of which I am a member) has also organized workshops in Montreal on applied research and popular environmental education.
3. EPAs were held in 1994, 1995 and 1996 in Cuernavaca, Morelos and had a combined total of 120 participants trained as promoters (GEMA 1999a:1).
4. A school for children was also planned, so that mothers could attend but also to provide an educational experience for children. This was attractive for mothers in itself, and there were even children who attended without their parents.
5. Peet and Watts (1996:7) also point out a weakness of early political ecology in focusing on land use and rural areas, while neglecting other social and environmental problems such as toxic waste dumping and urban pollution.
6. In this thesis, I concentrate on more formalized types of environmental education such as workshops, rather than for example, different kinds of public awareness-raising campaigns.
7. According to case studies of "movement education" reviewed in Paulston and Lejeune (1980:38), educational programs must serve to increase "movement capability, skills, and resources, with educational objectives directed toward enlarging movement capacity", increasing opportunities for the movement in terms of internal learning and reaching the public. Social movements involve the reformulation of ideas and communication of these to others. As Escobar (1992:412, 208) notes, social movements are "struggles over meanings as much as over socio-economic conditions" and "bring about new social practices which operate in part through the constitution of spaces for the creation of meaning".

8 . The question of "effectiveness" is not unproblematic. As Paulston (1980:261) notes, "The ... question "What pedagogical processes have been most effective?" is difficult to answer in any but the most general manner. The connection between instruction and subsequent behavior is much studied, but little understood. And on the basis of our case study material, we cannot hope to do more than suggest some of the major types and characteristics of effective pedagogy, where "effectiveness" is viewed as securing and supporting active commitment to the attainment of movement goals."

9 . Critical pedagogy presents a critique of the formal education system, focusing on power relations as a main aspect of study (Gore 1993:4). Similar to radical educational theories, critical pedagogy examines how dominant beliefs are reproduced in formal education. While critical pedagogy begins from this critique, it also sees the classroom as an area where hegemonic cultural values can be challenged (Giroux and McLaren 1989). In viewing the classroom as such, it becomes an arena for "empowerment" (cf. Giroux 1989).

Feminist popular education examines how oppression through gender interacts with class, race, and ethnicity (Kamel 1988; Walters and Manicom 1996). While the lack of focus on gender relations in Freire's approach to popular education has been seriously criticized by feminist pedagogists, the methods are embraced within much feminist pedagogy discourse (Walters and Manicom 1996; Gore 1993:22, 43; Nemiroff 1992:67; Kamel 1988). Walters and Manicom (1996:2) emphasize the importance of popular education for feminist goals, stating that feminist popular education "is oriented towards transforming gendered power relations and shares the basic methodological principle of valorizing, and building analytically and practically upon, the experiential knowledge of learners themselves".

10 . In this thesis, the focus is on non-formal education, although it is important to note that critical pedagogy approaches to environmental education in schools are significant in the literature. This literature points to the system of formal education as one of the sources of the reproduction of cultural values perpetuating environmental destruction (Bowers 1996, 1997; Orr 1992; Nordland 1994).

11 . Paulo Freire's views reflect Gramscian concerns that the oppressed are kept as such by internalizing those values reproduced by the structure which serves the economic interests of the oppressors. This results in what Freire (1970) calls the "culture of silence". Popular education as education for liberation is meant to empower the oppressed to break through the culture of silence through "authentic", or transformative, dialogue with each other (Freire 1977). Literacy education takes on a whole different meaning in popular education, as people learn to read through a method where the words they learn are taken from their experiences and become not just words, but "generative" words filled with meaning and directed towards a critical understanding of oppression. For instance,

in Freire's work in Brazil, the Portuguese word *favela* (slum) was used to generate not only sounds for learning other words, but for examining its meaning in a larger context (Freire 1977:38-39).

12 . The alternative treaties created by non-governmental organizations at the 1992 Earth Summit in Rio also include a treaty delineating principles for critical environmental education ("*Tratado sobre educación ambiental para sociedades sustentables y responsabilidad global*", Foro Internacional de ONGs y Movimientos Sociales 1993:25-32).

13 . There is a multitude of literature discussing possible ecological, political and social theories and philosophies for use in critical environmental education, particularly for areas where local ecological knowledge has been severely displaced or appears to be largely non-existent (such as in urban areas). For instance, Corcoran and Sievers (1994) assert that the concepts of deep ecology, conservation biology, bioregionalism, ecofeminism, and socially critical analysis can give new direction to environmental education. They argue that ecofeminism calls attention to male-centered education, while deep ecology can help expand environmental education by providing contextual meaning for scientific theories, and conservation biology offers educators "a palpable and solid basis for expressing the interrelatedness of the natural world" (Corcoran and Sievers 1994:6).

14 . It is often the case that popular educators come from outside a community, and various texts dedicate a significant portion to discussing how to increase community involvement (for example, see REPEC-CEAAL 1994; Abella, Fogel and Mora 1997; Viesca Arrache 1995). It was the initial situation for GEMA until promoters started taking over more of the educational and promotional aspects of popular education work in the community.

15 . DaSilva (1995) used methods drawing from more conventional qualitative educational research combined with some participatory research methods from "Relaxed Rural Appraisal" (RRA) and "Participatory Rural Appraisal" (PRA). In fact, "qualitative methods" in educational research is not synonymous with ethnography per se, but comprises a variety of methods including interviews and observation (Fien and Rawling 1996:15; Tuckman 1994:372). For example, "Rapid Assessment for Conservation Education" or RACE (Jacobson 1997), is an approach which uses a variety of techniques to identify environmental education needs in a community or region, evaluate existing programs, and recommend actions for agencies or community organizations. The methodology draws from program evaluation models, ecological assessments and participatory rural appraisals (Jacobson 1997:11).

16. In social psychology, studying attitudes often involves looking at the relation between "cognitive (beliefs, facts, principles, knowledge, or understanding); affective (emotion, feeling, or emotional evaluation); and conative (behavioural tendency or intent)" components (Gray 1985:22).

17. See De Landeshere (1993) and Anderson and Montero-Sieburth (1998) for discussion of the movement towards qualitative research methods and ethnography in educational research.

18. For instance, Gitlin, Siegel and Boru (1993:197) have criticised observation as a method because it is distant in terms of an emancipatory purpose of educational research, since understanding and application are separated. The long-term nature of ethnographic contributions has also been criticized by Gitlin, Siegel and Boru (1993:197-8) for the same reason. Non-participatory ethnographic research may be adequate if the target audience is policy makers, yet this is not always the case in nonformal education. In the latter instance, it is important to evaluate what is the best form of dissemination of research results as it relates to the purpose of research (cf. Mitchell 1985:85-86).

19. Interviews were conducted in Spanish. (I am originally from Uruguay and speak Spanish as a mother tongue.)

20. On March 13, GEMA and another NGO working in the region called Luna Nueva, organized a forum in the community to showcase the work of promoters from Huitzilac and the community of Tepoztlan. I was able to help organize the forum, invite most of the people I had interviewed and others, and present my work there. The forum was attended by promoters, community members, educators, and some government personnel.

21. When I asked one of the men from Huitzilac who was speaking if he minded he said he preferred I did not tape.

22. The average age for the women interviewed was forty-five, and for the men forty-four. Women's ages: 24, 24, 24, 29, 30, 33, 37, 39, 42, 57, 63, 64, 70, 70, 76. Men's ages: 19, 20, 21, 25, 28, 42, 43, 49, 50, 52, 58, 58, 60, 77.

23. The average survey interview was a bit over an hour, ranging from a minimum of forty-five minutes to an hour and a half.

24. *Comuneros* include most men in the community who inherit rights to communal lands.

25. After the first ten or so interviews I figured out how to ask the question of whether the person recognized the words "environment" or "ecology" in a more tactful way, by asking "do people here use the words 'environment' or

'ecology'?" then discussing the question some more until I was able to learn the same information. I did not catch this in the pilot interviews (I conducted three pilot interviews, although it would have been better to do more since I believe it would have made the way I asked questions such as this one more consistent).

26 . Where relevant, I asked other questions concerning: garbage, water, views on environmental education and participation (especially concerning gender differences), fires, and reforestation. These were interesting research questions, but most had arisen after I began the actual survey and I was only able to ask those people that remained to be interviewed. I would also often ask questions about the economy to open up the conversation to talking about the community and forest use.

27 . Contamination of water is a significant health problem in Morelos (Benítez 1990:104). For instance, in 1992 there was a cholera epidemic in Morelos due to contamination of aquifers with sewage (Ibarrola 1996:17). According to Oswald (1992:107), the highest rate of child mortality (32.5 percent) in Morelos is due to digestive system problems.

28 . The municipality also conducts some environmental education in the community. The Regidor de Ecología told me this includes teaching children in the schools about compost and recycling, as well as how to plant a tree and care for it.

29 . I spoke with two officials from the Regiduría de Ecología who told me about negative reactions they have had talking to people about the garbage problem by telling them what not to do. The director told me about a meeting they called for residents who live beside a garbage-filled ravine, for which eight people came out of twenty-five people invited. Those who came to the meeting were enthusiastic, but during visits to homes others said they would not do anything about it. The Director said there is little they can offer as incentives for people not to throw their garbage in ravines since there are insufficient trucks, and there have been few results in forcing people under the law.

30 . Original: "Ése es un problema que yo siempre he estado en contra... Pero se imagina cuántas personas lo hacen, que agarran las barrancas como basureros, como drenajes, como fosas.... ¿Y qué pasa cuando llueve? De que todo eso va dar al centro del pueblo... Ése es un problema...."

31 . Ashley Lebner, an undergraduate anthropology student at McGill conducted research on forest use in Huitzilac in the summer of 1997 for her honours thesis.

32 . For example, one logger told me:
- "Now the youth do this - raze to the ground - they have no control, no care.... And... those that work in the forest, as I tell you, we have no technique, no care in

cutting the trees.... They throw the tree, take what they more or less need, and leave the waste there... On top they do not plant, have no care in cutting the tree and clean up after....”

- “But there are people that do it, taking care that [the logged trees] do not fall on the small trees?”

- “No, in actuality no. Now it is all youth that in truth have no preparation... Preparation well, that they have some conscience, that someone would have inculcated that education ... and to tell them, look we will not prevent you from working, we will discourage you from doing it so....”

33 . Limited topsoil extraction (unlike wood) is allowed in Huitzilac through permits, although in practice, exploitation exceeds the amount legally permitted (Lebner 1998:21). Large amounts of forest topsoil extraction contributes to environmental degradation and it is linked to external demands for soil for gardens (Monroy et al. 1992:46) (for example, in the city of Cuernavaca).

34 . While forestry is important for Huitzilac's economy, not all households derive their main income from it. According to Lebner (1998:21), “There are no means to measure just how many individuals are participating in the traffic of wood. Some have guessed that there may be one hundred families involved in wood trafficking, and many of these if not more, involved in the traffic of soil, but of course the numbers are debatable”. In terms of the survey respondents I interviewed, most depend on various sources of income. Women I interviewed work in the home and some do paid domestic work, or sell food or clothes. Occupations among men I interviewed include farming, logging, topsoil extraction (for sale), charcoal production, and carpentry. A few individuals are involved in truck driving, factory work and small businesses. One respondent I interviewed is a student.

35 . Reforestation problems are ecological, but also political and social. Ecological problems include locally-inappropriate species (although this is being remedied) and inappropriate packaging and planting techniques which may not allow trees to develop quickly. There are also political problems impeding good reforestation, such as delays and other problems with devolution of funds from different levels of government. Finally there are problems at the local level with actual planting. There are widespread accounts by people who have themselves gone tree planting during reforestation campaigns, that planting is being done badly because it is seen as a job rather than community service. Trees are sometimes planted two or three at a time to minimize time spent in the field (people get paid per number of trees planted). There have even been episodes where trees were thrown away or buried.

