Community Landscape Planning for Rural Areas: A Model for Biocultural Resource Management

SILVIA DEL AMO-RODRÍGUEZ,
MARÍA DEL CARMEN VERGARA-TENORIO,
AND JOSÉ MARÍA RAMOS-PRADO

Centro de Investigaciones Tropicales, Universidad Veracruzana, and
Programa de Acción Forestal Trópical, Xalapa, Veracruz, México

LUCIANA PORTER-BOLLAND

Instituto de Ecología A.C., Xalapa, Veracruz, México

We propose a theoretical model for resource management in the tropics that includes biological and cultural aspects, called the Biocultural Resource Management Model. The model is a strategy for co-responsible landscape planning that could be implemented in rural areas with local populations as the drivers of conservation, restoration, and management of natural resources. It comprises different units of production and management conservation levels and outlines the social and environmental aspects. The model was derived from a 10-year working experience in Mexico through the nongovernmental organization Programa de Acción Forestal Tropical (PROAFT) and the evaluation of 24 management conservation projects, from 20 different organizations and 1421 participants. The model takes into account PROAFT’s evaluation regarding the successful participatory research experiences that enhanced diversification of agroecosystems and social organization. We propose and discuss a strategy and the challenges for the model implementation and its further evaluation in rural Mexican communities.

Keywords landscape planning, resource management, rural areas, sustainability

Landscape and environmental planning for natural resource use, conservation, and restoration has gained importance in the context of sustainability. These tools are framed by concepts regarding the management of resources that imply interactions between human needs and ecosystems dynamics. It has also been recognized not only that biological resources (i.e., plants and animals) are important, but that cultural resources (i.e., language and knowledge systems) are relevant as well, because it is culture that shapes the management of natural resources. Alcorn (1997) and Toledo (2003) have defined both cultural and natural resources together as a distinctive concept, called bioculture. This concept includes not only biological diversity, but also the local cosmovisions and management systems that interact and shape it.
Presently, it has been found that biocultural diversity is high in many areas where ethnic groups have been established for centuries (Toledo et al. 2003; Stepp et al. 2005). This finding implies the possibility of co-responsible management and the participation of local communities in conservation activities (Toledo 2003). It also implies that landscape planning should be conceptualized within the frame of biocultural diversity. However, in order to achieve “real people-centered landscape planning,” many challenges must be faced. An important one is to be able to reach a more pluralistic approach, in which the knowledge and values of the different actors are considered in the decision-making process and in the remodeling of institutions that are in charge of the environment (Brown 2003).

In developing countries, the tendency to ignore social differences is translated into an absence and invisibility of people from landscape planning and resource management decision making (Dietz et al. 2003). The rural and urban communities are generally left out of landscape planning activities; consequently, the values and richness of the community’s knowledge and culture are ignored. The variety of knowledge, values, and activities of local populations can in fact be important for the assessment, use, and management of natural resources, as well as for the establishment of conservation actions and the formulation of policies (Pretty and Smith 2004).

One of the main components of natural resource management is conservation, an activity that has been viewed from different perspectives by scientists, policymakers, and common people. In general, the main strategy has been the establishment of natural protected areas (NPAs) as “large, pristine, uninhabited parks” (Gómez-Pompa and Kauss 1992a; 1999; Schwartzman et al. 2000; Pretty 2003). However, for developing countries, the NPA should not be considered a unique model to follow, because many of the biologically diverse areas are already inhabited. In developing countries, resource management should take into account the social capital and co-responsible landscape planning among civil society, government, and scientific institutions (Pretty and Smith 2003). The harsh reality is that it is local people, often poor, who bear the cost of governmental conservation programs (Sheil 2004). Particularly in tropical countries, when it comes to planning and management, what forests mean to the people who live in them is usually ignored (Agrawal and Gibson 2001). As a result, local communities often suffer negative consequences from forestry policies, biodiversity protection activities, forest concessions, and other forest uses (Sheil 2004).

