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Sacred Nature and Community Conserved Areas

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Introduction

There is increasing recognition that biodiversity and cultural diversity are interconnected through cultural meaning (Posey, 1999), the use of language (Maffi, 2001) and local ecological knowledge (Berkes, 2008). Such biological and cultural diversity is thus connected by the various processes of the integrated social-ecological systems that make up the biosphere (Berkes and Folke, 1998). This chapter assesses Indigenous and Community Conserved Areas (ICCAs), and their associated livelihoods, cultures and spiritual beliefs that centre on nature. Biodiversity conservation is imperative to livelihoods that depend upon nature to produce ecological services for human well-being (MEA, 2005). But humans also have cultural and spiritual needs. In many parts of the world, belief in a sacred nature underpins people's land and resource use while in pursuit of livelihoods. Moreover, traditional cultural and spiritual values provide the context in which environmental stewardship can be nurtured. As Kothari (2009) puts it, the future of conservation lies at least partly in the past.

ICCAs provide examples of both novel and age-old approaches to safeguarding against common threats to biological and cultural diversity, and against the social and environmental consequences of this loss (Borrini-Feyerabend et al, 2004a; Kothari, 2006). In 2009, the IUCN defined ICCAs as 'natural and/or modified ecosystems containing significant biodiversity values, ecological services and cultural values, voluntarily conserved by indigenous peoples and local communities, both sedentary and mobile, through laws or other effective means' (IUCN, 2009). ICCAs comprise a diverse set of designated areas. While older ICCAs are more clearly associated with the sacred and spiritual beliefs of local groups, newer ICCAs tend to involve a complex



rationale that combines a subtler sense of the sacred together with a more prominent set of livelihood and resource productivity concerns.

ICCAs are found in both terrestrial and marine settings, and can range in size from <1ha in sacred groves in India to >30,000km² indigenous territories in Brazil (Oviedo, 2006). These areas, however, largely remain unrecognized by most conservation agencies. While they could (and should) be recognized for what they contribute to national and international conservation objectives, there is little documentation of their potential or discussion of their policy implications to date. As the IUCN acknowledges, ‘the history of conservation and sustainable use in many of these areas is (often) much older than government-managed protected areas, yet they are often neglected or not recognized in official conservation systems... and many face enormous threats’ (IUCN, 2009).

In this chapter, we look at the role that ICCAs could play in managing multiple values (conservation-spiritual/cultural-livelihoods) in multiple-use landscapes where a great deal of the world’s remaining biological and cultural diversity is located. We begin by examining the historic and contemporary context of ICCAs, before proceeding to a case study from Oaxaca, southern Mexico. This case illustrates the difficulties in matching official interpretations of the ICCA concept to local, on-the-ground realities, and the challenges facing the integration of ICCAs into national protected area (PA) systems. The chapter concludes by discussing a number of policy issues related to assessing the conservation benefits of ICCAs as part of multifunctional, cultural landscapes. These include threats to community control of ICCAs, finding the right mix of governance regimes to further biodiversity conservation while protecting local rights and values, and integrating traditional knowledge into PA management.

Traditional Systems Evolving into Mixed Strategies for Biodiversity Conservation

While ICCA may be a new term, the idea of natural areas conserved by communities is not. The traditional basis of conservation is older than the modern conservation movement and goes back to the time of temple gardens in Asia and European game preserves (Borgerhoff Mulder and Coppolillo, 2005). Probably the best known form of traditional conservation – sacred forests or sacred groves in India – have been documented in detail, and traditional sacred areas of diverse descriptions are found in all parts of the world (Ramakrishnan et al, 1998). There are most likely more of these sacred areas than appreciated today; a preliminary survey conducted in Ecuador identified 328 sacred sites (Oviedo, 2006) and, in a pilot project in the Russian North, 263 sacred sites were identified, described and mapped from interviews with indigenous elders of just one district of the Yamal-Nenets Autonomous region. These sites were located on some of the best hunting grounds and contained high biodiversity or rare species, migration routes and unique landscapes (AHDR, 2004). This demonstrates the intricate connection between ecological values and resources important for livelihoods. Furthermore, similarities between traditional and modern conservation are greater than many appreciate. Colding and Folke

(1997) found that nearly one-third of species-specific taboos held by indigenous peoples worldwide corresponded to threatened species that appeared on the IUCN Red List.

The World Heritage Sites network of United Nations Educational, Scientific and Cultural Organization (UNESCO) includes many sites dedicated to the integrated conservation of cultural and biological diversity; sacred mountains, sacred forests, temples and shrines, and sacred lakes and springs. Table 11.1 illustrates the broad diversity of sacred natural sites and the range of geographic regions in which they may be found (Schaaf and Lee, 2006). It is therefore no accident that many national parks around the world have been established at the sites of former sacred areas. These include the Alto Fragua Indiwasi National Park, the first national park of Colombia created at the request of indigenous groups. Another example is the Kazdagi National Park in western Turkey, established in an area with centuries-old sacred sites and a high diversity of trees used by local woodworkers for crafting a diversity of wood products since the time of the Ottoman Sultan Mehmed II in the 1400s (Berkes, 2008).