36 . Original: “Yo que me acuerde, y platicando con los señores ya grandes, por ejemplo mi papá, dice que él en su vida - tiene ochenta y tres años - que en su vida

nunca había visto un incendio así, nunca. Ahora se imagina yo también nunca había visto un incendio tan enorme, que abarcaba todo lo que tenemos de cerro.... Se acabó ecología, se acabó fauna. Todo se acabó.”

37 . Original: “En esta temporada de sequías, había digamos hace 20 años llegaba llover en marzo, una lluvias espontáneas les nombramos nosotros, que caen un día y se levanta... el calor. Pero antes esto había en marzo, en abril, ya llovía. Entonces esas lluvias nos protegían el bosque. Había incendios pero no de la dimensión que hubo ahorita en esta época. Hoy ya no llueve hasta junio. Entonces todo eso es una sequedad que cualquier cosita nos provoca un incendio.”

38 . Twenty-one respondents out of the sample of thirty said that there are less people who farm and have livestock (in response to the open-ended question of whether there have been changes in agriculture). This corresponds with Lebner's (1998:32) findings, where she notes “Agricultural production in Huitzilac is evidently declining. Slightly more than half of my informants owned a plot of land (varying from less than one hectare to four). Twenty seven percent no longer worked their land. Among those who did cultivate their plots, only thirty-six percent relied on their surplus for income. This reality, as compared to my understandings of the historical importance of agriculture for Huitzilac, represents a significant change.”

39 . Land in Huitzilac is still communal, but there have been sales of plots nevertheless. Some agricultural lands have become *fraccionamientos*; lands which have been sold to people from outside the community, mostly from Mexico City, and some are only used as vacation homes.

40 . Agriculture in Huitzilac is temporal.

41 . According to older informants, planting used to be done earlier, in April or May. For example, a respondent explained how in the 1960s, rains began in March, people began to plant in mid March, and harvest was by mid to late November. He said that now corn is planted in May and harvest is in December. Informants told me that this year they had to bring the image of the patron saint (St. John) into the village so that it would rain (usually, by the time of festivities of the patron saint in June, most were already farming).

42 . For example, Woodgate's (1991:172, 175, 181) research of livelihood and income diversification strategies of households in the highland community of San Felipe del Progreso indicates that decreases in income from maize production (which comprises 90 percent of crops grown in San Felipe) are linked to decreases in investment in traditional land management techniques. This trend was due in large part to state promotion of maize (for example, through credit and technological packages implicating chemical inputs and monocropping) and the

system of intermediaries controlling access to markets, which are significant in shaping the viability of maize production for farmers. Although I do not have enough data to make accurate observations on the effect of credit packages on agriculture in Huitzilac, some farmers I spoke with told me government credit packages are attached to requisites for growing particular crops but that they were not forced to use pesticides. Some farmers have also not been eligible for credit.

43 . Respondents shed light on how the increasing dependence on forest resources has proceeded hand in hand with a decrease in agriculture. For example:

- "Few people farm. Now few people dedicate themselves to farming."

- "Why?"

- "I would say that it is not economic, more than anything.... In this region, how can I tell you, the lands are not very productive. For that reason, it has never been profitable to farm, let's say in order to go forward, to progress. That is why other people prefer to work in something else and not farm, not work in the fields."

"People are accustomed to buy [corn rather than producing it] since there is the mountain."

"Now people don't want to work either... in the fields because in logging they make more.... Through logging, they left agriculture. It was more advantageous for them to cut trees than farm the lands."

44 . The uneven distribution of government help packages (*dispensas*) or other benefits such as jobs and services has led to disillusionment and distrust. As one interviewee explained: "Because at this time they would promise credit (orally) to farmers, and since it has existed, it has only been the same people until now, the same that always get that credit. That is why people have retreated somewhat from some organizations there were because they are no longer supported by them." Another interviewee explained how it is difficult to get support for cleaning up sewage problems from the municipality, saying that: "So if the authorities do not pay attention - they who could have much to say to prevent this and do not do it - then one as an individual can no longer say anything.... Unfortunately, that is how all the authorities are that come and go."

45 . Access to water has also been a contested issue between private landowners (of community land which has been sold and is known as *fraccionamientos*) and the municipal government because of unequal access to water benefiting the former (despite the fact that the pipes which carry water from the lakes go through the municipality).

46 . A symbolic example is how Ibarrola (1996:24) points out that water scarcity and contamination is a major problem, but while only 41.6 percent of homes in

Morelos are supplied with potable water, there are 5,000 swimming pools in the private residences of Cuernavaca city (according to the 1990 census).

47. According to Lebner (1998:31), "Although the communal land-tenure system still operates... locals have lost significant control of their resources. The fact that many of their harvesting practices are now enacted clandestinely cannot but inhibit informed community decision-making."

48. As Lebner (1998:20) notes, "It is the system of vigilance in the area, which is led principally by the Procuraduría Federal de Protección al Ambiente (The Federal Bureau of Environmental Protection), the Mexican Army and local road guards, that seems to be what informs, through 'action' what the criteria of preservation are. Characterized by sporadic incursions into the forests and a rather constant state of corruption, vigilance is repressive when it arrests *madereros* [loggers] (and sometimes *tierreros* [those who extract topsoil]), and is regularly involved, through bribes, with the traffic of resources. These issues as well are known throughout the state, as they are often documented in regional newspapers."

49. Original: "Ahí mismo hay corrupción, de parte de esas autoridades. Se les nombra Forestales... Ellos son los que detienen y los llevan a Procuraduría y ahí, extorsionan".

50. Original: "Francamente yo lo veo así, como un rebaño sin pastor... Ése se es el daño que nos estamos causando nosotros mismos. El gobierno ya no nos puede organizar, ya perdió el control... de la autoridad, ya no aplica la ley."

51. Original: "El dinero es nada más para ellos y no reforestan ellos.... Algunos dicen que vayan a reforestar... los que viven de la madera. Otros dicen que sí hay que ir porque hace falta el aire, que ve que es puro, para que haiga más árboles. Pero unos dicen que no van... si les pagan sí, sino no."

52. Original: "Nos estan perjudicando.... Están acabando el monte y luego ¿qué vamos a hacer?"

53. Original: "...es un proyecto para fortalecer y desarrollar capacidades organizativas, teórico-metodológicas y técnicas, en líderes comunitarios para que comprendan la situación ambiental local y su vínculo con la global (especialmente a través del intercambio de experiencias tanto nacionales como del norte del continente) y emprendan acciones concretas transformadoras que mejoren la calidad de vida."

54. Original: "El curriculum de la ENEPA busca lograr una transformación profunda de las condiciones sociales, económicas, políticas, culturales que dan origen a la problemática ambiental que estamos viviendo. En este sentido, su orientación fundamental es emancipadora."

55. Original: "En la ENEPA hemos buscado caminos para generar diálogo, para rescatar saberes, para validar la palabra de chicos y grandes; de hombres y mujeres; de letrados e iletrados; de la gente pobre."

56. These numbers represent the minimum which *for certain* participated, although there is the possibility there may have been more who were not registered or whom I did not record (if the latter is the case, additional participants likely only stayed for a very short period during a session). About seventeen people participated as organizers and/or presenters as well as a few observers, and about a dozen children participated in the children's activities.

57. These numbers overlap in descending order. For example, the nine people who participated in three or more sessions are included within the sixteen people who participated in two or more sessions.

58. One participant told me that he did not like some of the theories presented in some of the early sessions, especially that he does not think permaculture is feasible on a large scale.

59. The game was created by Margarita Hurtado.

60. The game was created by the Insituto Mexicano para el Desarrollo Comunitario (IMDEC).

61. Original: "El ocote, el oyamel, y el encino... son las raíces que abarcan no solamente hacia arriba, sino abarcan hacia abajo, tratando de buscar la humedad que tiene la tierra y al igual que los nutrientes. Y yo lo que he visto en las plantas que van a reforestar es que vienen bien comprimidas la raíz. Entonces yo pienso que para la gente necesitaría asesorarla primero para que sepan como plantar esas raíces que vienen comprimidas, y así es que el árbol alcance un desarrollo más notable. Uno de lo principales sería, bueno yo pienso, que esas raíces, que al abrir esas bolsas se deberían extender, y ya comparando la longitud que tiene la raíz y el hoyo de la profundidad para que la raíz no se dificulte tanto buscar la humedad y entonces, con ese mismo abono que trae... sería más fácil su desarrollo...."

62. One of the "actors" told me later that it was like that - she was merely playing out what she had actually done during the fires. However, another person told me in an interview that in reality the representation of the fires had not shown how grave the situation really was.

63. Original: "Estuve viendo en el pueblo y la gente que trabaja más la madera y que hace destrozo, pues nada más estaba viendo desde allá y enterándose de todo lo que sucede acá. O sea, no ayuda."

64 . Original: "Todos los participantes vivieron de alguna manera los incendios, apagándolos directamente, abriendo brechas, llevando comida, atendiendo heridos. Representar este siniestro en sociodramas permitió realizar un análisis. Al comentar lo que la gente recreó, pudimos apreciar muchos valores presentes en la comunidad. Ante la catástrofe, la gente respondió con valentía (a veces llegando a la osadía); cooperación, unidad, organización, responsabilidad, sin duda los motivó el amor al bosque, que es parte de su vida, de su historia, de su paisaje."

65 . Other instances where local-global links were made included the discussion of pesticides and the companies that manufacture them (in the session on soils), and the impact of new forms of waste and consumerism (in the session on waste). As well, at the first session, Gisela and I spoke about forestry in Chile and Canada respectively, in order to bring in an international perspective on what is happening in forestry and its links to the global economy. A government official present at the first session also spoke about experiences in Oaxaca, Mexico, with sustainable community forest management (the *Programa de Ordenamiento Forestal de la Sierra Norte de Oaxaca*).

66 . Although the term "ecosystem" had been presented in an earlier session of the ENEPA, most participants to the forest sessions had not been present.

67 . Original: "Uds se dieron cuenta los tipos de tierra que hay nada más en una área tan pequeña.... Con respeto a la vegetación, a mí me asombró mucho que Uds. tengan ese conocimiento fresco de plantas medicinales, que le den esa importancia y que hayan tenido buen ojo para ver lo que nos está rodeando."

68 . Original: "El señor ... [name omitted] nos ha dicho algo importantísimo. La vegetación es el sustento de vida para mucha vida silvestre, pero no podemos desligar lo que es la vegetación y lo que es la parte social de este ecosistema. La parte social la vamos a comportar nosotros, es una fuente de empleo.... De la vegetación se pueden sacar muchos benefactores. Se puede sacar comida, se puede sacar medicinas, se puede sacar materiales para construcción, se puede sacar combustibles. Es una parte que no hay que ... [minimizar], y por lo mismo es una razón ... para protegerla. Si nosotros lo acabamos rapidito, pues rapidito aparte de que vamos a desnudar el suelo, rapidito vamos a tener que recurrir a otros tipos de fuentes, tal vez más nocivas, no tanto para nosotros sino para el medio ambiente."

69 . Near the end of the forum Margarita asked me to present Ashley Lebner's (1998) work on use of forest resources in the community, which appears to have been well received based on comments afterwards and the fact that during the presentation, many people nodded their heads in agreement (especially concerning resistance to laws that were decided by others). This was an opportunity for research of a social science nature to be used in a workshop and also helped create a supportive atmosphere.

70 . Original: "Yo creo que mientras que no hay fuentes de empleo en Huitzilac, siempre la gente va estar aqui y es que no hay otra manera..."

71 . Original: "Y a la comunidad no deja nada. Lo que es importante es que la propia comunidad haga uso de sus recursos".

72 . Original: "Lo que no resulta nada fácil es lograr que un grupo de gente sencilla de una comunidad diga su palabra después de haber sido llamada por generaciones y generaciones. Nuestra gente ha sido acostumbrada a guardar silencio, a no plantear preguntas, a ser vasija que recibe información, órdenes, instrucciones, amenazas, opiniones predigeridas."