The debate about natural resource management, as Terborgh (2000) and Schwartzman et al. (2000) have stated, is over the role to be played by rural and indigenous people as custodians and users of the land. In contrast to Terborgh’s view, we acknowledge the important role of people managing resources, particularly in developing countries. Our position is that use, conservation, and restoration of the natural environment will be viable only if local populations become involved in the planning of their biocultural resources. Although many NPAs have been shown to be effective for protecting biodiversity, in particular by stopping land clearing inside parks (Bruner et al. 2001), deforestation often increases in the border areas (Sánchez Azofeifa et al. 1997). Other main issues to consider about NPAs are that most of the time they exist only in law (“paper parks”), many lack management plans, skills of protected area managers are often deficient, and, generally, local communities are not considered (Beresford and Phillips 2000). As several authors have pointed out, despite conservation efforts, many protected areas in the tropics continue to be degraded, while unprotected forests are being converted by logging and agriculture.
As forests outside of protected areas disappear, the pressure on protected areas grows. Thus, it is of the utmost importance to conserve biodiversity by stopping and reversing habitat loss and extensive landscape changes.

In this article, we emphasize that landscape planning must consider cultural diversity and biodiversity for use, conservation, and restoration efforts. We offer a working hypothesis, a model for biocultural resource management (BCRM), that was derived through the evaluation of the different projects coordinated during 10 years by the Programa de Acción Forestal Tropical (PROAFT) throughout Southeast Mexico.

In Mexico, as much as 80% of unprotected forests with conservation status are in the hands of ethnic communities with collective land titles (Bray et al. 2003). NPAs constitute only 8% of the Mexican territory (Pronatura 2002). Therefore, we believe that, in Mexico, community conservation policies and strategies should be included as complementary to NPAs. Despite some views that emphasize parks as a central component of conservation strategies (Bruner et al. 2001), the areas outside NPAs are as important as the parks themselves. Both strategies should include local populations as central components of conservation policies; these are key actors for conservation efforts to be effective.

The Importance of Including People in Resource Management

Landscape planning and environmental management, comprising the relationship between humans and nature, may be classified into many different approaches and paradigms. For example, Briassoulis (1989) proposes six approaches: (1) comprehensive/rational, (2) incremental, (3) adaptive, (4) contingency, (5) advocacy, and (6) participatory consensual. On the other hand, Colby (1991) describes five basic environmental management “paradigms”: (1) frontier economics, (2) environmental protection, (3) resource management, (4) eco-development, and (5) deep ecology.

Regardless of these classifications, there is often a disparity between theoretical propositions and practical applications. Therefore, during the actual planning and management processes, approaches usually blend for coping with and adapting to the environmental and social context. The Biocultural Resource Management (BCRM) Model that we propose comprises two different planning approaches: (1) the adaptive, and (2) the participatory consensual (Briassoulis 1989). The first consists of successive and continuous adaptations for management that vary over space, time, environment, and socioeconomic conditions. This approach has been advocated by ecologists, political scientists, and landscape planners, because it helps society to learn from past mistakes and fosters social responsibility. The second approach emphasizes mediation and negotiation in the resolution of environmental conflicts. Furthermore, we identify our model within Colby’s resource management paradigm (1991). The main focus is on sustainability: regulation of the human–nature relationship, amelioration of poverty, and control of population growth.

In addition, we acknowledge that resource management activities have been influenced by two different philosophical views of conservation that are worth mentioning: compositionalism and functionalism (Callicott et al. 1998). In the first, born from evolutionary ecology, culture is what differentiates humans from nature. This philosophy encourages the establishment of reserves for biodiversity conservation and research activities, and focuses on endemic and endangered species without considering the role and costs that this may have for local human populations.
The other view, with which we identify our model, perceives nature in a holistic and ecosystemic way, where humans are part of nature. For example, Wishitemi and Okello (2003) discuss the necessity that Kenya’s protected area model incorporate local wishes and promote resource-based enterprises for development and conservation. Therefore, biodiversity conservation can occur in areas that are inhabited, managed, and protected by people.