In some parts of the world, traditional conservation co-exists with government conservation. In the Western Ghats of south India, one of the world's recognized biodiversity hotspots, researchers have found high levels of biodiversity in traditional sacred groves comparable to that in PAs (Bhagwat et al, 2005). Threatened tree species were more abundant in sacred groves, but

Table 11.1 *A typology of sacred natural sites as reflected in the UNESCO document*

Site	Examples from the UNESCO document
Sacred mountains	<ul style="list-style-type: none"> • Sacred sites and pilgrimage routes in the Kii Mountain Range, Japan • Mount Fuji, Japan • Sacred peaks of the Nepali and Indian Himalaya • Adam's Peak in the cultural landscape of Sri Lanka
Sacred landscapes	<ul style="list-style-type: none"> • Sacred hidden valleys (<i>beyul</i>) of Nepali Himalayas • Sacred sites and burial sites (<i>mazars</i>) of Kyrgyzstan • Cultural landscape (<i>tsodilo</i>) of the Kalahari, Botswana • Sacred sites in Globally Important Indigenous Agricultural Heritage Systems (GIAHS), such as rice terrace systems • Gran Ruta Inca, the ancient route through the Andean Highlands • Sacred islands, such as the Solovetsky Archipelago in the White Sea, Russia
Sacred forests	<ul style="list-style-type: none"> • Sacred forests in temples and shrines, Japan • <i>Kaya</i> forests of coastal Kenya, sacred areas with protective magic • Sacred groves and ritual use, Ghana • Co-managed Bolivian sacred forests and indigenous lands
Sacred water	<ul style="list-style-type: none"> • American Indian sacred springs and waters of New Mexico • Sacred Sites and Gathering Grounds Initiative, Arizona • Sacred lakes and springs, Huascarán World Heritage Site and Biosphere Reserve, Peru • Rivers of the Ainu people, Japan

Source: Schaaf and Lee (2006)

endemic tree species were more abundant in the government forest reserve. Researchers also found high biodiversity in multi-species plantations dominated by shade-grown coffee. In these locally developed agroforestry systems, annual, perennial and tree crops are grown together by small landholders in species combinations that have evolved over hundreds of years. While national governments and international conservation organizations emphasize the importance of formal PAs, often to the exclusion of other kinds of protection, it seems that the biodiversity of the Western Ghats is the product of a combination of traditional conservation, agroforest-dominated cultural landscapes and government protection. In this integrated conservation area, sacred groves and agroforestry plantations are just as important as formal PAs (Bhagwat et al, 2005).

In contrast to the apparently deliberate conservation of landscapes and species through sacred areas and taboos, high species richness in some areas is the (non-deliberate) product of traditional livelihood practices. For example, in Australia's Western Desert, Bird et al (2008) showed that indigenous burning for purposes of small game hunting results in the formation of small-scale mosaics that increase habitat diversity. In areas where indigenous burning no longer takes place, the mosaics are much more coarse-grained, leading to a loss in habitat diversity and a decline of small mammals. There are many examples demonstrating the role of traditional livelihood practices in generating landscape level diversity, which leads to species and genetic diversity. Large areas of southern Mexico exhibit high species richness despite the absence of official PAs. In the case of Oaxaca, Mexico, Robson (2007) attributed this to local and indigenous practices that result in multi-functional cultural landscapes. These areas exhibit high beta-diversity¹ due to a mosaic of multiple-use forests and small-scale agriculture along environmental gradients. In the Peruvian Andes, the centre of origin of the potato, Quetchua indigenous people maintain a mosaic of agricultural and natural areas. The 8500ha area, now a designated biocultural heritage site, contains some 1200 cultivated and wild potato varieties. The Quetchua do not make a distinction between the cultivated and wild, and instead perceive the two as part of a continuum (Pathak et al, 2004).

These Indian, Mexican and Peruvian cases exemplify mixed systems that respond to contemporary issues and livelihood needs, while retaining historic sacred relations and traditional land use practices. This is an increasingly common scenario in areas where historic and sacred values of nature now combine with a livelihood dimension and/or a 'learned' conservation ethic. These cases also highlight the fundamental difference between formal PAs and ICCAs. The primary objective of the former is biodiversity conservation, whereas the latter are established for family and community well-being, such as the provision of clean water, as well as for spiritual and cultural reasons. However, ICCA management systems and practices often produce similar outcomes to those being strived for by conservationists from industrialized nations, and this is not coincidental. Despite lacking a modern conservation discourse, local resource users often have well-developed concepts for productive landscapes and waterscapes that provide a diversity of ecosystem services and products to meet livelihood needs (MEA, 2005).

What is also clear is that many indigenous and non-industrial peoples make little or no distinction between the biological, economic, spiritual and social objectives of conservation, and tend to regard these aspects as inter-related. In the worldview of many indigenous groups, from the Cree and Dene of northern Canada and the Maori of New Zealand, to the Zapotecs, Mixes and Chinantecs of northern Oaxaca, the use and protection of natural resources go hand in hand. A person has to use a resource in order to respect it and feel a responsibility towards it. According to this view, conservation without use can be damaging because it alienates people from their lands and from their stewardship responsibilities. Biological and cultural diversity necessarily go together as part of an integrated social-ecological system (Berkes and Folke, 1998).

