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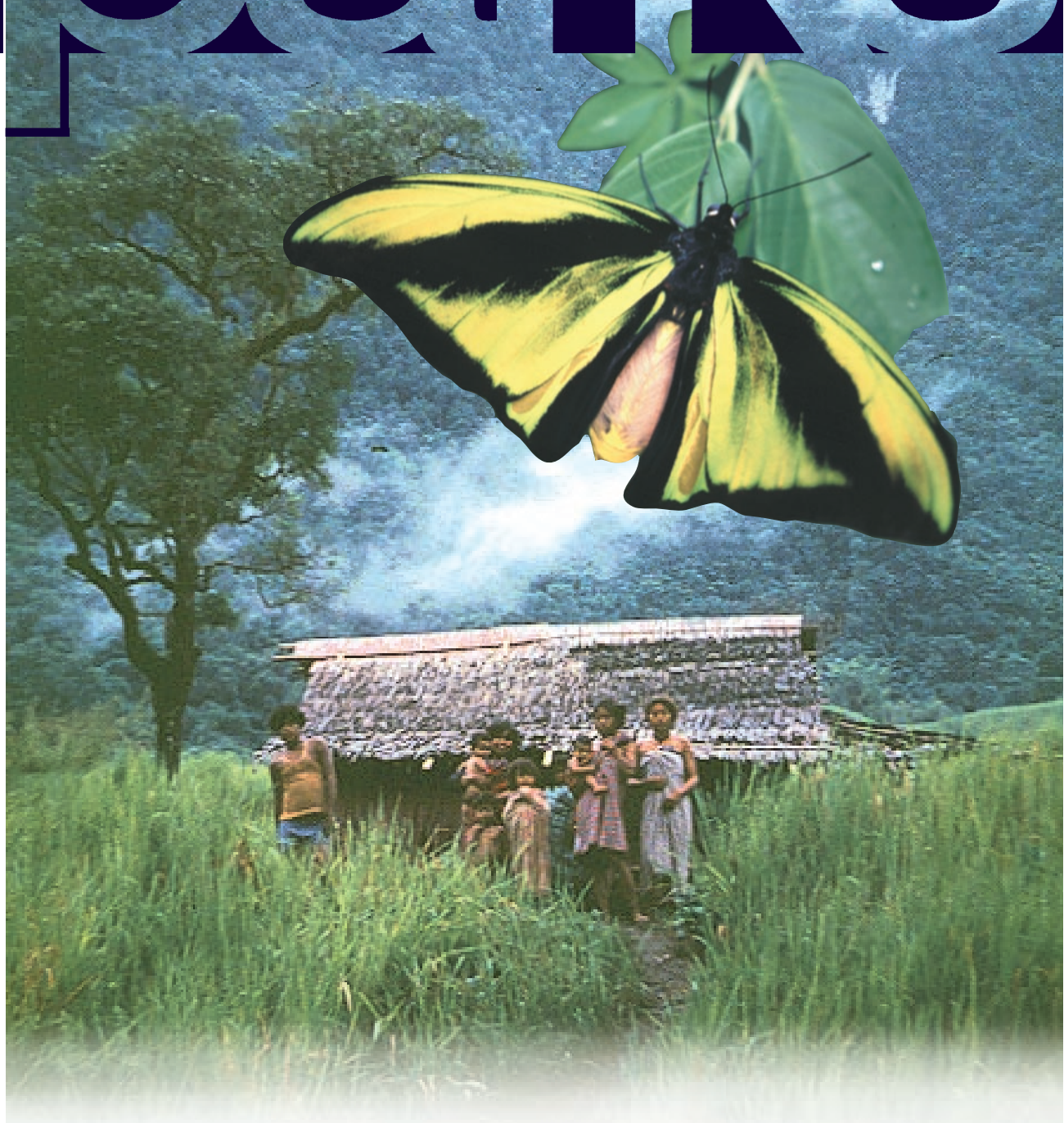

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Editorial

KATHY MACKINNON

This issue of Parks is dedicated to the memory of Clive Marsh, biologist, friend and conservationist, who dedicated his life to conservation and helped to establish protected areas and ICDPs in Africa and South-East Asia.

Integrated conservation and development projects – can they work?