Another important aspect to be taken into account for resource management is that we must include different stakeholders, but this implies including diverse perspectives and even emotional views of the best ways to manage the land and its resources. As Oreszczyn and Lane (2000) established in their study, although people do not feel experts in land use decisions, they do not necessarily have a naive view of their land and nature. Therefore, for researchers and planners it is useful to accept a variety of opinions and a certain degree of subjectivity while planning. Furthermore, the concept of social capital must be considered, because it is the basis for building trust, developing new norms, and improving natural capital outcomes (Pretty and Smith 2004). In the long term, social capital is the foundation for effective collective management of resources. By collective management is meant the participation of different stakeholders, independently of land tenure systems, but with an emphasis on legislation and respect for people’s needs and values.

Common resources and their “tragedy” have been a topic of discussion in recent times (Sugden et al. 2003). The debate has led several scholars to agree on the re-valuation of the concept of the commons and the idea of collective management of natural and cultural resources. Successful experiences of the commons are provided from local to regional levels, where resources can be closely accessed and where institutional and market conditions are supportive. For example, Pretty (2003) discusses the positive role of local populations in conservation and resource management in the long term. He points out the special role that social bonds and norms can play in sustainability and governance of resources. We consider social and human relations to be cultural assets and agree with Pretty (2003) that they are prerequisites for long-term improvements in natural resource management. Consequently, it becomes evident that resource management and landscape planning should not ignore their own social context, of which the rural community represents a fundamental element, where indigenous or local communities are strategic partners (Toledo et al. 2003). The main challenge in developing projects is crafting resource management and biodiversity conservation with social justice (Brechin et al. 2002).

Conservation biologists should no longer play the role of managers of other people’s lands but rather aim at being advisers and help people conserve biodiversity and secure their future (Colchester 2000). It is correct to draw attention to the pressure on biodiversity exerted by local communities, and to be skeptical about community-based natural resource management as a unique solution. To conserve biodiversity and manage resources, scientists and policymakers need allies where it really matters—on the ground—and few are better grounded than local people (Colchester 2000). Respect for people’s right to self-determination implies a fundamental change in the way conservationists and policy makers think and act (Colchester 2000). We need science and environmental policies to serve those directly involved in resource management (Holling et al. 2000).

There are difficulties, limitations, and challenges in involving people in this planning and management process because of the complexity of environmental and sociocultural systems and stakeholders’ multiple interests. The BCRM model
is not exempt from these difficulties. However, successful experiences in conservation and natural resource management exist that include local and indigenous people forming alliances with governmental institutions and nongovernmental organizations, and these inspired our proposal. These successful examples demonstrate the ability of societies to self-organize when government institutions fail. Some of them are traditional agroforestry systems such as home gardens and *chinampas* (Jiménez-Osornio and Gómez-Pompa 1991; Caballero 1993). Other examples are the community forestry enterprises of Quintana Roo State (Bray et al. 2003), and management of secondary vegetation by the Maya ethnic group (Nations and Night 1980). These efforts, although scattered and mostly on a small scale, are widespread in Mexico and other developing tropical countries (Gómez-Pompa and Kaus 1992). In addition, many examples of co-responsible landscape planning can be seen in other developing countries, as in India, Bolivia, and Brazil (Iriarte et al. 1999). Moreover, in many places that have been heavily deforested, the only sites that conserve original vegetation and wildlife are those managed through traditional agroecosystems (Steinberg 1998; Toledo 2003). This evidence reflects the urgent need to develop strategies for co-responsible resource management and conservation.