Rise of ICCAs: The Contemporary Context

In addition to historic ICCAs, such as sacred groves, new ICCAs have been established in recent years. Most of the marine ICCAs fall into this category and are largely situated in the Asia-Pacific region. These areas are a legacy of the rich heritage of traditional reef and lagoon tenure systems in which the use of closed areas, closed seasons and taboo species is common. More than 500 locally managed marine areas are found in the Philippines and more than 300 in Fiji, reflecting rapidly growing networks resulting from the efforts of leading island nations (LMMA Network, 2009). In terrestrial areas, ICCAs often emerge out of a combination of traditional practices applied to new species, and an evolving consensus on what constitutes environmentally friendly land use practices. For example, shade-grown coffee, now common in agroecological systems across Asia, Africa and Latin America, is a new 'innovation' in response to growing international markets for green products (Tucker, 2008).

A novel development that has driven the designation of some new ICCAs is the policy of payments for environmental services (PES). Although PES-like systems existed in the US in the 1980s (particularly in watershed management and soil conservation) and in various other countries in the 1990s, the practice is relatively recent. The original principle was to compensate communities for foregoing use and conserving their forests, based on the value of environmental services generated by these forests, for instance, watershed protection, carbon sequestration and biodiversity conservation. Since then, the concept has been used extensively in Latin America and southeast Asia through the efforts of organizations like the World Bank and the Centre for International Forestry Research (CIFOR). Certification of products is a mechanism that can be connected to PES and facilitates access to 'green' markets. This innovative economic approach spread particularly rapidly through countries such as Costa Rica and Mexico (Wunder et al, 2008). PES policies, therefore, provide a mechanism to integrate the conservation, livelihood and cultural objectives of community PAs, explaining their rapid adoption in many areas.

The multiple objectives of ICCAs compared to government-PAs, and how the two sets of objectives might become integrated, are perhaps best considered

through a set of case studies. Table 11.2 lists five relatively recent ICCAs from a range of geographic areas, all of which involve indigenous or tribal groups.

The Namibian ICCA shown in the table is designated under PA status. It borders Namibia's Etosha National Park and is part of a national network of conservancies that devolve wildlife rights, use and benefits to local communities (Hoole, 2008). This provides an example of the diversity of community-based conservation areas in southern Africa that originated with the Communal Areas Management Program for Indigenous Resources (CAMPFIRE) in Zimbabwe in the 1980s and spread to other countries like Zambia and Mozambique (Fabricius et al, 2004).

The Guyana example in Table 11.2 involves the community conservation of the giant Amazonian fish, arapaima, and is located within an existing PA, the Iwokrama Forest. Here the monitoring of the fish population and the enforcement of the fishing ban are carried out by the local Makushi people. These fish are territorial and live in shallow water. Monitoring relies on the ability of local fishers to identify individual fish from the surface disturbance they create when they come up to breathe air, and count them without marking or other intrusive measures. The enforcement does not rely on government regulation

Table 11.2 *Diverse objectives for establishing modern ICCAs*

<i>Cases and designations</i>	<i>Local objectives and priorities</i>	<i>Reference</i>
Ehi-rovipuka Conservancy, Namibia, 1975km ² , one of Namibia's 50-plus conservancies	Capture economic benefits of wildlife use and ecotourism; employment; meat from wildlife; enhance community organization and empowerment; participation in wildlife management	Hoole (2008)
Arapaima Management Project of the North Rupununi District Development Board, Guyana	Community-based conservation as investment for future use of arapaima (<i>Arapaima gigas</i>), the giant Amazonian fish; collateral donor support; empowerment through better organization and participation in multiple-resource management	Fernandes (2005)
Paakumshumwaaui-Maatuskaau Biodiversity Reserve, 4259km ² , Cree Nation of Wemindji, Quebec, Canada	Biodiversity and landscape conservation; security from hydro-electricity development threat; biodiversity and landscape conservation to safeguard traditional lifestyle; reaffirming land and resource rights; community identity, cohesion and cultural values	Quebec (2008)
Nuevo San Juan, Mexico, 18,000ha, community-based forestry enterprise	Economic and social development; multiple-use forest ecosystem for timber and non-timber forest products; grazing; financing of health and social services; control of traditional lands	Orozco Quintero (2007)
Regional Committee for Chinantla Alta Natural Resources (CORENCHI), northern Oaxaca, 26,000ha	Conservation of diverse tropical forests; development of common strategy for PES approaches; strategy to preserve common property within territorial borders; creation of communal statutes to normalize and regulate use of and access to resources	Camacho et al (2008)

but is based on social sanctions used by the whole community ('more eyes watching') (Fernandes, 2005).

The Canadian example is a biodiversity reserve created at the request of an indigenous group, the Wemindji Cree of James Bay. The original objective was to save a heritage river from possible hydroelectric development in a region where all the major rivers have already been dammed. Facilitated by a research group based at McGill University, Montreal, the Cree carried out consultations and began to develop a nomination document. In the process, they found many other reasons why protection should be implemented. The Quebec government supported the proposal as it facilitated meeting the PA quota for the province. Thus, the nomination document was prepared in about a year in a country where the nomination of a new PA under indigenous land claims can easily take a decade.