This edition of *Parks* came about as a direct result of the Pakse WCPA meeting in Lao PDR in December 1999, where conservation practitioners and protected area managers from all over South-East Asia met to share experiences and challenges. It is clear that the job of park managers is becoming increasingly complicated. Not only must they manage protected areas and wildlife, many are also taking on additional responsibilities for the social and economic welfare of neighbouring communities. How has this situation come about? And is it sustainable?

According to WCMC/UNEP there are now more than 44,000 protected areas worldwide, covering 10.1% of the world's terrestrial surface. Almost 42% (18,400 sites) are in developing countries, including some of the most biologically rich habitats on Earth. These protected areas are the cornerstones of biodiversity and species conservation (Kramer *et al.* 1997; Bruner *et al.* 2001). For most species, protected areas will be the single most important way to ensure their long term survival. Additionally, conservationists are taking an ecosystem or landscape approach towards conservation, working with communities, within and around protected areas, to further conservation objectives. Indeed many in the conservation community believe that wildlife conservation and protected areas in poorer countries are doomed unless local communities become an integral part of conservation efforts and benefit economically from those efforts. As a result, a whole generation of integrated conservation and development projects (ICDPs) has been born.

The term ICDP has been applied to a diverse range of initiatives with a common goal: linking biodiversity conservation in protected areas (PAs) with local social and economic development (Wells *et al.* 1999). In practice ICDPs usually target both the protected area (by strengthening management) and local communities (by providing incentives such as rural development opportunities to reduce pressure on natural habitats and resources). In most countries ICDPs started as small NGO efforts, but most major donors have now embraced the ICDP model; many build on earlier, more traditional conservation efforts to strengthen park protection and management. ICDPs range in size and scope from initiatives that seek to empower and benefit local communities, through projects designed for poverty alleviation around protected areas, to major programmes which attempt to integrate conservation with regional and national development. All are represented in this issue. It is not surprising that ICDPs are so popular, since they offer an almost irresistible cocktail of perceived gains: biodiversity conservation, increased local community participation, more equitable sharing of benefits and economic development for the rural poor.

Early enthusiasm for ICDPs is now being questioned with a more critical examination of their impact on both conservation and development objectives (Kramer *et al.* 1997; Noss 1997; Brandon *et al.* 1998, Hackel 1999; Oates 1999; Wells *et al.* 1999). Do ICDPs work? Are conservation and development compatible? Is the ICDP approach an effective or appropriate model for

protected area management? The answers must be "only sometimes" and "under some circumstances". Often conservation and development are conflicting agendas and projects have unrealistic and contradictory goals, with different stakeholders having very different expectations. Many in the conservation community are concerned that the social agenda is hijacking conservation efforts, yet often ICDPs have attained neither conservation nor rural development objectives. Occasionally they have achieved remarkable and inspiring successes in promoting the conservation agenda, fostering local support and increasing the area of land under protection for biodiversity.

The examination of protected areas and activities in this issue focuses on a few case studies from tropical forests in Asia and Central and South America. This focus is deliberate. Although tropical forests, especially lowland forests, are some of the most species-rich habitats on Earth, they are often poorly represented in national and regional protected area systems (MacKinnon 1997). At the same time many of the typical ICDP-type alternative livelihoods based on sustainable use (e.g. wildlife tourism or harvesting activities) are particularly difficult to deliver in tropical rainforests. Nevertheless, many of the same lessons and cautions derived from these forest sites may apply equally well to ICDP projects in other regions and habitats.

A new role for protected areas

Protected areas used to be seen as areas designated for conservation of wildlife and wildlands; increasingly, they are seen as drivers and providers of social and economic change (Brandon *et al.* 1998). Debate over the objectives of parks and the benefits that they should provide has become increasingly confused and complex. In addition to their normal duties of managing habitats, wildlife and visitor use, today's park managers are often expected to take on social issues for which they are ill-equipped: poverty alleviation, land tenure and resource allocation, social and economic injustice and market failures. ICDPs may provide one vehicle to address some of these issues at a local level, but few park authorities have either the mandate or resources to reach far outside their boundaries to address such issues in a broader regional landscape.