Finally, we have derived from literature and our own experiences the following statements that influence our analytical framework and model proposal:

- In most tropical areas members of the rural population, ethnic groups in particular, have practiced the most relevant in situ natural resource management and conservation (Altieri and Merrick 1987; Oldfield and Alcorn 1992; Toledo 1991).
- Traditional agroecosystems are self-sufficient diversified production systems, with ancestral anthropogenic origins. They provide a suitable habitat for a great number of species with important ecological and socioeconomic values (Alcorn 1984; Vandermeer and Perfecto 1997; Steinberg 1998).
- Coffee, cocoa, and vanilla groves are diversified cash crop systems that resemble natural ecosystems in their structure, dynamics, and function (Hart 1980; Ramos et al. 1996; Ewel 1999).
- Traditional knowledge and modern ecosystem management strategies provide rural communities with a fundamental role in the management of biocultural resources (Nations and Night 1980; Berkes 2004).

**Background of the Biocultural Resource Management (BCRM) Model**

The BCRM model is the result of 10 years of experience with a nongovernmental organization (NGO) called Programa de Acción Forestal Tropical (PROAFT) that carried out participatory work with communities in tropical areas of rural Mexico (Gómez-Pompa 1998; Amo 2001). This nongovernmental organization has been working with local populations since 1992 to develop resource management strategies for biodiversity conservation and rural development. PROAFT has received funds from national and international organizations such as the World Wildlife Fund (WWF), the Ford Foundation, the Mexican Fund for Nature and Conservation, the MacArthur Foundation, and the U.S. Agency for International Development. PROAFT’s staff comprises a group of biologists and social scientists whose work focuses on the development and conservation of tropical areas in Mexico. PROAFT actions and workshops involved 24 counties of seven Mexican states, with 20 legal community organizations, 24 projects completed, 83 technical courses,
and 1,421 participants from nine indigenous groups (Amo and Vergara-Tenorio 2007). The mechanism for participatory work is called the Tripartite Alliance and includes the following operative elements: (1) a group of local people interested in undertaking a concrete experience in a management project; (2) a local or regional institution, for technical training and as an advisory support group to facilitate direct collaboration with local communities; and (3) PROAFT, which has been in charge of coordination, financial support, and training support for each Tripartite Alliance project, as well as fundraising from governmental and nongovernmental sponsor agencies. This system facilitated the monitoring of conservation and management activities.

The main requirement for forming a Tripartite Alliance was that communities commit themselves to conserve their resources and conduct reforestation activities. Examples of the activities that have operated as Tripartite Alliance projects are tree nurseries, reforestation, intensive livestock, goat ranching, enrichment of secondary forests, rescue of native bees by reforestation with multipurpose species, and ecotourism.

Methods for Evaluating PROAFT’s Projects for Building the BCRM Model

The evaluation of PROAFT’s projects included the following elements: group organization, productive systems, social characteristics, training, financial schemes, and marketing of products. The mechanism for collecting information regarding the success of activities was through the monitoring of projects. Monitoring activities included workshops, interviews, questionnaires, field visits, and self-evaluation activities. The information obtained was used to produce annual and final reports for each project. Monitoring activities were carried out both by the advisory support group of each Tripartite Alliance and by the groups of producers themselves.

From 1992 to 1999, eight annual evaluation workshops were conducted by PROAFT. In these workshops assistance was represented by people from each of the three elements that composed the Tripartite Alliances (producers, institutions, and PROAFT staff) for the 24 projects. Assistance to the workshops involved members of different communities. For example, in 1997 a workshop conducted included the participation of 45 people, both male and female, who came from 25 southeastern rural communities. In the workshops the evaluations consisted of assessing changes in land use systems using game techniques, map building, questionnaires, forums, and field visits, among other activities. Moreover, the advisory technical group was in charge of in site evaluation and monitoring. These groups assessed the adequacy and permanence of each project, and the people’s participation through strategic planning. In these evaluations the following criteria were considered: group organization, budget administration and management, and conservation activities.