Of the two Mexican examples, the Nuevo San Juan case, state of Michoacán, is a long-standing ICCA dating back to 1983. The forestry enterprise emerged from the struggles of the 1960s and 1970s with forest concessions, in which local forests were heavily exploited by outsiders. Taking advantage of existing legislation and developing numerous partnerships to build capacity for starting up and running enterprises, community leaders chose to fight privatization by the use of a communal entrepreneurship approach (Orozco Quintero, 2007). The enterprise has become renowned for achieving value-added production, high diversity of products and by-products, and re-investment of profits for community social development. Nuevo San Juan, therefore, has been successful at balancing livelihood needs with conservation objectives, while increasing the land area under forest cover (Castillo and Toledo, 2000).

The second Mexican case is a much more recently designated ICCA in Oaxaca and involves a coalition of six Chinantec communities known as CORENCHI. A planning process took place among the CORENCHI communities between 2000 and 2006 that led to the demarcation of different land use zones, including conservation areas to protect high-biodiversity forest ecosystems. These zones cover more than 26,000ha in total, or approximately 80 per cent of the combined territories of member communities. The CORENCHI example is part of a new generation of ICCAs set up to strengthen communal control of natural resources and obtain greater socio-economic benefits through conservation efforts. Parallel to land planning, the CORENCHI community conservation process was stimulated by PES from the *Comisión Nacional Forestal* (the National Forestry Commission, CONAFOR) and certification by the *Comisión Nacional de Areas Naturales Protegidas* (the National Natural Protected Areas Commission, CONANP). As such, the CORENCHI experience complements the more detailed Oaxaca case study to follow, which focuses on a Chinantec community that is yet to apply for government recognition of its ICCAs.

Perhaps the most striking feature of Table 11.2 is the wide range of motivations for establishing ICCAs: access to livelihood resources, security of land and resource tenure, improving communal resource management regimes, security from outside threats, financial benefit from resources or ecosystem functions (including PES), certification, provision of critical ecosystem services such as clean drinking water, rehabilitation of degraded resources,

empowerment, capacity building, and cultural identity and cohesiveness. These motivations match many of the dominant conservation perspectives of local communities identified by Kaimowitz and Sheil (2007). Furthermore, each of the cases has multiple objectives, often combining economic, ecological and social aspects. Most cases in Table 11.2 are recent ICCAs; as such livelihood needs are often the main drivers. However, ethical and cultural values are still important because they underpin livelihood objectives. Thus, customary attachment to land and tenurial security are major motivations.

In some of the examples, cultural values are implicit. In the Guyana case, for example, the arapaima was once considered by the Makushi people as ‘mother and father of all the fishes’ and was protected by local taboos. The modern Makushi, however, say that they do not believe in such superstitions, but still their actions support the continuity of traditional conservation (Fernandes, 2005). In many cases, the needs of future generations are an integral part of the ICCA narrative. This comes across most strongly in the Canadian case where a locally managed PA was established ‘so our grandchildren can hunt and fish’. This is also emphasized in the Guyana case in which the Makushi are willing to forego current arapaima harvests for enhanced future potential, and in the Oaxaca case where the CORENCHI communities hope to strengthen the local economy through ICCAs in order to reduce rural-urban migration of young people. Although spiritual or sacred values are not always explicitly stated as drivers for the establishment of new ICCAs, they typically have an implicit underlying role, particularly in informing family and community-level discussions that evaluate the merit of establishing PAs.

The rise in ICCAs has been paralleled by recent dramatic shifts in international conservation paradigms and thinking. While the formal conservation movement has long attempted to separate people from so-called pristine ecosystems, and focus its efforts on islands of biological diversity, the ‘last five years has seen a remarkable turnaround towards linking protected areas (or conservation more generally) with the traditions and practices, livelihoods and aspirations of indigenous peoples and other local communities’ (Kothari, 2009). However, some caution is needed, especially given that the successful integration of ICCAs into national and international conservation systems would first require a range of conditions to be in place, including policy support, on-the-ground capacity and tenure security (Kothari, 2009). We explore some of these ideas further through another case study from Oaxaca. Home to more than half of Mexico’s ICCAs, Oaxaca offers an ideal opportunity to see how ICCAs work on-the-ground and the implications of their integration into a national PA system.

ICCAs in Oaxaca

Oaxaca is nationally and internationally renowned for its biological and cultural diversity (García-Mendoza et al, 2004). Its highly variable topography and climate has given rise to a range of landscapes and ecosystems. This natural environment has co-evolved with diverse indigenous groups who trace their origins to the hunter-gatherers that arrived in Mesoamerica up to

15,000 years ago (Smith and Masson, 2000). This biocultural diversity is still evident today. It is estimated that between 80–90 per cent of Oaxaca's tropical and temperate forests are under the management and control of 1400 local communities (Sarukhan and Larson, 2001; Bray et al, 2008). These communities represent 16 of Mexico's 53 indigenous groups. Many have developed intimate relationships with their natural resources and innovative management practices that lead to multifunctional, cultural landscapes (Robson, 2007). Territorial planning is based on a mosaic of land uses that include forest protection, timber extraction, the harvesting of non-timber forest products, and maize or bean cropping systems (Robson, 2007; Hunn, 2008).