What makes an ICDP successful or at least more likely to succeed? The Biodiversity Support Programme has listed five main conditions for success in any conservation effort: clarity in conservation goals and objectives; equitable and effective social processes and alliances (participation and partnerships); appropriate incentives for biodiversity valuation and conservation; supportive policies (local, national and international); and sufficient awareness, knowledge and capacity to conserve biodiversity. Add to this recipe some clear indicators, flexible and adaptive management and a long-term commitment of steady support and financing and one may have a chance at success and sustainability. Too often one or more of these ingredients are missing.

Clear conservation goals and objectives

Setting clear and achievable goals is especially important for ICDPs, where the enthusiasm to build alliances and merge conservation and social agendas often leads to loosely defined objectives, with different, and sometimes conflicting, expectations among stakeholders. Not all categories of protected area have biodiversity conservation as their primary objective, but many do, and it is often these high-biodiversity areas that have been targeted for ICDP interventions. A thorough analysis of threats to the area will help to determine both proximate threats and the root causes of biodiversity loss, and how best these can be addressed through the project. Improving livelihoods or amenities for local communities may bring some limited local benefits and help to win hearts and minds (as in Lao PDR) but it will do little to ensure park viability if the primary threat comes from new roads, agricultural policies or a breakdown in law and order, as the case studies from Leuser and Kerinci (Indonesia) bleakly illustrate.

Participation and partnerships

Most ICDPs involve a range of stakeholders and partnerships, often including NGOs and the private sector as well as government agencies and local communities. Participation and equity issues can influence how local communities respond to protected areas, to conflicts over rights and resources and to levels of enforcement. Whenever possible local communities should be seen to benefit from park-generated revenues, in terms of tourism income and/or employment benefits. Transparency, participation and fairness are important ingredients in determining how communities accept what uses are permitted, when, where and by whom. Local ownership can be crucial; ensuring that local communities retain benefits not available to outsiders fosters local stewardship for conservation (e.g. Arfak, Periyar).

In ICDPs it is often especially difficult to be fair and effective in targeting communities and individuals for development activities. Should one target the main offenders responsible for most biodiversity loss ("turn the poachers into gamekeepers"), provide benefits to those who are protecting the forest (reward good behaviour), or target the poorest of the poor (for poverty alleviation and social equity)? Many ICDPs try to do all three, without any clear assessment of the impact on biodiversity which is the overall objective of the project. In Periyar, however, the staff on the Ecodevelopment project have managed to work effectively with different user groups to enlist their support and turn management problems into effective solutions.

Incentives and linkages between conservation and development

Many ICDPs are designed on the premise that poverty is the main threat to biodiversity and that providing development opportunities to local communities will reduce pressure on park resources. Often this confidence is misplaced and the linkages between conservation and the development opportunities offered are, at best, unclear. Cases like Arfak where there is a clear link between butterfly ranching and habitat conservation are the exception rather than the rule. Often one can question the wisdom or appropriateness of promoting development and new livelihood opportunities for communities in or around protected areas, especially if they serve as magnets to draw in new migrants to marginal lands.

What, then, are the best land-uses adjacent to protected areas, and what buffer zones investments do make good neighbours for protected areas? The answer will vary with site and social context. In Sumatra, ICDPs around Leuser and Kerinci-Seblat National Parks are working with the private sector to maintain buffers of natural habitats in selectively logged forests as part of an ecosystem approach to conservation. In Central America, plantations of certified 'shade' coffee in El Salvador provide habitats and corridors for migrating birds and economic incentives for local communities; both farmers and biodiversity benefit. From a social perspective, well-managed lands under intensive agriculture may be just as good neighbours as natural habitats, especially if they limit access and encroachment. At Guanacaste, private landowners and orange groves play a similar role. Elsewhere, golf courses, vacation homes and well-run private farms may serve the same function. As usual, the perfect solution will be site-specific and may depend on the interests and support of key landowners.

The ICDP focus on meeting community needs and desires may sometimes actually increase the threats to protected areas by increasing levels of harvesting or utilisation as communities take on new options in addition to their previous activities. Giving a villager a high-yielding milk cow may increase his income but will not ensure that he gets rid of his scraggy herd, currently grazing untended in the park and competing with local wildlife; more likely he will keep both. Even more worryingly, the ICDP approach often pushes the park into the role of development provider for local communities, raising expectations that the management authority may have neither the capacity nor financial resources to go on meeting once the project is over and donor funding is finished.