73 . Terms that were explained to the group included biomass, texture, intensity of disturbance (*intensidad del disturbio*), and habitat. After marking quadrants, groups of participants measured indicators such as slopes (related to erosion), soil texture, tree measurements, and signs of animals. The biologists visited each group to talk with participants. Findings were presented in the large group later, including answers to the questions that were asked of each group as well as sharing other knowledge that individuals held (for example, on the conditions of trees). The biologists coordinating the activity gave a small presentation on how such technical measurements are used to measure the impact of fires and assess whether to reforest or allow the forest to regenerate naturally.

74 . Original: "No quería yo ir, porque me sentía yo mal... porque pensé que me iba sentir mal entre todos Uds. por decir... Cómo yo, una persona de edad, cómo que le hacen así de un ladito... Estaba muy bien. Estuvo bien porque uno convive en las pláticas..."

75 . Original: "Qué bueno sigan dando así orientaciones y que vengan, que no abandonen mucho este pueblo que ahorita está rico, que tal vez todavía pueda recuperarse [antes] de que sea demasiado tarde en cuanto a la tala. Y que uno vaya sabiendo más. Los que viven de ahí que se den cuenta... que el monte no es nada más para un rato."

76 . For four respondents this question was not applicable, since they either knew very little of agriculture or had only recently moved to the community. In terms of an overall picture of the sample it may be important to note that twenty-two out of the thirty respondents have lived in Huitzilac since birth and have lived there most of their lives. One person was born in the community but left at age fourteen to work elsewhere and then returned three years ago. The seven other people were born in nearby communities in the municipality, and two people moved to Huitzilac from Mexico City.

77 . Original: "Antes aquí - digamos hace 30 años - no eramos autosuficientes, pero sí teníamos para comer para toda la comunidad. Ahora ya dependemos de

otras comunidades, de otros estados. Ya por ejemplo, el maíz ya no se siembra... ya no se produce lo que hace 30 años producíamos.”

78 . Original: “Pues antiguamente sí era muy productivo, las tierras, para ... maíz, frijol, haba... Pero desgraciadamente ahora ya no.”

79 . Original: “Ya nadie quiere trabajar. Ya todos quieren ganar el dinero más fácil, pero pues ya no habiendo siembra todo también se encarece. El frijol ya está caro, el maíz, todo carísimo...”

80 . Original: “Cuando yo era niña, que vivía con mis papás, las tierras sí daban mucho cultivo. Se daba mucho el frijol, el haba, el maíz. Y se sembraba todo. Todos los terrenos, no había ni un terreno que no estuviera sembrado. Todos sembrados. Sí, si ya para esta época ya cambió todo. Ya las tierras no dan cultivo como debe de ser....”

81 . Original:

- “Yo alzaba yo 50 cargas de mazorca....”

- “¿Y todavía?”

- “No. ¡Antes se daba el maíz pero hartito, unas mazorcotas pero chulas, grandes! Ahora crecen así... aunque le eche uno abono de gallina. A veces es más lo que se gasta que lo que se da.... Ya no es como antes, que con la misma tierra del suelo producía maíz, mazorcas.... Y antes ... daba su mazorquita. Daba tres, cuatro mazorcas, y ahora ya no... Ya no crece como antes, que daba gusto ver la mazorcotas grandes...”

82 . Original: “Ya sin abono no se da nada - por eso queremos un abono para nuestras tierras que sea efectivo”.

83 . Original:

- “Ya no le echan de gallina. Ya es puro químico. Por eso digo las tierras ya se hicieron infértiles por el abono. El abono químico hace que la tierra pierde fuerza....”

- “¿Ud. ha visto los efectos de los abonos químicos? ¿Se conoce lo que hace a la tierra?”

- “Sí, sí se conoce porque echándole abono químico a una tierra, por decir este año siembra con el abono químico, si al siguiente año ya no le echan abono químico a la tierra, ya no cultiva la tierra. Deben de seguirle echando ese abono.”

84 . Original:

- “Y antes, nada más un año no sembrabas el terreno, o dos años, y se daba muy bien la planta, se daba sin abono..... Y hoy el cambio que hay es solamente echándole abono.”

- “¿Antes se dejaba también la tierra?”

- “Un año o dos años sin sembrarla para que descansara.”

- “¿Y ahora no?”
- “Ahora también la dejan, pero ya no se da, solamente con abono...”

85. Original:

- “Bueno, se ha notado más este año, pero ya que será, desde hace 2, 3 años se han venido presentando cambios. Y ahora pues ha sido muy notable esto, mucha es la diferencia de otros años.... Hace 10 años llovía bastante por acá... sí, aquí llovía mucho.”
- “¿Más que ahora?”
- “Sí, más, más. Ahora el calor también ha sido muy intenso....”

86. Original:

- “...Antes no era así. Antes en el mes de junio llovía más. En este mes había veces que no se quitaba el agua. Amanecía lloviendo, se anochecía lloviendo, y no se quitaba el agua. Pero ahora no - sí, ha fallado el agua.”
- “¿Hace cuánto que cambió así?”
- “¿Que cambió la temporada de agua? Pues hace como seis años.”

87. Original:

- “¿Hace mucho que se han notado estos cambios en las lluvias?”
- “Empezaron a cambiar en 1970 por decir.”
- “¿1970?”
- “Sí, 1970. 1970 fue cambiando más, hasta hoy que ha sido todo muy cambiado.”
- “¿Cada vez menos [lluvias]?”
- “Sí, cada vez menos.”

88. Original: “Pues los tiempos han cambiado mucho.... Yo me acuerdo que cuando estaba pequeñita... antes me acuerdo que a veces se pasaba día y noche, día y noche ... estaba lloviendo. Ahora ya no llueve como antes. Ya no. Ya las lluvias se retrasaron mucho. Y hay veces que llueve poco, y ya no se alcanza desarrollar lo que es el maíz.”

89. Original: “Sí, las lluvias sí han cambiado. Este año ya llovió a por julio... Porque antes cuando yo era niña o ya era una señorita, así cuando yo crecí, les digo a mis hijos que antes eran aguaceros. Empezaban desde el mes de mayo a llover, y la gente sembraba... terrenos lejos... los sembraban en el mes de marzo... abril. Ya para este mes de agosto, ya había elotes... Pero ahora ya no...”

90. Original: “Ya las lluvias ya no son las mismas de antes.... Sí, inclusive aquí el clima ya cambió. Aquí ya no hace frío como hacía antes. La temperatura ha subido.”

91. Original: “Ya no llueve establemente, a veces llueve, a veces casi no llueve. Está variable.”

92. Original: "Pues, le digo lo de los árboles que también están acabando con el agua porque también las lagunas han estado bajando mucho. Nosotros luego a veces pensamos qué vamos a hacer cuando el agua de las lagunas se termine. ¿Qué va ser de este pueblo?..... ¿Qué va pasar con los niños? Que ellos son los que se van a quedar. Esa pregunta ... se me queda a mí, porque ¿quién me la contesta? No hay nadie que me dé respuesta a esa pregunta."

93. Original: "... Porque cuando un monte está tupido de árboles, que esté frondoso como debe de ser, yo me he fijado que las nubes llegan más rápido y pronto vienen tiempo de aguas. Pero hoy como los montes están muy talados, muy escasos de árbol, de todo eso, es como las lluvias se han ido atrasando más."

94. Original: "El bosque sofocaba el calor por tanto árbol que había. El clima aquí era frío, frío. Y ahora la verdad no. Las lluvias también han cambiado mucho. Antes era bastante lluvioso aquí en Huitzilac, y ahora ya no."

95. Original: "Cuando yo crecí llovía quince días, ocho días, de día y de noche, de día y de noche. Pero árboles había bastantes.... hartos árboles. Y ahora no. Donde íbamos a los hongos, había hartos árboles, y ahora ve Ud. son puros llanos. Árboles ya no hay."

96. Original: "Antes estaba el bosque más lleno, había más arboles, pues como se ha talado mucho, la lluvia está muy lenta por eso."

97. Original: "Acabándose los árboles se van las lluvias, se acaba la vegetación, se acaban los animales."

98. Original: "Por lo mismo que no hay árboles yo me imagino que por eso ya no llueve como antes. Todo el clima está cambiando a consecuencia que la vegetación se está terminando."

99. Original: "Si no llueve ¿con qué se mantiene el árbol? Ahora los que han sembrado chiquitos, como niños. Si Ud. a un niño no le da agua, ¿no está flaquito? Así los árboles.... Si todo está seco... Como el ojo de agua. Antes había harta agua, harta agua. Ahí íbamos a traer agua.... Daba abasto a todo el pueblo. Y a ver, tiraron los árboles y ahora ... cae poquita, nomás para gasto de allí."

100. Original: "A veces con tal de que no anden robando, está bien. Pero a veces, no, porque ciertamente le quitan la fuerza al agua. Casi por los árboles también tenemos agua. Porque si son cerros pelones no tienen agua, están secos, no tienen agua. ¿De dónde, si no tiene vegetación, no tiene qué le mantenga abajo la humedad?"

101. Original: "Yo pienso que el gobierno debe de poner un tope a toda esa gente que se está subiendo y la tiene que bajar. La tiene que bajar porque es el

pulmón de Morelos y de cualquier otro estado que tengamos alrededor. Y por el agua más que nada, que algún día se nos va acabar por lo mismo que se acaban el monte. ¿De dónde vamos sobrevivir?”

102. Original: “Yo tengo sabido que la vegetación atrae las lluvias. Aquí antiguamente llovía 15 días y 15 noches consecutivas. Y ahora ya no. Una hora, una hora y media, dos horas, y ya.”

103. Original: “A través de esa vegetación llovía más... había más agua, más alimento. Se cultivaba mejor, había mejores cosechas.”

104. Original: “Se va llegar al año que no va haber monte, no va haber nada. Ni agua ni monte, ni nada va haber, y a ver, ¿qué vamos a hacer aquí?”

105. Out of the twenty-seven who do not think the forest is being maintained, six respondents told me they, their husband or sons depend on the forest for a major part of their livelihood (this number may be higher though). Of the three people who think the forest is being maintained, one man's livelihood is logging and two women's families work in forest and carpentry.

106. Original: “Para mí ya no es igual porque antes veía los montes llenos, tupidos. Ahora ya no. Ya está, por decir, pelón. Ya se acabó el monte, ya no hay vegetación. El cambio si es mucho... ya lo han talado mucho, se ha quemado....”

107. Original: “Hay muchos de por acá de este lado que a eso se dedican, a la madera, a hacer madera. Entonces haga de cuenta que van y cortan, cortan árboles, y van dejando pelón. Sí, y esos árboles le hace falta a uno... yo pienso más que nada por el agua, por higiene....”

108. Original: “Y ahora con los incendios, peor. Quedó haga de cuenta un desierto.”

109. Original: “Está muy deteriorado porque se ha talado bastante, y más que nada yo creo que sería los incendios.... La tala se puede arreglar con la reforestación, pero llega el fuego y arrastra todo.”

110. Original: “Ya casi todo el monte se terminó.”

111. Original: “Yo cuando conocí aquí esto estaba llenísimo de árboles, llenísimo. Eran bosques muy bonitos, y de todo tipo de madera. Pero nada más llegaron los incendios, señorita, y se acabó.”

112. Original: “Los chamacos ya de unos quince, veinte años casi se viven de la madera. Van y tumban los árboles, unos árbolitos.... ¿Para que sirve? Es como un niño que cortan... Ahora todos los que sembraron desde antes, todos esos ya

los cortaron....”

113 . Original: “Rápido se está acabando el monte... Se va ver que estuvo mal no aprovechar.”

114 . There are some small non-governmental initiatives in this respect, such as the Unidad Transformadora de los Recursos Naturales de Huitzilac. I was told by a member of the group that the purpose is to market forest products harvested sustainably.