Recent years have seen the establishment of ICCAs, managed as part of local common property regimes. The reported number of ICCAs in Oaxaca differs depending on the source consulted and the definition being used. According to Anta and Perez (2004), 44 communities have set aside conservation areas comprising a total of 175,000ha. In a subsequent study, Anta (2007) identifies only 42 certified community reserves (covering 91,318ha) and 90 voluntary conservation areas (covering 265,720ha). Bray et al (2008) refer to 236 'informally protected' community areas in Oaxaca, covering an estimated 240,000ha of forestlands. While many areas relate to local conservation efforts that are explicitly recognized by communities, governmental agencies, non-governmental organizations (NGOs) or academics, others fall under different land uses. Despite this somewhat confusing picture, two things are clear about ICCAs in Oaxaca. Firstly, there are far more of these areas here than in any other Mexican state. Secondly, ICCAs in Oaxaca cover at least half the area afforded protection by state or federal parks and reserves. These community initiatives represent a wide range of target eco-zones and cover a number of the 'priority' and 'extreme priority' sites recently identified by the country's conservation planners (CONABIO-CONANP et al, 2007). For example, of the 191 species of mammal found in Oaxaca, 32 per cent were found in state and federal PAs, 37 per cent were found in community PAs and 55 per cent were found in both classifications of PA. It has also been reported that 30 per cent of Oaxaca's endemic species at risk are found in the state's ICCAs (Anta, 2007).

The rise in the number of ICCAs in Oaxaca and other Mexican states has led to important policy and legislative changes. In May 2008, reforms to the *Ley General de Equilibrio Ecológico y la Protección al Ambiente* (General Law of Ecological Balance and Environmental Protection, LGEEPA) opened the door to the certification of ICCAs under the title of Voluntary Conservation Areas (VCAs). The VCA mechanism certifies participating communities for the establishment, administration and management of PAs that meet national biodiversity conservation goals. These areas are recognized for the provision of environmental services and meeting conventional PA objectives. Furthermore, products from the sustainable harvest of (restricted) forest resources will receive a government-endorsed 'sustainability seal' to facilitate access to 'green' markets. The LGEEPA's newly-modified Articles 46 and 59 mean that VCAs could be officially recognized by federal government and incorporated into the *Sistema Nacional de Áreas Protegidas* (National System of Protected Areas, SINAP).

According to the latest figures, 127 VCAs are listed by CONANP (June 2009). Of these, 63 belong to indigenous communities, 17 of which are located in Oaxaca. The majority of Oaxacan ICCAs, however, have yet to be registered under the VCA certification mechanism. Thus, they are not formally recognized by government as contributing to national biodiversity conservation goals, nor do they appear on any map of national or state PAs. The following case study provides an opportunity to explore how the Oaxacan experience fits our broader understanding of the ICCA concept and the challenges faced by communities who seek official recognition for their conservation efforts.

Santiago Comaltepec, Northern Oaxaca

Located in the Chinantla region of northern Oaxaca, the indigenous Chinantec community of Santiago Comaltepec holds title to 18,366ha of communal lands. These include extensive tracts of tropical dry forest, temperate pine-oak forest, montane cloud forest and tropical evergreen forest. The community's cloud forest covers some 5500ha with little fragmentation and forms part of the largest and best conserved areas of this forest type in Mexico. The community's forests provide a range of vital hydrological services to both the local populace and downstream users.

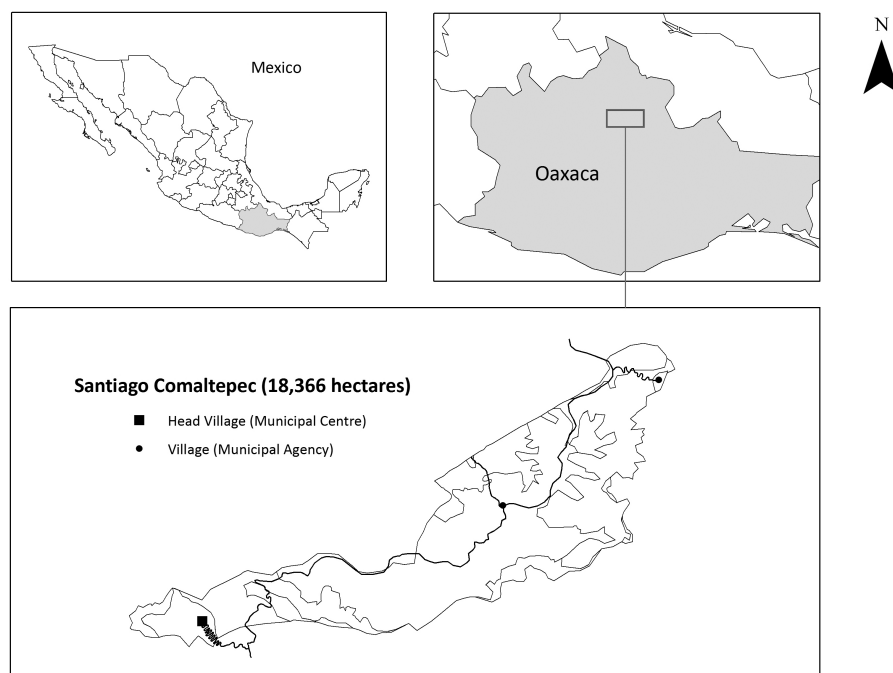


Figure 11.1 *Location and layout of Santiago Comaltepec, Sierra Norte of Oaxaca, Mexico*