Policies

In many cases, the root causes of biodiversity loss and threats to protected areas can be traced to government policies or their application (Brandon *et al.* 1998; Wells *et al.* 1999). A variety of policies are affecting the rate of tropical forest loss in developing countries: land use, resettlement and transmigration policies that encourage colonisation of frontier regions; provincial and national transport and communication policies that advocate road building through primary forests; energy policies that promote the flooding of lowland valleys for hydroelectric power schemes; pricing policies and subsidies for timber and agricultural products; and land tenure policies that stimulate expansion of the agricultural frontier. The Guanacaste case study illustrates that it is not just local and national policies which impact on protected areas: international policies and global trade also influence local land-use decisions and political support for conservation efforts.

Policy challenges to protected areas are further compounded by a general lack of political commitment to conservation, reflected in the weakness of many conservation agencies and the lack of adequate financing for park management. This weakness makes it difficult for park managers to challenge other government agencies over actions and regional development plans that may affect protected areas. Political upheaval, decentralisation and the breakdown of law and order exacerbate the problems, as in Indonesia where illegal logging is occurring in national protected areas and their buffer zones as locals and special interest groups seize the opportunity to grab land and resources (Environmental Investigation Agency 1999; Jepson *et al.* 2001).

Education, awareness and capacity-building

As the case studies in this issue show, ICDPs have played a critical role in building local and institutional capacity for strengthening protected areas and their management. They have helped to pilot new institutional models, public-private partnerships and a much greater role for NGOs, local communities and indigenous groups in protected area and conservation activities. These activities, supported by training, education and awareness campaigns, have often been some of the most successful aspects of ICDPs, helping to build local "ownership" and support for protected areas. In many countries, however, a greater challenge is to strengthen national commitment to conservation by increasing the awareness of policy-makers and other major stakeholders of the myriad social benefits of protected areas and their critical role in protecting key environmental services (MacKinnon *et al.* 1986).

Sustainable use and sustainability

The present conservation premise of "use it or lose it", often a basis for ICDPs, has important implications and trade-offs for conservation and protected areas (Wells *et al.* 1999; Bennett and Robinson 2000). What resources are used, who gets to use them, when , how much, and what for (own use or sale) are decisions dependent on the political and social context. Many ICDPs promote harvesting of non-timber forest products and wildlife, often in park buffer zones, as a way of providing sustainable livelihoods. In Lao PDR the Sustainable Non-timber Forest Project was established with primarily social and development objectives, yet contributes to forest conservation. Elsewhere parks such as Periyar and Guanacaste are allowing privileges to certain user groups for limited collection of specific resources within appropriately zoned areas.

Nature-based tourism, especially ecotourism, is a favoured activity for many ICDPs, both to raise revenue for PA recurrent costs and as a means of supporting local economic development. Unfortunately there is still a significant gap between the potential of nature tourism and its actual financial contributions to park financing or local communities (Brandon 1996). Moreover donor funding cycles for ICDPs are usually short-term and rarely provide for financial sustainability beyond the project lifetime, even when they have encouraged the protected areas to take on new responsibilities for community welfare. To

address this problem, and to smooth out the irregularities of unpredictable government budgets, many protected areas are looking at devloping other sources of revenue as well as tourism fees. Guanacaste has proven to be an innovative pilot site trying and testing a whole range of revenue earners from tourism to bioprospecting and payments for ecosystem services and carbon sequestration in regenerating forests. Increasingly, protected areas are seeking new institutional mechanisms, with greater involvement of the private sector and civil society (Leuser), and new financial mechanisms, ranging from trust funds to payments for watershed services.

The way forward

The case studies presented in this issue illustrate a range of projects and activities where park managers, NGOs, local communities and the international community have worked together with mixed success to achieve that elusive goal – sustaining biodiversity in a changing and anthropocentric world. It is clear that ICDPs are no panacea for assuring the long-term viability of protected areas. Nevertheless in a world where governments and donors are increasingly focused on poverty alleviation, it is clear that protected areas will increasingly have to be justified in terms of their linkages and synergies with sustainable development, provision of livelihoods and benefits, and ability to supply society with ecosystem services, such as watershed protection and reducing vulnerability to natural disasters.