In total during the assessment we observed the number of direct participants (1,421), people trained (1,322), and beneficiaries (4,932), as well as the number of restored or diversified hectares (2,670), number of planted trees (158,620), plants produced in community nurseries (51,350), number of animals or wildlife reproduced (754), and number of organizations formed (20). We also asked people about the advisory-group performance and had discussions about possible new activities for conservation, restoration, and sustainable management of natural and cultural resources (Amo 2001).
The systematization of the workshops, and other evaluation and monitoring activities, gave us key information for documenting and understanding the mechanisms of co-responsible resource management in rural Mexico. This information has been analyzed in detail in the following publications: an independent evaluation report by Agency for International Development (Davenport 1995), an internal evaluation report by PROAFT (Amo 2001), one book chapter (Amo and Rorive 2003), and a peer review paper (Amo and Vergara-Tenorio 2007). This information also led us to the design of the BCRM model as a conceptual representation of the experiences provided by the different projects that had been implemented and evaluated that serves as a tool for the design of future projects.

In this sense, in order to build the BCRM model, we first identified the main land use systems that had been represented by the Tripartite Alliances experiences, and the people’s needs concerning production and conservation, traditional management practices, and successful agroforestry systems. Then we defined ideal landscape units, with different management conservation levels, each of them with different spatial, temporal, and cultural meanings. Toledo’s (2003) proposal of indigenous multiuse strategies was important to assess the model’s design.

The BCRM model is based on the empathy between two main components: natural and cultural resources. The model proposes co-responsible landscape planning that integrates local populations, scientists, technicians, and members of the civil society in an effort to develop strategies to manage resources for use, conservation, and restoration.

Results: The BCRM Model

In order to construct the BCRM model, the assessment of the evaluations conducted to the Tripartite Alliances projects was used. As stated, the workshops and other activities regarding the evaluation of the Tripartite Alliances performance were characterized by a dialog among technicians and local people and included the analyses of co-responsible landscape planning and alternative schemes for conservation and management actions.

Among of the project’s achievements are: a list of important species for conservation, reforestation, and agroforestry systems; identification of multiple and diversified productive systems; use of traditional practices; and sustainable forestry systems. In Davenport (1995), a report of the main positive qualities achieved through the implementation of the Tripartite Alliances in terms of the social system included: the enthusiasm of the participants in the projects, creativity and innovation exerted, the number of new members that became integrated in each project, volunteerism, credibility and trust, reassessment of cultural identity, and recovery of self-esteem. Regarding group organization, we found an improvement regarding participatory planning skills of groups in which the participation of women and older persons was also relevant. In summary, PROAFT successfully helped establish 24 reforestation programs, 10 “Campesino” reserves, and 20 agroforestry projects. Through different financial schemes supported by the European Economic Community and Nacional Financiera, we helped create 25 micro-enterprises that commercialized 21 products (i.e., honey, vanilla, coffee, palms, and handcrafts) (PROAFT 1996).

All of PROAFT’s work and activities inspired the BCRM as a theoretical model that helps plan for management systems in tropical areas through
co-responsible participation. The model considers traditional indigenous knowledge and management practices of different ethnic groups in México that participated with PROAFT. It comprises different units of production and management conservation levels and outlines the social and environmental aspects implied.

The units of production that comprise the BCRM model are represented as rings and are structured along four management conservation levels accommodated in concentric circles. In general terms, the circular representation has spatial, temporal, and cultural meanings (Figure 1). The core area represents the household surrounded by the home garden, which provides basic family needs and is especially important for women, children, and the elderly. As the rings spread farther away, more space is needed for agroecosystem productive activities. These units provide food and cash crops and a possible surplus that can be used for cash or exchange. Finally, the outermost ring represents the “natural ecosystem” that functions as the fringe of the management-conservation system and as the connection to other systems. This ideal pattern is observed in various ways in many natural resource management schemes of different ethnic groups of tropical Mesoamerica.