Table 11.3 *Land use zones, communal territory of Santiago Comaltepec*

<i>Land Use Zone</i>	<i>Area (ha)</i>
I Forest Production Areas	1436
II Protected Areas	
• Watershed protection	523
• Wildlife protection	4421
• Forest reserve	5068
Subtotal	10,012
III Forest Restoration Areas	416
IV Agriculture/Livestock/Urban Use	6206
TOTAL	18,070²

Land uses in Santiago Comaltepec include multi-crop production for subsistence and commercial end use, pasturelands for grazing and forests for logging. Ecosystems are also managed for the protection of ecosystem services, the creation of wildlife refuges and the harvesting of non-timber forest products. In this way, territorial use is based on multiple values and needs including subsistence and economic importance, spiritual and sacred significance, and the provision of environmental services (Martin, 1993; Robson, 2009). Table 11.3 shows the community's current territorial plan (2003-13), which divides the communal territory into four main land use categories. ICCAs account for over half of Comaltepec's territory (10,011ha) and are designated for forest, wildlife and ecosystem protection. In such areas, extractive activities are officially restricted by regulations that clearly define (and limit) who has access to and permitted use of forest resources. Village-elected communal authorities supervise and monitor these forest areas. Furthermore, there are at least three sacred areas recognized by local resource users, which play host to important ceremonial activities at the beginning of each year.

The ICCAs were established for a number of reasons. Firstly, local people hold a strong conservationist ethic formed, in part, by the concession period (1957–1982) when forests were taken over and heavily exploited by outside logging interests. Secondly, forests are highly valued for the role they play in the provision of clean drinking water. Thirdly, the establishment of ICCAs in Comaltepec has been incentivized by government PES schemes. The Mexican payment program for hydrological services (for the period 2004–2008) generated approximately US\$8000 per year for the community.

Despite setting aside such a large proportion of its communal territory for forest and wildlife conservation purposes, there is still uncertainty and a lack of clarity pertaining to a number of key issues, including the definition of ICCAs, the question of conservation outside of ICCAs, and issues surrounding government recognition of ICCAs.

Defining ICCAs There are numerous categories of ICCA and so conceptual definitions are subject to interpretation by the different actors involved. In the

case of Santiago Comaltepec, the community has established three different ICCAs designated for three specific purposes; forest reserve, wildlife protection and watershed protection. Under the Mexican government's VCA mechanism, it is unclear whether all three areas would be considered for certification or just those protecting forest ecosystems that are of the highest priority to conservation agencies (cloud forest, for example). If the latter is true, then just over half of the community's total designated area (the 'forest reserve') would potentially be recognized by federal government as contributing to biodiversity conservation. This issue points to the problems that could arise when a novel concept is adopted by policy-makers in order to fit pre-existing government conservation objectives.

Conservation outside of ICCAs The problem of definition is further complicated when we consider that conservation can (and does) take place outside of formal community PAs. Robson (2007, 2009) has shown that conservation benefits in northern Oaxaca are not tied exclusively to the presence of PAs but rather to the multifunctional nature of land use systems. This protects important elements of both forest and agricultural biodiversity across a range of land uses, suggesting that limiting the definition of an ICCA to a 'formally decreed PA' may negate the important contributions made elsewhere in a community's territory. For example, the use of local knowledge and practices to promote a diverse crop selection and, therefore, high levels of agro-biodiversity. Indeed, the community's territory forms part of a wider region considered a centre of domestication, crop evolution, and diversity among and within crop species. Local multi-crop agroforestry systems exhibit important levels of floristic diversity (Bandiera et al, 2005), while the agriculture-forest mosaic provides for a complex, patchy landscape on which a number of bird and mammal species depend (Robson, 2009).

Santiago Comaltepec is also home to a number of sacred natural sites that lie outside of the community's officially designated PAs. Productive activities are typically restricted in these culturally important areas, resulting in biodiversity and landscape conservation (albeit on a small scale). While they are widely acknowledged by the community, their legal status is not clearly established. A large percentage of the community's forestry zones, meanwhile, are certified for sustainable management practices and cutting cycles are employed that seek to protect natural forest processes and functions. Clearings and regeneration cuts imitate the effects of forest fires to help with pine regeneration and reproduce processes of ecological succession. Although the community does not consider these areas to be formal ICCAs, they do contribute to habitat conservation and beta-diversity at the territorial scale.

Government recognition of ICCAs What would recognition under the VCA scheme imply for a community like Santiago Comaltepec? At the moment, their lands (including community PAs) are managed under customary governance arrangements. This autonomy is very important to local people. With a history of government interference, communities like Comaltepec are wary of

most forms of outside intervention. While the community welcomes official recognition of their conservation efforts, they are against any co-management arrangements whereby future ICCA decision-making is shared with external agencies. When interviewed, the village authorities in Santiago Comaltepec were not aware of the new direction taken by Mexican conservation policy, including the development of the VCA mechanism. Most indigenous forest communities were not involved in the discussions that led to recent changes to environmental law. Subsequently, they have little or no knowledge about ICCAs as a new category of official PA and few know how to participate in the VCA mechanism, nor are they aware how involvement would impact their lives in practical terms. The VCA mechanism currently remains an enigma to much of its target audience, and would appear to provide participating communities with few options and a reduced sense of control.