Many of the problems facing protected areas in tropical countries – inadequate financing, low visitor fees, lack of benefits to local communities, hostile neighbours – are not restricted to developing nations. A typical North American park would likely experience the same shortfalls and challenges. What is different, however, is the expectation that protected areas must be self-supporting or justified in terms of local economic benefits, rather than maintained as pockets of natural heritage entitled to full support from the public purse. ICDPs, with all their shortcomings, are attempting to meet some of these challenges. The sort of commitment, entrepreneurship, flexibility and opportunism exhibited at Guanacaste may be a foretaste of what will be needed to maintain many other major protected areas and sites of high biodiversity value.

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A partnership between government and indigenous people for managing protected areas in Peru

GONZALO CASTRO, LUIS ALFARO AND PIERRE WERBROUCK

Achieving effective management of protected areas with the involvement of local communities is crucial to biodiversity conservation. This paper describes the different types of protected areas in Peru, the legislation behind these areas, as well as the degree of community involvement in the management of the different types of areas. The current protected area situation in Peru and the challenges these areas face are described by the authors. The importance of implementing participatory management plans and the trade-offs between biodiversity conservation and indigenous people empowerment are highlighted. Additional efforts are needed to achieve an adequate level of management for the entire system but the Government is committed to expanding protected areas and improving their management. Thus four new areas have been set aside and this paper reviews their social and biological characteristics, the challenges for their management, such as the application of zones and the mixture of different communities within one area making participatory processes more difficult. Both the prospects for community management and the specific findings and recommendations are given by area.

THERE ARE PROVEN WAYS to manage protected areas effectively through the provision of adequate financial, institutional and human resources inputs. In many developing countries, however, short-term management effectiveness is often an artificial situation achieved via project support, and in most cases long-term sustainability remains a major challenge.

Short of increased government expenditures to maintain protected area systems – an unrealistic expectation in most developing countries – to date there are only a handful of proven reliable ways to achieve such sustainability. These include the establishment of conservation trust funds and the development of self-financing mechanisms via entrance fees. Nonetheless, achieving sustainability is more than purely a financial issue, since in the long term it is perhaps more important to build support from the citizens who live in and around protected areas and can be their main advocates. Effectively engaging local populations in management and decision-making is an important dimension that needs to be addressed. This theme is the focus of this paper.

Here, we describe a new initiative from the Government of Peru, in which an attempt is being made to increase the social sustainability of conservation by empowering indigenous people to participate in protected area management. Under Peruvian law, the goal of protected areas is to conserve biological diversity. Nevertheless, there are various categories that allow sustainable utilisation of natural resources based on the IUCN classification, including the category of communal reserves, equivalent to IUCN Category VI (*reservas comunales*). The definition of a communal reserve is "a protected area established to protect wild flora and fauna to benefit adjacent populations. The utilisation and commercialisation of resources can be made based on management plans that have been approved by the authority, but implemented by the beneficiaries …"

To take advantage of this management category, the Peruvian government is implementing a new project financed by the Global Environment Facility and implemented by the World Bank (WB) to support the management of an existing reserve, and the establishment and management of four new protected areas in the Peruvian Amazon. The combined area of the new reserves to be created will probably exceed 7 million ha, thus supporting the forest conservation goals of the Forest Conservation Alliance (WWF-WB Alliance). The Government of Peru has already created three new reserved areas (an interim category of protection) with a total area of 6.3 million ha,

as a step towards this goal. More importantly, the project represents an exciting opportunity to establish a partnership between indigenous people and government for the sustainable management of protected areas.

Biological significance and protected areas in Peru

The Amazon region of Peru is part of the largest continuous tropical forest on the planet, which includes 40% of all remaining tropical forests. The fact that it is the most important repository of biological diversity on earth is undisputed. Peru's Amazon is located in the upper watershed of the basin and contains a very rich biodiversity expressed in terms of unique species richness and high levels of endemism and habitat diversity. Even though the region needs to be studied in greater detail, many areas in the Peruvian Amazon already hold world records for biodiversity richness.