More specifically, the first level of management in the model is the most intensive, and is represented by the first two rings. These are the home garden and the horticultural units where we generally find spices, fruits, medicinal

Figure 1. The Biocultural Resource Management model.
herbs, ornamental plants, poultry, and other animal species generally intended for subsistence and animal feed, but surplus can be commercialized or exchanged. At the second level, management is less intensive. It comprises two rings that include fruit orchards, cattle ranching, and agricultural crops like milpa. The third level of management is less intensive than the previous one and is structurally similar to natural vegetation. It comprises different agroforestry systems and can be used for exchange or commercialization of goods and services with the external market. The fourth level of management, the least intensive, comprises natural ecosystems and includes communal ecological reserves where only extractive activities are carried out. The levels that are farther away from human settlement, use, and management have less environmental impact. Hence, at the fringe of the model, mature forest patches are interconnected and become more complex, diversified, and complementary. The outermost ring is the most important for biodiversity conservation because it is the most suitable area for maintaining and restoring biodiversity, since it can be connected with other systems' fringes and form mature forest corridors and webs.

In Figure 2a and b, we display in schematic form the different resource management levels of the BCRM model. The scheme represents mosaics of agroecosystems and natural ecosystems in different successional stages, from heavily managed to conserved areas, immersed in a matrix of land use (Figure 2a). When several communities adopt this model, connections between fringe zones are established, and corridors that permit the exchange of different wild populations are created (Figure 2b). In other words, this spatial distribution allows the creation of ecobelts. In ecological terms, these systems are less vulnerable and more resilient and diversified and, in socioeconomic terms, more realistic. The model entails the idea of dynamic ecosystem stability and resilience.

**Implementation and Viability of the BCRM Model**

The model is an integrative approach for planning, managing, conserving, and restoring natural and cultural resources in rural communities. It is a reflection of ways in which local and indigenous populations have traditionally managed their resources for centuries. We recognize that many rural communities are struggling with adapting to new ways of life and values, given globalization and
modernization processes that include, in many cases, the loss of traditional resource knowledge. Therefore, to implement this proposal it is important to enhance traditional identities and preserve traditional practices and resource management systems.

The proposed model provides new insights into biocultural resource management. It is a link between social and ecological elements, representing a stable scheme for establishing resilient landscapes. It is an opportunity to rethink and rescue the role of common land rights systems and to allow a rational use of resources. The model can be established in communities with already disturbed or eroded natural ecosystems and/or agroecosystems, by restoring structure and function using agroecological principles (Hart 1980; Gliessman 1998). The viability of the model depends on the following: (1) to create resilient landscapes with high levels of biodiversity (Bengtsson et al. 2003), and different resource use units for self-sufficiency and income; and (2) to enhance social organization and participation by using indigenous and local knowledge as a tool for management and conservation (Berkes and Folke 1998).

Biocultural resource management requires internal human intervention and social interaction, starting with landscape planning, followed by design and implementation stages, including monitoring and redesigning, using an adaptive management approach, and emphasizing cultural–natural processes. The focus should be on encouraging diversified and multi-stratified agroecological systems, modeled on the basis of natural systems (Hart 1980; Gliessman, 1998). The model allows for ecological management and social objectives at the local level. The ecological management objectives are as follows: (1) sustainable use of natural resources, (2) conservation and restoration of ecological processes, (3) in situ conservation of cultivated and wild native germplasm, (4) reinforcement of food production, and (5) decrease in negative impact of land use. The social objective is the enhancement of the social system through decision making (Rowlands 1998), self-determination (King and Ezaguirre 1999), food security, access to resources, empowerment (Rowlands 1998), organization, and communication (Pfeffer et al. 2001).

Several challenges exist for implementing the BCRM model. Organization and active participation of local communities for participatory landscape planning are essential for the implementation of the model, but in practice, this is difficult to achieve. Social networks need to be built and strengthened to ensure success in the implementation of the model. An example could be that to create ecobelts, different communities must act upon agreements and established norms that operate through social networks.