115 . Arizpe, Paz and Velázquez (1996:31) looked at how settlers in the Lacandona rain forest perceived environmental change, and how this correlated with other factors such as religion, ethnicity and economic status. While perceptions ranged widely among the people they interviewed (which included recent migrants, town dwellers, and Indigenous and *campesino* settlers), the researchers concluded that some generalizations can be made. Many respondents held the importance of deforestation to be minor relative to other concerns which include poverty, lack of access to land, war, pollution, “wrong attitudes”, and health (Arizpe, Paz and Velázquez 1996:94). While most respondents “perceived significant changes in the environment related to rain, heat, winds, floods, and the disappearance of animals, all of which are related to deforestation”, only 6.7 percent of those surveyed perceived deforestation as a major problem (Arizpe, Paz and Velázquez 1996:53).

116 . Other problems which were mentioned were water issues, ozone depletion and air pollution, although some respondents who mentioned it said smog is not a problem yet in Huitzilac. Another person mentioned the problem of agrochemicals, but stated this is not really a problem in Huitzilac because they are employed minimally.

117 . There were ten respondents who cited deforestation as a grave problem in the community and also cited deforestation as an “environmental” problem.

118 . In total, fifteen respondents who do not think the forest is being maintained did not cite deforestation among “environmental” problems. Nine respondents did not think the forest is being maintained *and* attributed the cause of the decrease in rains to deforestation or fires, but did not cite deforestation as an “environmental” problem.

119 . Original:

- “Aquí la palabra medio ambiente ¿se conoce? ¿La gente aquí habla, usa esa palabra de medio ambiente o ecología?”

- “No, casi no, que yo sepa no. Porque ecología y eso, solamente en Cuernavaca hay oficinas de todo eso. Son los que cuidan el monte, ¿no? árboles frutales y tanto de árbol de monte. Aquí no hay, o solamente que sea el que está aquí en la

autoridad, que hay un representante.... Creo si no es de ecología... viene a ser un trabajo casi igual. Es el que da datos de la reforestación, de cuándo llegan árboles, cuándo se va ir a plantar....”

- “¿Qué quiere decir la palabra medio ambiente aquí...?”

- “La mera verdad es que lo del medio ambiente yo no comprendo bien lo que es...

¿Como cuál sería?”

- “¿O la ecología?”

- “Bueno, lo que le acabo de decir, que aquí hay ese representante, es lo único.”

- “¿Y hay problemas que se consideran como de medio ambiente?”

- “No, eso no, que yo sepa no.”

120. Original:

- “¿Se conoce lo que es aquí, son palabras que son conocidas aquí?”

- “Sí... la ecología es como un árbol, de sembradura de verduras, de la basura...”

[...]

- “Aquí hay problemas ambientales, problemas ecológicos... de ecología?”

- “¿Cómo qué?”

- “¡No sé, Ud me dirá [laughing]!”

- “No, así que he visto, no... Ahora yo siendo crecida aquí, nacida aquí, no he visto casi de eso....”

121. One of these women participated in the first sessions in order to learn more about particular subjects like permaculture. Another woman participated in a few of the early sessions in order to learn more about the workshops generally.

122. Other problems mentioned by participants from outside the community who did not say garbage and deforestation are contamination of water and air.

123. Original: “... Yo veo que a algunas personas que si les interesa, si, si.... pero a veces por su trabajo y eso realmente no pueden participar”.

124. Thirteen out of the sixteen participants who registered during the first sessions were invited personally by the organizers. Three were invited by a third party who had been contacted by GEMA. Out of these sixteen, four were promoters. Four participants came from outside the community.

125. For those who have heard, the local schools appear to be important. A young man who studies at the *preparatoria* in Huitzilac had heard about the ENEPA from a member of GEMA who used to be a biology teacher in the local high school. Two respondents told me that in the *preparatoria* there are courses on the environment. One woman learned about recycling and compost from her daughter who studies there. In the kindergarten there are educational activities for compost and recycling. This would support the view that environmental education carried out with children in the schools seems to be important for reaching adults

as well, at least in terms of waste issues. Two respondents explained that they had learned about environmental issues from their children. For example: "Us... because of the children. My daughter is now in high school, the other passed me into sixth year. And because of them I realize, when they tell me 'They gave me an assignment on ecology. What is an assignment on ecology? What would you do to take care of the ecology?' And that is when one... develops more.... Because of them we once again begin to learn new things."

126 . One of the respondents participated in the forest sessions of the ENEPA. One young man had participated in a course on composting two years ago. Another couple, whom both work at the nearby national park, participated in workshops being carried out there with SEMARNAP on waste management for seventy service workers. A young woman and her sister-in-law explained how they had been visited by someone from the local *preparatoria* who spoke to them about garbage and was inviting people to a workshop. Another had been visited by members of the Grupo Colibrí, and had learned about recycling, composting, and organic gardening.

127 . Original: "A veces tienen más tiempo las mujeres que los hombres. Los hombres se van a trabajar. Y más aún no les conviene hablar de recuperación del bosque, cuando su actividad es lo contrario, la destrucción."

128 . Original: "No hay porque los que van al monte pues no les interesa. Lo que ellos quieren es ganar dinero." A related issue is that two participants said that people will come if they are paid, because there is interest in generating income. Government-run workshops in the town (on meat preparation, preserves, and other courses) have usually paid a sum to people in return for their attendance.

129 . Original:

- "Cuando me dicen 'oye, puedes invitar a alguien', sí, pero como yo fui invitada no podía.... Y le comenté a un muchacho, le digo 'ay estuvo bien bueno', dice que '¿y por qué no me invitaste?', y le digo 'pues fíjate que me dieron ganas, pues tú tienes muchos amigos, me dieron ganas. Pero es que no pude, no pude, porque dije cómo le hacemos, en qué nos vamos'. Y luego dice 'no me iban a aceptar porque me iban a decir que yo talo el monte y me iban a echar' y le digo 'no, fíjate que no, según lo que hablaron no era en contra tuya'.... Y dice, 'para la otra me invitas, ¿no?', le digo '¿de veras? Bueno, ahí te aviso'..."

- "¿O sea que él dijo eso que pensó que como trabaja el monte que-?"

- "Más si ven cómo comenta Ud, ¿no? Piensan que es de gobierno... o sea no hay confianza. Por eso le comento, es que nos damos cuenta qué personas son y si alguien va como representante de ... pues según la confianza que le tenga a la persona."

130 . Julia Carabias is the national environment minister and a few weeks previous to this interview she had assisted at a very public ceremony in the national park Parque Nacional Lagunas de Zempoala, to receive a one million dollar donation from the Ford Foundation for reforestation efforts to restore the fire-damaged forests of Mexico (the Zempoala area was one of the most severely damaged during the fires of 1998).

131 . Original:

- "Es que la verdad esas palabras apenas fueron reconocidas, o sea no tiene mucho. Las personas que platican con Ud, no, pues el monte y todo... pero medio ambiente no... son cosas nuevas por eso la gente no. Son cosas que todavía tenemos que aprender."

- "Son palabras nuevas para todas partes."

- "Sí"

- "Entonces, por ejemplo, alguien que trabaja en la madera y ve 'resolver problemas ambientales' [a reference to the poster for the ENEPA], ¿se va poner defensivo?"

- "Sí, se pone defensivo, porque yo creo que presiente que es algo que no quieren que hagan ellos... es algo que van a parar por medio de gobierno. Como les estaba comentando SEMARNAP, es donde para totalmente la tala el monte, y ellos presienten eso.... Como decían, '¿qué viene a hacer Julia Carabias? No, pues vino a que ya no se tale'. Eso es lo que - las personas que no fueron a verla pues - eso es lo que creen. En la realidad no, pero hay que hacer que hiciéramos conscientes a esas personas que no piensen eso. Pero la verdad es que son palabras que no tiene mucho que llegaron y como ellos están talando el monte, eso es lo que sienten que van a parar todo."

132 . The problem of terminology is also seen in debates over concepts such as "sustainable development" and "sustainability". These terms are to a large extent academic and governmental.

133 . Original: "Casi siempre que les invitas a algo preguntan '¿y quién va ir?'.... 'Ay es que Fulanita, yo no me llevo con ella'."

134 . Original: "Sí, promoviéndolo nosotros ahora, bueno, ahora me cuento como promotor. Promoviendo también para que así la gente tenga ánimo de seguir adelante."

135 . Original: "Sí, puede servir, porque las personas que acudimos a los talleres podemos comprometernos a llevar otra persona, otras cinco, para que sea más en grande y que haiga más comunidad."

136 . Original: "Principalmente que [la educación ambiental] se le diera a los niños, porque ellos ya desde chiquitos llevarían una conciencia ecológica."

137. Original: "Porque ya viendo que el monte ya va para abajo, y que los árboles ya no tienen nada de tierra y se van cayendo, hay que hacer conciencia."

138. Original: "Pues yo digo que todo se podría solucionar organizándonos, por grupos, y dándoles alguna plática a las personas, para que aprendan, para que entiendan..."

139. Original: "La responsabilidad es de todos, porque todos vivimos aquí en este lugar. Todos tenemos que ayudar."

140. Original: "Yo digo hacer conciencia porque nosotros no vamos a ver eso, ¿pero nuestros hijos, nuestros nietos? Ya no van a tener... aire, ya no va haber nada de eso."

141. Original: "Hay mucho trabajo en la comunidad.... Yo quisiera un apoyo, haga de cuenta como de gobierno - no sé de qué dependencia - para dedicarme lo que es de verdad mi pueblo, que es lo que necesita."

142. Original: "Lo primero es organizarnos... que tenemos conciencia de trabajar sobre esto.... No hay que perder esa esperanza de que se puede hacer.... Lo primero es tener ese sacrificio, esa lucha...."

143. Original: "Si no nos organizamos, no se puede hacer nada. Entonces, ya organizados, se puede ir a las autoridades."

144. The diagnosis revealed that garbage was seen as the biggest environmental problem, followed by inadequate drainage, lack of running water, air pollution, fumes from incineration of garbage, water shortage, deforestation, and others (Grupo Colibrí 1996).

145. Original: "Sí, hay barreras... Somos poquitos y realmente pocos no se puede hacer mucho porque no toda la gente nos ayuda. Si hubiera más gente, habría menos obstáculos para hacer el proyecto que tenemos en mente".

146. Original: "No nos apoyaban. Empezamos con muchas ganas de hacerlo pero terminamos muy desilusionados.... Es que en ese tiempo había problemas políticos, o sea con el presidente que sacaron."

147. Original: "En realidad no estaba muy educada, que era la ecología.... Me llevó mucho la atención y entonces decidí entrar ahí. Pero no estaba muy convencida, pensé que no iba aguantar... Pero después más entra uno le gusta más y más.... Me gustó y por eso estoy ahí. Y además para ayudar a la gente.... Te hace conciencia sobre todo lo que haces, todo lo que te perjudica."

148 . Original: "Lo más interesante, pues creo que todo, en realidad es todo. Porque nos enseñaron más que nada a tener conciencia de nosotros mismos hacia la naturaleza. Por ejemplo, yo antes cuando vivía en la casa de mi tía... iba a los lavaderos porque allá no había agua. Yo veía que las señoras dejaban sus basuras de sus detergentes, de blanqueador, o sea nada más las dejaban tiradas. Y pues si las dejaban tiradas ellas, yo también. Esa era mi idea ¿no? Si ellas lo hacen ¿por qué yo no? Y después que empecé a ir a la Escuela de Promotores, cambió mi idea..."

149 . Original: "Al principio todo empezó por sacar mi servicio social, pero después te vas entrando. Quizás tú tampoco te habías dado cuenta de tantos problemas que había. Y ya cuando estás practicando, llevándolo a la práctica todo eso, te empiezas a dar cuenta en realidad lo que estaba pasando."