The Peruvian System of National Protected Areas (SINANPE) includes protected areas that currently cover only 6.7% of the Peruvian Amazon. An expansion of the protected area coverage is required to maximise the chances of achieving long-term biodiversity conservation. In 1994, and with the support of the GTZ (German Aid Programme) and the NGO community, the Government of Peru produced a "Master Plan for the National System of Protected Areas". The plan identifies new protected areas that need to be established in order to achieve ecoregional representation, and to protect the highest priorities from a biological perspective. This 'ideal' representative system would eventually include approximately 65 areas of national importance covering between 12% and 15% of the territory. The national system currently includes 48 protected areas. Adding new areas to the system, however, must be done with caution, weighing the positive incentives of new political opportunities and commitments against the realities of institutional management capacities that need to be strengthened over the long term.

The overall strategic approach followed in this project is based on the need for direct participation by local indigenous communities in the management of conservation areas. The lessons learned in Peru and elsewhere demonstrate that the sustainability of protected areas is greatly enhanced when local populations benefit directly from their establishment. The Peruvian Amazon contains numerous indigenous groups who wish to ensure the maintenance of forest integrity through conservation and through the promotion of development options that maintain forest cover to the greatest possible extent. Therefore, directly incorporating indigenous groups in the management of these areas builds upon the synergistic potential brought about by two complementary objectives: biodiversity conservation and indigenous peoples' cultural identity.

Peruvian legislation recognises this approach through the establishment of several management categories of protected areas, including communal reserves, national reserves, and the clustering of various categories within 'biosphere reserve' models. The law establishes that conservation areas may be given in custody and usufruct to natural and juridical persons. Such is the case of several Communal Reserves administrated by more than one community (e.g. the Tamshiyacu and Yanesha Communal Reserves). Similarly, the Natural Protected Areas Law allows for leasing contacts for the administration and use of these areas and the development of projects for those holding title to such lands, including specifically communities, and allows for joint management mechanisms based on the participation of local populations. Under these scenarios, the pressure on forested land would be greatly reduced by the implementation of participatory management plans. Should this effort prove effective, the long-term objective is to expand the model to other areas within the Peruvian Amazon.

The expansion of the system of protected areas in Peru to achieve the long-term targets identified in the Master Plan is limited by the lack of financial resources. Progress towards achieving the sustainability of the present system has been good (Table 1), with increased budget

allocations by central and local governments, and the growing role of PROFONANPE (a public-private trust fund) in transferring funds to finance recurrent costs. The system now has a total of 48 areas, all of which have permanent presence and enjoy some form of management; 39 of these areas have a Park Director on the ground and 11 have a master plan. It is widely recognised, however, that additional efforts are required to achieve an adequate level of management for the entire system. Nevertheless, many areas are receiving adequate support from the central government, PROFONANPE, international bilateral agencies and NGOs. By 1998, the overall state budget for protected areas was $4.6 million with $2.1 coming from the trust fund PROFONANPE. A few of the protected areas, such as the Manu National Park, have reached a satisfactory level of funding of recurrent costs and made substantial progress towards social sustainability through direct community involvement in their management.

From the perspective of biodiversity conservation, however, the system is incomplete and additional participation of civil society and the private sector in planning and direct management of protected areas is desirable. Future challenges include incorporating protected areas into regional and national development plans, and better defining the conceptual and operational role and responsibilities of social institutions and the private sector. Recently passed legislation and current institutional approaches have set the trend for an increase in the involvement of civil society. The next, and crucial, strategic step is to accelerate this involvement, thus enhancing the sustainability of the system as a whole.

Targets of the initiative

The Peruvian Government has made a commitment to expand effective forest conservation in the Amazon region to encompass at least 10% of the biome, which covers 75 million ha in Peru. This commitment was made public by the previous administration, as a response to the challenge posed by the Forest Conservation Alliance (World Bank – WWF). To accomplish this goal, the government is committed to establishing several new protected areas in the Peruvian Amazon – likely to cover over 7 million ha. In parallel to this commitment, the government is also promoting a greater involvement of local communities (particularly indigenous peoples) in the direct management of protected areas, to promote biodiversity conservation and sustainable use and to ensure the equitable distribution of the benefits resulting from the protected areas as part of an overall strategy for rural poverty alleviation.

The World Bank, with funding from the Global Environment Facility (GEF), is helping the government to realise these two national priorities by supporting a pilot five-year project, which would involve the consolidation of an existing reserve, and the establishment of a first set of four new conservation areas to be managed by local indigenous groups. This is expected to be the first phase of a longer-term involvement if the model proves successful.