The domination of communal land tenure systems in Oaxaca (and Mexico more widely) means that there is almost no public land for the government to unilaterally set aside as PAs (Robles Gil, 2006; Bray et al, 2008). At the same time, the Santiago Comaltepec case highlights how biodiversity conservation can be compatible with community interests, and that the incorporation of sufficient ICCAs could significantly increase state and national PA coverage. The VCA initiative is an important strategy for the conservation and sustainable use of biodiversity, by which the Mexican government recognizes landowners' voluntary efforts to protect their lands. It does not require local people to relinquish their ownership and management of forest resources, and could lead to official recognition and wide-ranging benefits for participating communities. These potential benefits are especially important for communities that have limited tracts of commercially valuable timber forests or whose forest areas are particularly inaccessible (Bray et al, 2008).

However, the Santiago Comaltepec case also shows that the Mexican government's take on the ICCA concept often fails to match on-the-ground realities, where traditional and contemporary landscape management may achieve conservation in a diversity of ways. Furthermore, there is concern as to what official recognition would imply, in administrative terms, for participating communities. Mexico has yet to fully develop the legal or institutional framework required to stimulate and support the range of voluntary conservation measures. As Anta (2007) explains, novel mechanisms such as the VCA certification scheme are poorly recognized by many of the country's policy-makers and biodiversity specialists. Many key conservation institutions and players have yet to incorporate the idea of voluntary conservation into their agendas, programmes or work plans.

Policy Implications

The findings from Oaxaca and Mexico provide some important policy lessons for other countries that harbour a significant proportion of the world's remaining biological and cultural diversity. They raise a number of questions that have inevitable policy implications. Here we briefly explore four of these:

(i) how to assess the conservation benefits of ICCAs; (ii) what are the perceived threats to community control of ICCAs; (iii) how to find the right mix of governance regimes for ICCAs; and (iv) how to incorporate traditional ecological knowledge into PA management.

In terms of the conservation benefits of ICCAs, policy debate is needed to contextualize the significance of ICCAs. For many signatory countries to the CBD, recent policy has been based on a form of 'systematic conservation planning' (after Margules and Pressey, 2000). This identifies omissions and gaps in national PA systems and selects priority regions for targeting future conservation efforts. Taking this policy to its logical conclusion, many governments will no doubt look to incorporate a significant number of ICCAs into their national PA systems in the future.

There is concern that government ICCA-recognition schemes will not consider some areas of high biodiversity because they are either too small, contain the 'wrong type' of forest, or are considered 'tainted' by existing human disturbance. For example, it is difficult to imagine the VCA mechanism in Mexico certifying large portions of community territory that contain a mosaic of agricultural and natural areas. This would require a progressiveness that is mostly lacking from CONANP, *Comisión Nacional para el Conocimiento y Uso de la Biodiversidad* (National Commission for Use and Knowledge of Biodiversity, CONABIO) and other key government agencies. Rather, government focus is likely to remain on 'wilderness' areas set within community lands that meet pre-existing conservation objectives (Robles Gil, 2006), thereby neglecting the protection of biological and cultural diversity across territorial zones. This would force the ICCA concept away from a 'pro-poor conservation' approach (Kaimowitz and Sheil, 2007) that is based on finding, developing, maintaining and safeguarding managed landscapes that address basic human needs and values.

With regard to the perceived threat to community control of ICCAs, the degree of government involvement in ICCAs is still unclear. This is something many communities are concerned about because they consider the protection of their natural resources and territory as a key aspect of their cultural identity and reproduction. We know, for example, that many communities in Oaxaca would be strongly opposed to government agencies attempting to formalize autonomous indigenous initiatives. Although the current IUCN PA categories make a distinction between 'co-managed protected areas' and 'community conserved areas' (Borrini-Feyerabend et al, 2004a), all ICCAs would in effect be co-managed by government conservation legislation.

Many indigenous and rural groups, however, still associate 'parks' with 'dispossession'. This is the principal reason why some Indian and Filipino communities with designated ICCAs have been reluctant to take advantage of new legislation (Pathak et al, 2004; Kothari, 2006). The strength of the Australian model for Indigenous PAs (IPAs) is that aboriginal people can decide upon the level of government involvement. The establishment of IPAs thereby creates an arrangement that enables indigenous groups to declare and manage an area, while maintaining control of the resources within their traditional

territory (Smyth, 2006; Australian Government, 2009). A similar approach, however, has yet to be adopted in other regions.

In terms of finding the 'right' governance regime for ICCAs, there currently appears to be no single 'correct' governance model. The difficulty is that many existing ICCAs continue to suffer from a range of limitations, including the loss of traditional management capabilities and authority, and insecure land tenure (Borrini-Feyerabend et al, 2004b; Kothari, 2006). On the basis of the cases highlighted in Table 11.2, capacity building can be strengthened through the establishment of partnerships and networks (Berkes, 2007). These typically involve a range of actors such as community, NGOs, government agencies and academic institutions (MEA, 2005). 'Packaged' prescriptions do not work because each ICCA is different. Rather, flexibility and site specific approaches are needed. Strengthening land and resource tenure through government recognition and PES provides incentives for ICCAs to join national systems. This is the major strength of Mexican ICCAs, where power becomes decentralized to communities holding common property rights.