150 . Original: "No sé si no sabían explicar o yo no les entendía, pero creo que me gustó más como lo dieron en la Escuela de Promotores Ambientales que como lo dieron ellos - o sea fue totalmente diferente... Tienen sus diferencias en hablar, en explicar."

151 . Original: "Por ejemplo, qué problemas ambientales hay en tu comunidad nos preguntaron a cada uno por escrito.... Nos daban más que nada conceptos de lo que era, acerca de las aguas sucias. Pero... nosotros teníamos que sacar nuestras propias conclusiones de los temas que hacían. Conforme a eso, cada ... curso, de clase, nos pedían una opinión acerca de los temas que se daban. O sea dar tu propio punto de vista. Por el tema de la basura, qué nos pareció. Para cada tema tenías que tomar una opinión. Lo más importante que me pareció es lo del agua...."

152 . Original: "Te digo yo soy muy amante de la naturaleza. Entonces, pues si podía hacer algo - quizás no era mucho - pero si podía hacer algo, pues adelante.... Incluso por eso decidí de ser maestra."

153 . Original: "Nosotros íbamos guiando.... 'Bueno, ¿tú qué piensas?... Pues, dibújalo'.... Era bien padre porque eran puros niños, la mayoría. Era bien divertido. Después, entre tanta pintura, ¡resultamos pintados todos! Hubo mucha convivencia, personas que yo no conocía, llegué a conocerlos, aunque sea un poquito. Lo suficiente para saber los conocimientos que tienen de nuestra comunidad. Sí, luego también platicar entre las personas, los mayores, qué pensaban, cómo querían participar..."

154 . Original: "Al principio que teníamos miedo, pero después como fue pasando el tiempo, nos fuimos acostumbrando, y nos desenvolvimos más. Y las ideas que teníamos todas se planteaban y veíamos cuáles eran buenas y las poníamos en el proyecto para ver si podíamos hacerlo más fácil."

155. Original: "No sé, me gustó.... No sé explicarlo qué es lo que... te interrelacionas con más gente, te dan más animo. Y luego cuando fui a la Escuela de Promotores pues más."

156. Original:

- "...Te preocupas, pero como que no sabes que hacer... Ya como con eso, ya te fueron diciendo 'Mira, puedes ayudar en esto', 'Puedes hacer esto', 'Puedes colaborar en esto'."

- "¿Y sentías que puedes hacer algo?"

- "¡Sí, *siento* que puedo hacer algo!"

157. Original: "... Ya no, porque como ven que ya no perteneces a nada y nomás éramos dos personas. No, realmente no se podía hacer nada porque no estábamos apoyadas. Ahora que estamos apoyadas [by GEMA] otra vez sí."

158. Original: "Nunca se puede entender a las personas. Ni que el mundo se esté destruyendo no hacemos caso. Yo me incluyo entre esas personas ... que no quieren entender. Desde que me salí del Grupo Colibrí como que empecé otra vez a decir 'Bueno, ya ni modo. Ya no puedo hacer nada'. Con tanta gente, ya no puedo. No tengo suficiente carácter para, por ejemplo, con mis vecinos hablarles y decirles los que les decía antes cuando andaba en grupo, ya no. Una posible solución que podría haber en el grupo sería la convivencia."

159. Original: "Es más por el interés, porque divertido digamos es un poco... Participar exactamente como promotor ambiental es en realidad tener muchas ganas de trabajar en eso porque es bastante cansado... Necesitas tener mucha voluntad.... Participar en los talleres o en eso es un poco más fácil, pero ir conscientizando a la gente o explicando a la gente es bastante cansado.... hay gente que te dice 'tengo muchas cosas que hacer como para estarte escuchando.' Te sientes mal. Te baja la moral, te bajan no sé todas las ganas de salir a ayudar o a trabajar - quizá se puede decir así - ese día. Y necesitas decir, lo hago porque se necesita hacer y tú sigues caminando. Porque si no tienes en realidad esa fuerza de voluntad de hacerlo al primer socón de puerta, aunque cinco te hayan recibido muy bien, te vas. Y te vas en primera porque no te estaban pagando exactamente para hacerlo, ¿no? Estabas haciendo un apoyo a la comunidad. Nadie te estaba obligando a hacerlo, cuando querías agarrabas tus cosas y te ibas."

160. Original: "... creo que hace conciencia, se interesa más, yo creo más en los talleres que cuando tú le ibas a dar pláticas en su casa.... Porque ves que trabaja más la gente unida".

161. Original: "Todo se puede llevar a cabo, solamente que todo es a largo plazo...."

162 . Original: "Pues, la gente más o menos sí sabe. Yo he hablado con algunas personas, y más en las reuniones... como que la gente sí más o menos sabe lo que tiene que hacer, como que le falta el impulso para hacerlo. Como no ve que nadie lo hace, pues ellos no lo hacen, como que están esperando que otros tomen iniciativa.... Muchas veces es desesperante... porque vas a dar una plática y esperas que ellos te digan 'no, yo no sabía nada', ¿no? Pero no, ellos te empiezan a decir, y hasta te dicen otras cosas que tú ni siquiera sabías.... Pero no lo hacen. Entonces, ¿qué caso tiene que lo sepan si no llevan a la práctica? Buscan algún pretexto. 'Para qué separar mi basura, si van a ir a tirar allá en el Tezontle?' '¿Para qué hago esto si de todas maneras lo hace el vecino?' y 'Para qué - ' Como ven que todos hacen lo mismo, pues ellos no ven el caso de empezar por ellos."

APPENDIX A: Registration sheet questions

*** ¿Como se enteró de la ENEPA? [How did you hear about the ENEPA?]**

*** ¿Por que decidió participar en la ENEPA? [Why did you decide to participate in the ENEPA?]**

*** Indique con una "X" si en su casa aplica alguna de las siguientes tecnologías**

[Indicate with an "X" if in your house you apply any of the following technologies]:¹

() sanitario seco [dry toilet]

() compostaje [composting]

() hortalizas o agricultura [garden or agriculture]

() captación de agua de lluvia [rainwater collection]

() separación de basura [waste separation]

() campañas de reforestación [participation in reforestation campaigns]

Otras [Other]: _____

*** ¿Mencione dos de los problemas ambientales que considere más importantes?**

[Mention two environmental problems you consider most important?]

*** ¿Qué le gustaría aprender en la ENEPA? [What would you like to learn in the ENEPA?]**

¹ The purpose of asking what techniques they use already was to have an idea of the knowledge of participants in these areas, which are subjects treated in the ENEPA.

APPENDIX B: Survey questions guide in Spanish

- Q. ¿Siempre vivió aquí?
- Q. ¿Cuáles piensa que son los problemas más graves en la comunidad?
- Q. ¿Pertenece a alguna organización (de comunero u otra organización comunitaria o de la iglesia)? Si así es, ¿en qué consiste su participación en ese grupo? (si corresponde: ¿Por qué decidió participar?)
- Q. ¿A qué se dedica?
- Q. Desde que se acuerda, ¿ha notado cambios en las lluvias? Si así es, ¿cuáles son las causas de ese cambio?
- Q. ¿Siembran? Desde que se acuerda, ¿ha notado cambios en la agricultura? Si así es, ¿cuáles son las causas de ese cambio?
- Q. Desde que se acuerda, ¿ha notado cambios en el monte? Si así es, cuáles son las causas de ese cambio?
- Q. ¿Cree que el monte se trabaja de manera que se mantiene? ¿O cree que es posible de trabajar el monte de manera que se mantenga? ¿Cómo?
- Q. ¿Va al bosque?
- Q. ¿Se usan las palabras “medio ambiente” o “ecología” aquí?
- Q. ¿Hay problemas “ambientales” aquí? ¿Cuáles son los problemas ambientales más graves aquí?
- Q. ¿Oyó hablar de cursos o talleres sobre la “ecología” o el “medio ambiente”?
- Q. ¿Participó en algún taller, curso o actividad sobre el medio ambiente? Si es así, ¿dónde? ¿Cuándo? ¿Por qué decidió participar? ¿Cómo fue? ¿Sobre qué tema(s) fue?
- Q. Si hubiese un taller o actividad de este tipo que a Ud le interesara, ¿habría algo que le impediría ir? (horarios, los niños, el trabajo?, etc.)
- Q. ¿Qué edad tiene?
- Q. ¿Hasta que año de estudios hizo?
- Q. (Sexo)

APPENDIX C: Participation rates in sessions

The number of adult participants in the eight sessions of the ENEPA was as follows:

- **First session:** 10 (ten women)
- **Second session:** 10 (eight women, two men)
- **Third session:** 9 (seven women, two men)
- **Fourth session:** 4 (two women, two men)
- **Fifth session:** 11 (eight women, three men)
- **Sixth session:** 7 (six women, one man)
- **Seventh session:** 17 (nine women, eight men)
- **Eighth session:** 10 (five women, five men)

APPENDIX D:

Compiled responses to evaluations from sessions one through six

EVALUACION sesión 1: (por escrito)

¿Qué aprendió en esta sesión?

- "Me gusto saber de los ecosistemas, los animales que hay en la selva lo que comen."
- "Que es muy importante saber en que tipo de ecosistemas estamos y los cuales podemos convivir y cuales no."
- "Que hay formas de lograr una buena reforestacion y ademas mayor informacion sobre los sistemas."
- "La forma de dirigir las sesiones y que es un promotor ambiental."
- "Los problemas que existen de ecologia en diferentes lugares."
- "Como se pueden resolver los problemas ambientales, como enfocarse mas acerca de los promotores ambientales."
- "Algo de la situacion de deforestacion de Chile y Canada y un proyecto interesante en Oaxaca."
- "Para saberse desenvolver, todo el proyecto esta bueno."
- "La importancia de los ecosistemas, la problematica de tala, y la solucion de los arboles cuidar de no dañar mas la vida natural."

¿Qué fue lo que mas le gustó de la sesión?

- "Me [gustaron las mascararas]."
- "Los diferentes tipos de ecosistemas y la explicacion sobre las cadenas alimenticias."
- "En general me gusto todo aprendi muchas cosas."
- "Las actividades interactivas."
- "Lo dinamico y practico de el, es una forma muy optima para el aprendizaje."
- "Como se puede prevenir una tala de arboles, que nosotros podemos talar pero volver a reforestar siempre y cuando sea de la region la reforestacion."
- "La informacion que nos dio Tere de Oaxaca es muy interesante para mi. La presentacion de Alberto fue muy clara."
- "Todo me interesa para seguirle todo. Las mascararas todo el programa esta bonito."
- "Lo importante de todo fue el tema y la convivencia de todo el grupo y las mascararas."

¿Qué faltó o qué no le gustó?

- "Todo me gusto...."
- "Faltaron mas compañeros y en si todo me gusto."
- "Falto mas informacion sobre las actividades que se tenian que realizar."
- "Bueno para la primera sesion esta bien, falta parte del taller para tener una opinion mejor o general sobre lo que falto."

- "Estuvo muy completo."
- "Para mí que está muy bien el programa explicado y muy bueno."
- [blank]
- "Todo el ambiente está bueno, todo me gustó."
- "Más gente y que empezamos un poco tarde."

Si desea hacer otros comentarios sobre los temas, los materiales, el ambiente, l@s compañer@s, l@s facilitador@s, etc., ¡adelante!

- "Me gustaría que invitaran más gente para que el ambiente sea [mejor] y aprendamos de el ambiente y de ecología."
- "Que vinieran más compañeros para que el ambiente sea más alegre y que las explicaciones sean más fáciles."
- "Seguir adelante aunque sean pocas las personas y que esto hace tener más interés por la insistencia de ustedes."
- "Bueno, pues sigan adelante, es bueno que existan personas interesadas en contribuir ayudando a formar promotores ambientales para cambiar o cuidar el medio, hay que empezar educando."
- "Solo que me da gusto saber que hay personas que se preocupan realmente por el medio ambiente, capaces de dar un poco de su tiempo por algo que le ayudara toda su vida."
- "Sobre el ambiente que nos expliquen más a fondo y que salgamos de nuestras dudas. Pero estuvo muy bien, adelante."
- "Mascaras - muy bonitas. Espero que más gente llega mañana."
- "Todo está bien. Me gustaría que se juntara más gente para que hubiera más ambiente."
- "Estuvo super. Todo."