The selection of target areas for project implementation was the result of a consultative and participatory process which included representatives from the National Parks Service (INRENA); the Ministry for Women and Human Development (PROMUDEH); indigenous groups, including their two confederations (the Inter-Ethnic Association for the Development of the Peruvian Rainforest [AIDESEP] and the National Confederation of Amazonian Nations of Peru [CONAP]); and national and local NGOs. This selection process took into account proposals made by local indigenous organisations, social and technical criteria identified during the design phase of the project. During preparation, a decision was made to work in an existing reserve (Pacaya Samiria National Reserve) and in four still-to-be-established protected areas: Santiago-Comaina, Purus, Gueppi and El Sira. During the process of project preparation, three new protected areas (Santiago-Comaina, Gueppi and

Alto Purus) were established as Reserved Zones (a transitory protection status[1]), but have not yet been categorised. Only El Sira still remains to be established as a protected area.

Two of the project protected areas are located in the Peruvian-Ecuadorian border region, a high priority area under the Peru-Ecuador Broad Agreement for Border Integration, Development and Neighbourhood, dated 26 October 1998.

Social and biological characteristics of the target areas

El Sira (proposed Reserved Zone)

This proposed zone is located within three departments of the Amazon region of Peru (Pasco, Huanuco and Ucayali). The proposed reserve would cover an area of 600,000 ha. Since 1975, indigenous communities have been suggesting the creation of a Communal Reserve in the area. INRENA and indigenous communities have confirmed their willingness to create such a reserve but technical studies undertaken in the past need to be updated.

The area is characterised by pristine forest. There are numerous tree species of conservation concern, orchids and medicinal plants. At least 299 bird species, 124 mammals, 140 reptiles and 109 fish have been recorded, but the true numbers are likely to be much higher. Threats to the proposed reserve include: gold exploration in the Lupapichis and Negro rivers; intensive fishing, including the use of toxins in the Pachitea river and the construction of a road through the San Matias-San Carlos Protected Forest.

Both indigenous groups and colonisers live in the area. The two groups differ widely in their use of natural resources with indigenous hunter-gatherer groups (Shipibo-Conibo, Ashanika and Yanesha established in 128 communities along the Ucayali, Unini, Pichis and Pachitea rivers) maintaining traditional cultural values and colonisers being involved in agricultural production, forestry and fishing activities.

The population has been estimated at about 22,200 inhabitants of whom some 82% are considered indigenous. Economic activities are more intense in areas close to urban centres such as Pucallpa while fishing is the main activity in the Ucayaly River. In the Pichis and Pachitea areas, timber extraction is predominant.

Gueppi Reserved Zone

This zone was established in March 1997 and covers an area of 625,971 ha. It is situated in the Santa Clotilde district of Maynas province in the department of Loreto. This reserve borders protected areas in Ecuador (Cuyabeno) and Colombia (La Paya). Access to the area is difficult, and road infrastructure is limited to trails linking riparian communities.

There are 50 plant species of economic importance, mainly along river margins, 17 primate and 560 bird species. A total of 112 fish species have been recorded in the lower basin of the Napo River, but again, the true number is likely to be much higher. The following tree species are considered threatened: cedro (*Cedrela odorata*), caoba (*Swietenia macrophylla*), lupuna (*Chorisia insignis*) and tornilllo (*Cedrelinga cateniformis*). The threatened fauna includes the black caiman (*Melanosuchus niger*) and boa (*Boa constrictor*). Biodiversity in the area is threatened by selective extraction of tree species, indiscriminate hunting and overfishing.

Quichua, Huitoto and Secoya indigenous groups inhabit the area. There are 22 human settlements, with an estimated population of 2,250 inhabitants situated on the right bank of the Putumayo river and its three tributaries, the Peneya, Yaricaya and Angustilla rivers. There are also four military posts on the Lagartococha and Aguarico rivers. It is estimated that there are 677 Quichua people while the Huitototo and Secoya groups contain 100 and 425 people

1. According to Peruvian legislation, protected areas can be established initially as Reserved Zones, to be later categorised, that is, assigned permanently to one of the nine categories set out in the Law of National Protected Areas. These categories are National Parks, National Sanctuaries, Historical Sanctuaries, Scenery Reserves, Wildlife Refuges, National Reserves, Communal Reserves, Protection Forests, and Hunting Areas.

respectively. Preparatory workshops identified the need for further technical studies and consensus building among local indigenous groups and the National Development Institute (INADE) regarding the exact dimensions of a National Reserve and a Communal Reserve to be permanently categorised from the present reserved zone.