Finally, in terms of the use of local knowledge, ICCAs offer lessons in integrating traditional knowledge and management practices into PA planning. Local and traditional knowledge have only been discussed seriously since the 1990s, and have not to any extent entered mainstream conservation science. Many of the examples mentioned in this chapter, from the Western Ghats to Oaxaca, show that, in many areas, there is in-depth local and traditional knowledge of ecological functions, including how to manage multiple species at multiple scales (Berkes and Folke, 1998). Integrating ICCAs into PA systems means that conservation area managers at all levels need to understand the importance of local knowledge and local institutions (Berkes, 2009). Conventional scientific knowledge and community knowledge operate at distinct spatial scales, and good management requires the use of both (Borrini-Feyerabend et al, 2004b; Berkes, 2008).

Use of local and traditional knowledge in conservation raises questions about the appropriate scale at which conservation should take place. This choice of scale is highly political as it inevitably affects the rights of local people to use and manage resources. Use of biodiversity for livelihoods at the local scale will not necessarily mesh with 'systematic conservation planning' approaches which tend to focus on larger-scale regions. Much of the current debate on community-based conservation (Fabricius et al, 2004; Borgerhoff Mulder and Coppolillo, 2005) focuses on the question of scale, and has no simple answer. It is true that in a complex system all scales are important. Managing ICCAs, and conservation in general, requires taking into account interests at all levels and looking for win-win solutions where possible and trade-offs where not (Berkes, 2007). Indigenous and other rural communities of the world have never been at the centre of the conservation discourse. Getting their voices heard is not going to be easy; rights are won, not given. But there are ways in which local ICCA managers can gain a voice through the actions of community groups, indigenous associations and development NGOs.

Conclusions

The conservation of biological and cultural diversity is intimately interconnected, and indeed interdependent (Pretty, 2007). Language, land use practices, traditional ecological knowledge and resource management institutions connect both forms of diversity in social-ecological systems (Berkes and Folke, 1998). We are now at a critical junction in the history of conservation where there is the opportunity to make social-ecological linkages explicit by including people in conservation. ICCAs offer a means to accomplish this, but old paradigms do not change quickly.

A major obstacle facing ICCAs is that these areas do not look much like traditional conservation projects to agencies, officials and policy-makers whose explicit focus remains the protection of threatened and endangered species and their habitats. In fact, in many countries, only a portion of ICCAs are likely to meet the government criteria for recognition and inclusion in national PA systems. Therefore, these recognition schemes risk falling into the trap of restricting their remit to match pre-existing conservation objectives, thereby failing to reflect what is actually happening on the ground.

The issues discussed here have implications for conservation policy nationally and internationally. If ICCAs are to play an integral role in future conservation policy, the conventional conservation approach would, by necessity, become more inclusive and pluralistic, no longer in the monopoly of conservation biologists and government officials. It would broaden the constituency for conservation and make it more real and legitimate for indigenous and rural peoples of the world. Whereas strict preservation will continue to be important, the incorporation of sustainable use and livelihood needs into conservation will contribute to UN Development Programme (UNDP) Millennium Development Goals (MDGs) on sustainability and poverty eradication. In particular, ICCAs will help support the poorest families and indigenous peoples that heavily depend on wild resources. In this way, they can and do form a key component of an emerging conservation paradigm that addresses broader, more diversified and more democratically-defined goals.

For ICCAs to work, however, the needs of indigenous people and the threats to these needs must be better recognized, understood and addressed (Kaimowitz and Sheil, 2007). The vast majority of ICCAs have yet to receive recognition from official agencies and the most successful in this regard will likely be communities that are politically perceptive and influential. Weaker and more marginalized groups are likely to find it difficult to lever the required level of institutional and technical support. To help ICCAs fulfil their potential in meeting national and international goals, current government recognition mechanisms need to be backed by a set of supportive legal reforms that are transparent to target communities, and which clearly spell out the costs and benefits of participation. Local and indigenous communities burdened with the costs of conservation generally seek recognition but not intervention, and prefer to receive benefits for their efforts without the imposition of new conditions. Whether national conservation agencies are able to adopt such an approach is yet to be seen.

The conservation of biological and cultural diversity is centred in multiple-use landscapes, where territorial use and protection is informed by multiple values that combine conservation ethics, livelihood needs and long-standing values and beliefs. This complex mix can make it difficult to decide where conservation begins and where it ends. Thus, embracing the diversity and richness of indigenous experiences into the mainstream poses an enormous challenge to conservation. Conventional PAs and conservation science will no doubt continue to be important, but 'next generation' conservation will need to connect cultural diversity with biological diversity through the incorporation of livelihood needs and cultural values into conservation objectives.

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Notes

- 1 Beta diversity (β -diversity) is a measure of biodiversity that compares the species diversity between ecosystems or along environmental gradients. In Oaxaca, it is common to find a number of different tropical and temperate forests over a relative short distance due to the abrupt topography, aspect and associated climatic variation.
- 2 The shortfall of 296ha is linked to an area of Comaltepec's territory that was under legal dispute with the neighbouring community of San Pedro Yolo. While this conflict has been resolved, no form of land use is currently permitted in this area.

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