EVALUACION sesión 2: "Los caminitos" (dibujado)

- ¿Sabías que es un diagnóstico participativo?
- ¿Compartiste tus conocimientos?
- ¿Te gustó la sesión de hoy?
- ¿Te gustaron las dinámicas?

EVALUACION sesión 3: "Cuerpitos" (dibujo de persona con comentarios adentro)

Cabeza: ¿qué aprendí? ¿qué pensé?

- "Que podemos hacer cosas mejor."
- "Que le podemos incluir al Ecojuego?"
- "Pienso que todo lo que hacemos nos va ayudar bastante para pensar en el medio ambiente."
- "Aprendí a compartir."
- "Aprendí de Huitzilac y de planeación."

- "Algo de la historia interesante de Huitzilac."
- "Aprendí lo que es cronología y muchas cosas mas."
- "Aprendí mas de Huitzilac."
- "Aprendí que juntos podemos hacer muchas cosas."

Corazón: ¿qué sentí? ¿qué me gustó?

- "Sentí que todo es muy bueno, que todo nos sirve mucho."
- "Jugar."
- "Que hay mas participacion."
- "Alegria al saber que el bosque en un futuro se puede salvar."
- "Sentí alegria de conocer mas gente y un poco de tristeza que no hay mas gente de Huitzilac."
- Siento miedo de ir al curso de ecologia para promotor...."
- "Me sentí muy a gusto con el grupo."
- "Me agrada venir a este curso y estar con todos."

Manos: ¿qué me gustaría hacer?

- "Hablar de soluciones de problemas especificos."
- "Trabajar mejor."
- "Hacer cosas mas dinamicas."
- "Me gusto mucho hablar de cronologia."
- "Voy a compartir lo aprendido."
- "Quiero hacer la cronologia con mi grupo."
- "Quiero seguir trabajando con mi grupo."

Pata: cosas que no me gustaron

- "No dejar expresar mi opinion."
- "Que no sabia muy bien el proceso de la planificacion."
- "Que se me habia olvidado lo de planeacion y lo volvi a recordar."
- "Faltaron quesadillas."
- "Que soy muy gritona y risueña."
- "Que haya minas de carbon sin control."
- "Los datos de la cronica no todos son veraces."
- "Podemos usar mas intercambio de ideas y informacion. Todos tienen mucho para ofrecer el grupo."

EVALUACION sesión 4: Ronda, en pizarrón

¿Qué sugiero?:

- Organizarnos
- Que los exponentes hagan resúmenes
- Hacer una junta con los campesinos del pueblo
- Profundizar mas
- La practica

- Informacion de las plantas nativas
- Aprender que se hace localmente y de los participantes

¿Qué me gustó?:

- Temas interesantes y sentirse a gusto
- El melon
- La participacion entusiasta
- Platicar a pocos

¿Qué aprendí?:

- La palabra "permacultura"
- Caracteristicas del suelo
- Que se puede hacer hortalizas asi
- Componentes del suelo

EVALUACION sesión 5: (mismo formulario que la sesión 1)

¿Qué aprendió en esta sesión?:

- "Aprendi hacer camas permacultura...."
- "Como aprovechar el suelo sin destruirlo con la tecnica de cama de permacultura. Como controlar las plagas utilizando repelentes naturales, la realizacion de compostas y la utilidad."
- "Otra forma de captar y aprovechar pequeños especias para sembrar."
- "Pues yo aprendi a hacer lo de la cama. Fui a cosechar rabanos y me gusto."
- "La problematica del agua en mi comunidad y ademas a preparar y sembrar una cama de permacultura que explico Rose y Alberto."
- "Como hacer hortalizas sin remover la tierra los diseños tipicos de permacultura, las diferentes maneras de hacer composta."
- "Aprendi la problematica del agua en Huitzilac y posibles soluciones. Tambien aprendi a hacer una pequeña hortaliza de jardin."
- "Cosas practicas (sobre permacultura) con Rose y Alberto y sobre problemas del agua (sociodramas). Asi como observacion de compostas hechas antes."
- "Bueno pues los problemas del agua en Huitzilac (sociodramas). Camas de permaculturas que estuvo a cargo de Rose y Alberto."
- "Aprendi a sembrar semillas en las camas permaculturas con los profesores Rose y Alberto y Lorena y compañeros del pueblo y de afuera".
- "A realizar hortalizas a traves de permacultura. Que es necesario cuidar el agua."

¿Qué fue lo que más le gustó de la sesión?

- "De la accion fue que formamos nuestro ayuntamiento para ver puntos importantes que tenemos en nuestra comunidad."
- "Como aprovechar el suelo sin destruirlo logrando una mayor produccion por la permacultura."
- "Los sociodramas para descubrir y darles solucion."

EVALUACION sesión 6: (escrita)

¿Te gustó el tema de hoy?:

- "Claro que si. Estuvo muy bien."
- "Si."
- "Si. A mi me gusto porque aprendi lo importante que es separar la basura. Que con este procedimiento podemos cuidar enfermedades y la contaminacion del suelo, aire, y agua."
- "Si."
- "Si. Creo que el tema de la basura es muy interesante. Por eso es que hay que utilizar las 3 "R".
- "Si, pues nos permite reforzar lo que conocemos en relacion al tema y reconocer la importancia de llevar a efecto las alternativas de solucion."
- "El peligro de seguir contaminando el medio ambiente... hay que evitar."
- "El tema que mas me gusto me di cuenta que la celulosa de los arboles sirve para hacer el papel y que de 500,000 arboles apenas salen 4 libretas y 4 periodicos y que el periodico se puede reciclar. Tambien me gusto que vimos que hay muchas maneras de hacer compostaje."

¿Crees que se puede poner en práctica?:

- "Si, solo se trata de que cada uno de nosotros quisieramos y tambien que nos guste para que salga todo bien."
- "Si."
- "Si."
- "Claro que si."
- "Si, como no consumir mucha basura, separarla y hacer composta."
- "Claro, y ya lo realizo."
- "Conscientizar a otros y organizarnos."
- [blank]

¿Qué más te gustó del tema de hoy?:

- "Hay que tratar que cada uno de nosotros haga una composta."
- "A mi me gusto mucho lo de separar la basura."
- "Saber el efecto de invernadero."
- "Como reciclar la basura."
- "Todo lo de hoy fue muy interesante me gusto todo, sobre todo lo de la basura como hacer para producir menos."
- "La practica de la composta, porque puedes constatar que si se puede hacer y no es dificil."
- "Si, lo estamos llevando a la practica."
- [blank]

¿Cómo estuvo la exposición de las compañeras?:

- "Estuvo muy bien la explicación de lo de la basura."
- "Perfectamente bien y a mi gusto."
- "Muy abiertas y explicadas."
- "Muy bonita y a mi me gusto."
- "Muy bien, sobre todo como hacerla y después de obtener el abono que hacer con el abono..."
- "Muy clara."
- "Estaba muy bien ... y sencilla."
- [blank]

¿Qué más te gustaría saber?:

- "Como hacer para que las fabricas ya no fabriquen tanto."
- "Pues todo lo de hortalizas compostas y la basura."
- "Saber los problemas del suelo y de la permacultura."
- "A mi me gusta saber lo de las hortalizas, en reciclar la basura."
- "Todo lo que se refiera a ecología ambiental enfocarme mas, profundizar mas y tener muchas alternativas para no contaminar nuestra comunidad. Invitar a la gente para cuidar el medio ambiente."
- "Que alternativas se tienen para utilizar sustitutos de insecticidas, materiales, etc."
- "Observar otras experiencias."
- "Me gustaria tambien saber quien y a donde depositar los desechos que se puede reciclar, como los botes, plasticos, o a quien dirigirme."

Observaciones:

- "Yo observo que algunos dicen que si entienden pero mejor porque no lo llevamos a practica para saber si entendimos."

APPENDIX E: Education levels of respondents

None of the elderly people in the sample continued past primary school, and no one above the age of forty-two in the sample went on to secondary school. In terms of formal education, the sample of thirty breaks down as follows:

- Four received no formal education: three women (ages 57, 63, 76) , one man (not from Huitzilac, age 52)
- Seven did not finish primary school: three women (ages 64, 70, 70), four men (ages 49, 58, 58, 60)
- Eight completed primary school: three women (29, 42, 39), five men (21, 43, 50, 58, 77)
- Three did not finish secondary school: two women (ages 24, 24), 1 man (age 42)
- Three finished secondary school: one woman (age 30), two men (ages 25, 28)
- Three did not finish *preparatoria* (one is going back to finish his final year): two women (ages 24, 37), one man (age 20)
- Two finished *preparatoria*: one woman (age 33, has lived two years in Huitzilac); one man (age 19, has lived eight years in Huitzilac)

APPENDIX F: Compiled responses to the ENEPA registration sheet for the first sessions

¿Como se enteró de la ENEPA?

- "Bueno por medio de las personas que andaban invitando... Gema"
- "Por las personas que andaban invitando de Gema"
- "Bueno, por medio de Lorena"
- "Por invitacion"
- "Por Lorena de GEMA"
- "Por medio de una compañera que me invito a participar en el grupo"
- "Por los organizadores de GEMA"
- "Por medio de un familiar"
- "Alberto"
- "Por medio de GEMA"
- "Por GEMA"
- "Lorena, GEMA"
- "Lorena"
- "Por mi vecina Estela"
- "Por GEMA"
- "Un amigo me platico de esto y decidi venir"

¿Por que decidió participar en la ENEPA?

- "Pues porque pienso que es muy bonito aprender muchas cosas"
- "Porque es importante saber"
- "Porque me gusta"
- "Porque me interesa la ecologia"
- "Porque me gusta trabajar para el ambiente"
- "Porque me llamo la atencion saber mas del medio ambiente"
- "Porque nos interesan los problemas ambientales de nuestra region..."
- "Por la importancia de rescatar los bosques, animales del municipio y principalmente las Lagunas de Zempoala"
- "Porque estamos trabajando con comunidades"
- "Porque se me hizo interesante poder ayudar al medio ambiente"
- "Porque me interesa aprender sobre educacion ambiental"
- "Por lo importante que es para todos saber todo sobre ecologica y los daños y soluciones prontas para resolverlos"
- "Porque le interesa lo de las hortalizas"
- "Me gusta participar en cursos y mas de ecologia"
- "Porque nos interesan los problemas ambientales y quiero saber un poco mas"
- "Porque quiero conocer los problemas de Huitzilac y ayudar"

Indique con una "X" si en su casa aplica alguna de las siguientes tecnologías:

santiario seco: 0

compostaje: 9

hortalizas o agricultura: 9
captación de agua de lluvia: 6
separación de basura: 11
campanas de reforestación: 7
Otras: "Apagar los incendios"

¿Mencione dos de los problemas ambientales que considere más importantes?

- "Las calles (sucias con mucha basura); la tala de arboles"
- "La basura de las calles. Que no pierdan el bosque"
- "Que en las calles tiran demasiada basura"
- "El problema de la basura. La tala del bosque"
- "El bosque - los arboles que se quemaron. Ecologia"
- "La basura y la tala de los arboles"
- "La tala de arboles y la basura que se tira en todas partes"
- "La contaminacion de las Lagunas de Zempoala por la basura, la tala..."
- "La basura, el agua"
- "Que haya tantos bosques quemandose y la basura que tiran..."
- "Contaminacion, tala imoderada"
- "Los incendios forestales y reciclaje de basura, asi como el contaminar el agua..."
- "La basura, ... las chamusquinas, cuando quema la basura uno"
- "El aire, y la basura"
- "La tala de arboles, la quema de basura"
- "Los incendios del bosque, la basura que contamina mucho"

¿Qué le gustaría aprender en la ENEPA?