Another challenge when working with local populations is that most of the time this entails working with marginal groups such as ethnic groups and women who need to increase their self-esteem and to revalidate their culture in order to play a proactive and positive role in management. In addition, it is difficult to guarantee that the benefits are distributed to the whole community in a fair way or that all participants will adopt conservation practices. A final major challenge to implement this model, at least in Mexico, would be to restructure the governmental institutions in order to be more egalitarian. Government management and conservation policies for rural areas should include viable financial, educational, and technical support instead of functioning through assistance policies. A key element is to recover the spirit of the collective use of land in Mexico,
recognizing and respecting both the common and the private land tenure systems in spite of newer reforms that are currently making communities parcel their common lands.

Finally, we would like to discuss the actions required for the implementation of the BCRM model (Figure 3). The basic productive system is nature, which comprises ecosystems and biodiversity. It is related to the operational principles and actions regarding management, conservation, and restoration, through participatory landscape planning. Life support systems consist of environmental services and natural resources, which are integrated into human production systems through the activation of the local economy. The peoples’ system, which includes cultures, groups, and places, is directly related to cultural enhancement and equal participation of social actors.

---

Figure 3. Actions for the implementation of the Biocultural Resource Management model.
Community participation should be endogenous, ascendant, and stimulating. It starts with the appropriation of current and alternative productive activities by the local population, followed by a participatory landscape planning process. The planning process should incorporate the community’s knowledge of natural resources and the environment and consider the existence of different “internal components” that are interconnected. It should generate awareness by the participants of their knowledge and capacity to interpret their environment. Three fundamental questions should be answered: (1) What resources do we have and what is their current status? (2) What changes have occurred regarding the natural resources during the last two or three decades? (3) How do we want to manage our resources in the short, middle, and long terms?

Testing the viability of the model is a next step for our research team. This is going to be done through the establishment of several pilot projects to improve existing land use systems and projects in ecological restoration and conservation. These projects should monitor the processes of environmental restoration, revaluation of cultural practices, social learning, and organization. A system of monitoring and feedback is a fundamental requisite for the adaptive management process and helps deal with change (Holling 2003). The use of ad hoc indicators is necessary to build and evaluate links between natural and social sciences. Indicators should have enough flexibility to adapt to particular situations and should also evaluate whether social learning is plural and representative (Weiss 1966; Rölling and Wagemakers 2000).

Conclusions

The most striking facts in developing countries are that, in the last three decades, poverty and migration from rural areas have increased. In Mexico, the rural sector has been affected the most with a disintegration of local economies, which has influenced its culture and forms of organization (Bartra 2003). This is a consequence of current natural resource policies that are made centrally, in an elitist way, and without considering the rural population. Hence, it is of utmost importance to include people in planning processes in rural areas, through participatory processes and resource management models. Although it is essential to acknowledge that local control does not always lead to sustainable use or conservation, we have to give people the opportunity to participate in the planning of natural resource management. Community landscape planning and biocultural resource management is another way to maintain sustainable landscapes outside of natural protected areas and managed forests. These processes strengthen the idea of alternative strategies that complement conservation and restoration.

Sustainability is reached through a social learning process in which we all take part. It is conceptualized as interactions between productive systems (nature and people), and operational principles and actions. In our model the social learning process implies recognition of local interests and needs, taking into account the external system’s inputs and outputs. The BCRM model arises from a co-responsible way of thinking about nature and culture. This model considers an integral management of natural and cultural resources, expanding the productive base to include wildlife management, environmental services, and cultural expressions. It is a holistic sustainable model with a resilient internal organization, where pluriethnicity is a keystone.
References

Agrawal, A., and C. C. Gibson. 2001. The role of community in natural resources conser-
vation. In Communities and the environment: Ethnicity, gender and the state of community-