- "Pues muchas cosas, etc."
- "Me gustaria aprender de todo lo del medio ambiente"
- "A mi de todo un poco"
- "Descubrir juntos... para evitar la tala de bosque"
- "Como combatir la basura y saber en que consiste la ecologia mas a fondo..."
- "Todo lo relacionado con el medio ambiente... prevenir problemas ambientales"
- "A poder aprovechar los recursos sin explorarlos y cuidar el ambiente..."
- "A trabajar con grupos"
- "Todo lo posible para poder reforestar y hacer compostas"
- "Como saber enseñarle a las personas, o sensibilizarlos sobre nuestro ecosistema"
- "Como poder, o esperar a, solucionar los problemas del municipio y despues del estado y luego del mundo entero."
- "Cultivar la verdura, sembrar y mas cosas"
- "Como poder ayudar en mi trabajo y comunidad para crear un mejor medio de vida"
- "Un poco mas de todo. Tratar cada tema mas a fondo"
- "Me gustaria aprender a utilizar los recursos sin explotarlos"

BIBLIOGRAPHY

Abella, Gonzalo, Ramón Fogel, y Carlos Mora. 1997. *Educación Ambiental: Manual para Educadores Ambientales*. Centro de Estudios Rurales Interdisciplinarios (CERI), Centro Paraguayo de Estudios de Desarrollo Económico y Social (CEPADES), Programa de las Naciones Unidas para el Medio Ambiente (PNUMA). Intercontinental Editora. (Impreso en Asunción, Paraguay)

Anderson, Gary L. and Martha Montero-Sieburth (eds). 1998. "Introduction". Pp. xi-xix, *Educational Qualitative Research in Latin America: The Struggle for a New Paradigm*. New York: Garland Publishing

Arizpe, Lourdes, Fernanda Paz, and Margarita Velázquez. 1996. *Culture and Global Change: Social Perceptions of Deforestation in the Lacandona Rain Forest in Mexico*. Ann Arbor: University of Michigan Press

Arnold, Rick and Bev Burke. 1983. *A Popular Education Handbook: An educational experience taken from Central America and adapted to the Canadian context*. Ottawa: CUSO Development Education and Ontario Institute for Studies in Education, Adult Education Department

Batallan, Graciela. 1998. "Appropriating Ethnography for Research in Education". Pp. 35-50 in Gary L. Anderson and Martha Montero-Sieburth (eds), *Educational Qualitative Research in Latin America: The Struggle for a New Paradigm*. New York: Garland Publishing

Barndt, Deborah. 1996. "Tracing the Trail of Tomasita the Tomato: Popular Education around Globalization." *Alternatives Journal* January-February 1996:24-29

Barndt, Deborah. 1995. "Critical Education for Social Change in the Context of Sustainable Development". Pp. 92-97 in Naresh Singh and Vangile Titi (eds), *Empowerment Towards Sustainable Development*. Winnipeg: International Institute for Sustainable Development.

Barndt, Deborah. 1991. *To Change this House: Popular Education under the Sandinistas*. Toronto: Between the Lines

Barry, Tom. 1995. *Zapata's Revenge: Free Trade and the Farm Crisis in Mexico*. Boston: South End Press

Benítez, Salvador Aguilar. 1990. *Dimensiones Ecológicas del Estado de Morelos*. Cuernavaca, Morelos, Mexico: Centro Regional de Investigaciones Multidisciplinarias, Universidad Nacional Autónoma de México

Bernard, Russell. 1995. *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. London: Sage Publications

Berteley, Maria and Martha Corenstein. 1998. "An overview of Ethnographic Research in Mexico: An Approach to Educational Problems". Pp. 51-75 in Gary L. Anderson and Martha Montero-Sieburth (eds), *Educational Qualitative Research in Latin America: The Struggle for a New Paradigm*. New York: Garland Publishing

Blaikie, Piers and Harold Brookfield. 1987. *Land Degradation and Society*. London: Methuen

Bowers, C.A. 1996. "The Cultural Dimensions of Ecological Literacy". *Journal of Environmental Education*. 27 (2):5-10.

Bowers, C.A. 1995. *Educating for an Ecologically Sustainable Culture: Rethinking moral education, creativity, intelligence, and other modern orthodoxies*. Albany: State University of New York Press.

Burton, I. Kates, and G.F. White. 1993. *The Environment as Hazard*. New York: The Guilford Press

Cabarle, Bruce, Franciso Chapela and Sergio Madrid. 1997. "Introducción: El manejo forestal comunitario y la certificación". Pp. 17-33 in Leticia Merino (coordinadora), *El manejo forestal comunitario en México y sus perspectivas de sustentabilidad*. Centro Regional de Investigaciones Multidisciplinarias, UNAM; Centro de Educación y Capacitación para el Desarrollo Sustentable, Secretaría de Medio Ambiente, Recursos Naturales y Pesca; Consejo Mexicano para la Silvicultura Sostenible; World Resources Institute. Cuernavaca, Morelos, Mexico.

Clover, Darlene E. 1995. "Theoretical Foundations and Practice of Critical Environmental Adult Education in Canada". *Convergence*. XXVIII (4): 44-54

Clover, Darlene E, Shirley Follen, and Budd Hall. 1998. *The Nature of Transformation: Environmental, Adult and Popular Education*. Transformative Learning Centre, Ontario Institute for Studies in Education. Toronto: University of Toronto Press

Colón, Eliezer. (Taller de Educación Alternativa, Cidra, Puerto Rico). 1994. "Experiencia de Educación Ambiental y Educación Popular". Pp. 43-46 in REPEC-CEAAL, *Once Experiencias de Educación Ambiental y Popular en América Latina: Una Contribución a la difusión del Tratado de Educación Ambiental para Sociedades Sustentables y Responsabilidad Global firmado en Rio 1992*. La Habana 1994. Red de Educación Popular y Ecología (REPEC) del

Consejo de Educación de Adultos de América Latina (CEAAL).

Corcoran, Peter B. and Eric Sievers. 1994. "Reconceptualizing Environmental Education: Five Possibilities". *Journal of Environmental Education*. 25 (4): 4-8

DaSilva, Christian M. 1995. *Divergence or Convergence? Local Environmental Knowledge, Secondary Schools, and Environmental Education in Tanzania*. M.A. Thesis, Carleton University, Ottawa.

De Landesheere, G. 1993. "History of Educational Research". Pp. 3-15 in Martyn Hammersley (ed.), *Educational Research: Current Issues*. London: Paul Chapman Publishing

Díaz, José Alberto Tavarez (Centro Dominicano de Educación Ecológica (CEDECO). "Saneamiento Ambiental y Participación Comunitaria". Pp. 55-59 in REPEC-CEAAL, *Once Experiencias de Educación Ambiental y Popular en América Latina: Una Contribución a la difusión del Tratado de Educación Ambiental para Sociedades Sustentables y Responsabilidad Global firmado en Río 1992*. La Habana 1994. Red de Educación Popular y Ecología (REPEC) del Consejo de Educación de Adultos de América Latina (CEAAL).

Dore, Elizabeth. 1996. "Capitalism and ecological crisis: legacy of the 1980s". Pp. 8-19 in Helen Collinson (ed.), *Green Guerillas: Environmental Conflicts and Initiatives in Latin America and the Caribbean*. London: Latin America Bureau.

Durham, William H. 1995. "Political Ecology and Environmental Destruction in Latin America". Pp. 249-264 in Michael Painter and William H. Durham (Eds.), *The Social Causes of Environmental Destruction in Latin America*. Ann Arbor: University of Michigan Press

Ebbutt, Dave. 1985. "Educational Action Research: Some General Concerns and Specific Quibbles". Pp. 152-174 in Robert G. Burgess (ed.), *Issues in Educational Research: Qualitative Methods*. London: The Falmer Press

Erickson, Frederick. 1985. "Qualitative Methods for Research on Teaching". Occasional Paper No. 81, Institute for Research on Teaching, Michigan State University, East Lansing.

Escobar, Arturo. 1996. "Constructing Nature: Elements for a poststructural political ecology". Pp. 46-68 in Richard Peet and Michael Watts (eds.), *Liberation Ecologies: environment, development, social movements*. London: Routledge.

Escobar, Arturo. 1992. "Culture, Practice and Politics: Anthropology and the study of social movements". *Critique of Anthropology* Vol 12(4):395-432

Esteva, Joaquín (Centro de Estudios Sociales y Ecológicos, A.C., Michoacán, México). "Educación Popular Ambiental en la Region de Patzcuaro, Michoacán, México". Pp. 13-18 in REPEC-CEAAL, *Once Experiencias de Educación Ambiental y Popular en América Latina: Una Contribución a la difusión del Tratado de Educación Ambiental para Sociedades Sustentables y Responsabilidad Global firmado en Rio 1992*. La Habana 1994. Red de Educación Popular y Ecología (REPEC) del Consejo de Educación de Adultos de América Latina (CEAAL).

Foro Internacional de ONGs y Movimientos Sociales. 1993. *Construyendo el Futuro: Tratados Alternativos de Río 92*. Montevideo, Uruguay: REDES - Red de Ecología Social, Amigos de la Tierra

Freire, Paulo. 1977. *Cultural Action for Freedom*. Middlesex, England: Penguin Books. (First published in 1970)

Freire, Paulo. 1970. *Pedagogy of the Oppressed*. New York: Seabury Press.

Ghai, Dharam and Jessica M. Vivian (eds). 1992. "Introduction". Pp. 1-19 in *Grassroots Environmental Action: People's participation in sustainable development*. London: Routledge.

García-Jiménez, Plutarco. 1992. "Estructura del Sector Agropecuario y Movimientos Sociales en Morelos". Pp. 143-220 in Ursula Oswald S. (Ed.), *Mitos y Realidades del Morelos Actual*. Cuernavaca, Morelos, Mexico: Centro Regional de Investigaciones Multidisciplinarias, Universidad Nacional Autónoma de México

Gates, Marilyn. 1993. *In Default: Peasants, the Debt Crisis, and the Agricultural Challenge in Mexico*. Boulder: Westview Press

GEMA. 1999a. "Proyecto: Escuela Nacional de Educación Popular Ambiental (ENEPa)" (March 1999 draft project proposal). Grupo de Educación para el Medio Ambiente (GEMA). Cuernavaca, Morelos, Mexico.

GEMA. 1999b. Draft of the Huitzilac ENEPa workshop summary or *memoria*. Grupo de Educación para el Medio Ambiente (GEMA). Cuernavaca, Morelos, Mexico.

Gigliotti, Larry M. 1994. "Environmental Issues: Cornell Students' Willingness to Take Action, 1990". *Journal of Environmental Education* Vol. 26 (1): 34-42

- Giroux, Henry. 1989. "Schooling as a Form of Cultural Politics: Toward a Pedagogy of and for Difference". Pp. 125- 151 in Henry Giroux and Peter McLaren (eds). *Critical Pedagogy, the State, and Cultural Struggle*. Albany: State University of New York Press.
- Giroux, Henry and Peter McLaren (eds). 1989. "Schooling, Cultural Politics, and the Struggle for Democracy". Pp. xi- xxxv (intro) in *Critical Pedagogy, the State, and Cultural Struggle*. Albany: State University of New York Press.
- Gitlin, A., M. Siegel and K. Boru. 1993. "The Politics of Method: From Leftist Ethnography to Educative Research". Pp. 191-210 in Martyn Hammersley (ed.), *Educational Research: Current Issues*. London: Paul Chapman Publishing
- Gledhill, John. 1995. *Neoliberalism, Transnationalization and Rural Poverty: A Case Study of Michoacán, Mexico*. Boulder: Westview Press
- Gore, Jennifer. 1993. *The Struggle for Pedagogies: Critical and Feminist Discourses as Regimes of Truth*. New York: Routledge.
- Gray, David. 1985. *Ecological Beliefs and Behaviors*. Westport, Connecticut: Greenwood Press
- Grupo Colibrí. 1996. "Diagnosis of the Community of Huitzilac" (translated report). Grupo de Educación para el Medio Ambiente. Cuernavaca, Morelos, Mexico.
- Gupta, Avijit. 1988. *Ecology and Development in the Third World*. London: Routledge
- Hall, B.L. and Y. Kassam. 1988. "Participatory Research". Pp. 150-155 in John P. Keeves (ed.), *Educational Research, Methodology, and Measurement: An International Handbook*. Oxford: Pergamon Press
- Hall, Budd and Edmund Sullivan. 1995. "Transformative Education and Environmental Action in the Ecozoic Era". Pp.98-105 in Naresh Singh and Vangile Titi (eds), *Empowerment Towards Sustainable Development*. Winnipeg: International Institute for Sustainable Development.
- Hausbeck, Kathryn Wald, Lester W. Milbrath, and Sean M. Enright. 1992. "Environmental Knowledge, Awareness and Concern Among 11th-Grade Students: New York State". *Journal of Environmental Education* Vol. 24 (1): 27-34

Hewitt de Alcántara, Cynthia. 1980. "Land reform, livelihood, and power in rural Mexico". Pp. 21-36 in David A. Preston (Ed.), *Environment, Society, and Rural Change in Latin America: The past, present, and future in the countryside*. Chichester: John Wiley & Sons

Hickling-Hudson, Anne. 1994. "The Environment as Radical Politics: Can 'Third World' Education Rise to the Challenge?" *International Review of Education*. 40 (1): 19-36

Hurtado, Margarita. 1999. "Análisis curricular del proyecto: "Escuela Nacional de Educación Popular Ambiental." (Parts 1 and 2) Unpublished paper (in the program Maestría en Desarrollo e innovación educativa). Universidad Pedagógica Nacional, Unidad Morelos. Cuernavaca, Morelos, Mexico.

Ibarrola, Isabel U. Diciembre 1996. "Diagnostico Ambiental del Estado de Morelos", Version preliminar del Marco Estatal para el Diagnóstico Participativo del Municipio de Huitzilac. Grupo de Educación para el Medio Ambiente (GEMA). Cuernavaca, Morelos, Mexico.

INEGI. 1997. *Anuario Estadístico del Estado de Morelos Edición 1997*. Instituto Nacional de Estadística Geografía e Informática (INEGI). Aguascalientes, Ags., Mexico: INEGI

Kamel, Rachael (ed). 1988. *Growing Together: Women, Feminism and Popular Education*. Isis International and Network for Women and Popular Education of the Latin American Council on Adult Education.

Keiny, S. and U. Zoller (eds). 1991. *Conceptual Issues in Environmental Education*. New York: Peter Lang

Kelly, Alison. 1985. "Action Research: What is it and What can it do?". Pp. 129-151 in Robert G. Burgess (ed.), *Issues in Educational Research: Qualitative Methods*. London: The Falmer Press

Kemmis, S. 1993. "Action Research". Pp. 177-190 in Martyn Hammersley (ed.), *Educational Research: Current Issues*. London: Paul Chapman Publishing

LEAP/INFORSE. 1997a. "A Working Conceptual Paper, Environmental Popular and Adult Education". Learning for Environmental Action Programme (LEAP) of the International Council for Adult Education (ICAE), and the International Network for Sustainable Energy (INFORSE).

- LEAP/INFORSE. 1997b. *Case Studies in Environmental Adult and Popular Education*. Learning for Environmental Action Programme (LEAP) of the International Council for Adult Education (ICAE), and the International Network for Sustainable Energy (INFORSE). Toronto: LEAP/Transformative Learning Centre.
- Lebner, Ashley. 1998. "Money and Meaning: Motives for Peasant Resistance to Forest Conservation". Undergraduate thesis, Department of Anthropology, McGill University (Montreal, Canada)
- Leeming, Frank C., William O. Dwyer, Bryan E. Porter, and Melissa K. Cobern. 1993. "Outcome Research in Environmental Education: A Critical Review". *Journal of Environmental Education* Vol. 24 (4): 8-21
- Meredith, Thomas C. et al. 1994. "Critical Zones and Global Environmental Change" in *Canadian Critical Environmental Zones* Canadian Global Change Program Technical Report Series #94-1 February 1994.
- Mitchell, Peter. 1985. "A Teacher's View of Educational Research". Pp. 81-96 in Martin Shipman (ed), *Educational Research: Principles, Policies and Practices*. London: The Falmer Press
- Monroy, M. Rafael et al. 1992. "Características del Medio Físico Biótico". Pp. 37-64 in Ursula Oswald S. (Ed.), *Mitos y Realidades del Morelos Actual*. Cuernavaca, Morelos, Mexico: Centro Regional de Investigaciones Multidisciplinarias, Universidad Nacional Autónoma de México
- Nemiroff, Greta Hofmann. 1992. *Reconstructing Education: Toward a Pedagogy of Critical Humanism*. Toronto: Ontario Institute for Studies in Education.
- Nordland, Eva. 1994. "New World, New Thinking, New Education". Pp. 1-20 in Betty Reardon and Eva Nordland (eds.), *Learning Peace: The Promise of Ecological and Cooperative Education*. Albany: State University of New York Press.
- Orr, David W. 1992. *Ecological Literacy: Education and the Transition to a Postmodern World*. Albany: State University of New York Press.
- Oswald, Ursula. 1992. "Transformaciones Socioproductivas en el Estado de Morelos". Pp. 65-141 in Ursula Oswald S. (Ed.), *Mitos y Realidades del Morelos Actual*. Cuernavaca, Morelos, Mexico: Centro Regional de Investigaciones Multidisciplinarias, Universidad Nacional Autónoma de México

Painter, Michael. 1995. "Introduction: Anthropological Perspectives on Environmental Destruction". Pp. 1-21 in Michael Painter and William H. Durham (Eds.), *The Social Causes of Environmental Destruction in Latin America*. Ann Arbor: University of Michigan Press

Palmer, Joy and Philip Neal. 1994. *The Handbook of Environmental Education*. London: Routledge.

Park, Peter. 1993. "What is Participatory Research? A Theoretical and Methodological Perspective". Pp. 1-19 in *Voices of Change*. Westport: Bergin

Paultson, R.G. and D. Lejeune. 1980. "A Methodology for Studying Education in Social Movements". in Rolland G. Paulston (Ed.), *Other Dreams, Other Schools: Folk Colleges in Social and Ethnic Movements*. Pittsburgh: Center for International Studies, University of Pittsburgh

Peet, Richard and Michael Watts (Eds.). 1996. "Liberation Ecology: Development, sustainability, and environment in an age of market triumphalism". Pp. 1-45 in *Liberation Ecologies: Environment, development, social movements*. London: Routledge

Petrezelka, Peggy, Peter F. Korsching, and James E. Malia. 1996. "Farmers' Attitudes and Behavior Toward Sustainable Agriculture." *Journal of Environmental Education* 28(1):38-44

QPIRG-McGill and GEMA. 1998. *Academic and Community Cooperation for Environmental Sustainability: Sharing Our Experience in Partnership*. The Quebec Public Interest Research Group at McGill (QPIRG-McGill) (Montreal, Canada), El Grupo de Educación para el Medio Ambiente (GEMA) (Cuernavaca, Mexico). Financed by the Canadian International Development Agency (Ottawa, Canada).

Redclift, Michael. 1992. "Sustainable Development and Popular Participation: A Framework for Analysis." Pp. 23-49 in Dharam Ghai and Jessica M. Vivian (eds), *Grassroots Environmental Action: People's participation in sustainable development*. London: Routledge.

REPEC-CEAAL. 1994. *Once Experiencias de Educacion Ambiental y Popular en America Latina: Una Contribución a la difusión del Tratado de Educación Ambiental para Sociedades Sustentables y Responsabilidad Global firmado en Rio 1992*. La Habana 1994. Red de Educación Popular y Ecología (REPEC) del Consejo de Educación de Adultos de América Latina (CEAAL).

Robertson, Alistair. 1994. "Toward Constructivist Research in Environmental Education". *Journal of Environmental Education* Vol. 25 (2): 21-31

Robottom, Ian. 1993. "The role of ecology in education: an Australian perspective". Pp. 1-9 in Monica Hale (ed). *Ecology in Education*. Cambridge: Cambridge University Press.

Robottom, Ian. 1985. "Evaluation in Environmental Education: Time for a Change in Perspective?" *Journal of Environmental Education* Vol. 17 (1): 31-36

Robottom, Ian and Paul Hart. 1995. "Behaviorist EE Research: Environmentalism as Individualism". *Journal of Environmental Education* Vol. 26 (2): 5-9

Schmieder, Allen A. 1977. "The Nature and Philosophy of Environmental Education: Goals and Objectives". Pp. 23-34 in UNESCO, Trends in Environmental Education. Paris: United Nations Educational, Scientific and Cultural Organization (UNESCO)

Smyth, J.C. 1988. "What Makes Education Educational?". Pp. 33-56 in Briceno, Salvano and David C. Pitt (eds). *New Ideas in Environmental Education*. London: Croom Helm.

Stapp, William B. 1972. "Environmental Encounters". Pp. 232-24 in Cornelius Troost and Harold Altman (eds), *Environmental Education: A Sourcebook*. New York: John Wiley & Sons.

Troost, Cornelius and Harold Altman (eds). 1972. *Environmental Education: A Sourcebook*. New York: John Wiley & Sons

UNESCO (prepared by Sheila M. Haggis). 1991. "Environmental Education: A Component of Sustainable Development", Ch.6 in *Education for All: Purpose and Context*. United Nations Educational, Scientific and Cultural Organization (UNESCO) Paris: UNESCO

UNESCO. 1980. *Environmental Education in the light of the Tbilisi Conference*. United Nations Educational, Scientific and Cultural Organization (UNESCO) Paris: UNESCO

UNESCO-UNEP. 1987. *Environmental Education and Training: International Strategy for Action in the field of Environmental Education and Training for the 1990s*. Moscow. United Nations Educational, Scientific and Cultural Organization and the United Nations Environment Programme.

Viesca Arrache, Martha. 1995. *La Educación y el Cambio Ambiental: Reflexiones y Propuestas*. Cuernavaca, Morelos, Mexico: Centro Regional de Investigaciones Multidisciplinarias (CRIM), Universidad Nacional Autónoma de México (UNAM)

Viesca Arrache, Martha. 1990. *Perspectivas de una propuesta de educación ambiental en el estado de Morelos*. Cuernavaca, Morelos, Mexico: Centro Regional de Investigaciones Multidisciplinarias (CRIM), Universidad Nacional Autónoma de México (UNAM)

Vio Grossi, Francisco. 1984. "Popular Education: The Latin American Experience". *International Review of Education* Vol. 30 (3): 303-314

Vivian, Jessica M. 1992. "Foundations for Sustainable Development: Participation, Empowerment and Local Resource Management". Pp. 50-77 in Dharam Ghai and Jessica M. Vivian (eds), *Grassroots Environmental Action: People's participation in sustainable development*. London: Routledge.

Walters, Shirley and Linzi Manicom (eds.). 1996. "Introduction". Pp 1-22, in *Gender in Popular Education: Methods for Empowerment*. London: Zed Books.

Woodgate, Graham. 1991. "Agroecological possibilities and organisational limits: some initial impressions from a Mexican case study". Pp. 155-183 in David Goodman and Michael Redclift (Eds.), *Environment and Development: The politics of sustainability*. Manchester: Manchester University Press

Wren, Brian. 1977. *Education for Justice*. London: SCM Press.