Purus Reserved Zone

This zone was established in July 2000. It is located in the Purus province of the department of Ucayali and parts of the Madre de Dios province and covers an area of 5,101,945 ha. Project preparation work in Alto Purus substantiated the government's recent decision to create this area as a Reserved Zone of over 5 million ha (the largest protected area in the country and one of the largest in the world).

The biodiversity is poorly known but believed to be extremely important. Threats include the use of toxins for fishing and indiscriminate forestry extraction. The population of the area is estimated at 3,600 inhabitants of whom 75% are indigenous. An estimated 40 indigenous communities of Cashinaguas, Sharanahuas, Culinas, Mastanahuas, Amahuacas, Ashanikas and Chaninahuas are settled along the Purus and Curanja rivers. There is also evidence of uncontacted groups identified as Mashcos inhabiting an area of approximately 769,000 ha. A group of approximately 130 colonist families live in the Mi Peru and Palestina hamlets and the provincial capital of Puerto Esperanza.

Santiago-Comaina Reserved Zone

This zone was established in January 1999 with an area of 863,277 ha. It is located in the province of Condorcanqui, the Imaza district of Bagua province in the department of Amazonas and the Morona district of Alto Marañon province in the department of Loreto.

Once again, the biodiversity of the area is poorly known but extremely rich. The following flora species are considered vulnerable: huasai (*Euterpe precatoria*), ungurahui (*Oenocarpus botaua*), yarina (*Phytelephas macrocarpa*), shiringa (*Hevea* spp.), uña de gato (*Uncaria* spp.) and shimbillo (*Inga* sp.).

Aguaruna and Huambisa indigenous communities inhabit areas along the Comaina, Cenepa, Santiago and Marañon rivers in the Cenepa and Rio Santiago districts of Condorcanqui province in the department of Amazonas. The population of Condorcanqui province is estimated at 30,520 inhabitants. Preparatory activities increased the knowledge of local stakeholders and interests in a complex scenario in which indigenous titled lands, Communal Reserves, Protection Forests and National Parks need to be seen as components of a single unit for conservation and sustainable use, geographically clustered as a biosphere reserve. On the basis of a consensus emerging out of the preparatory consultations, the government has recently extended the reserved zone.

Pacaya-Samiria National Reserve

The Pacaya-Samiria National Reserve was established in 1982. It is located in the department of Loreto and covers an area of 2,080,000 ha. The area supports at least 330 bird species, 79 mammals, 40 reptiles and 55 fish species. The area of the reserve has been subject to direct use including rubber production, livestock breeding and forestry activities. According to the Conservation Data Centre of Lima, eight species are on the brink of extinction and others such as the black lizard (*Caiman niger*), manati (*Trichechus inunguis*), red guacamayo (*Ara macao*), oje (*Ficus insipida*), cedro (*Cedrela odorata*), and tornillo (*Cedrelinga catenaeformis*) are considered threatened. The main threats to the reserve are intense population pressure on existing resources and oil exploration.

The reserve is inhabited by indigenous communities of the Cocama-Cocamilla group and the Shipibo-Conibo group. There are 203 human settlements within the borders of the reserve with

an estimated population of 92,000 inhabitants. There are 24 indigenous communities. A considerable number of migrants from Yurimaguas and Pucallpa have also settled in the area.

Prospects for community management

There are a number of characteristics which are common to all project areas. The analyses conducted during preparation indicated that the communities have the following strengths:

(1) They are organised and still maintain their cultural values and identities. Although many communities are under severe outside pressures, they are adequately represented by umbrella organisations such as the Inter-Ethnic Association for the Development of the Peruvian Rainforest (AIDESEP) and the National Confederation of Amazonian Nations of Peru (CONAP).
(2) They have traditional knowledge of the use of natural resources.
(3) They have access to abundant resources, mainly in aquatic ecosystems.
(4) There is an understanding of indigenous people's rights, although this knowledge is presently restricted to traditional leaders.

Participants in social assessment workshops also identified the following weaknesses:
(1) Weak organisational structures at the community level requiring training in participatory methodologies and democratic processes;
(2) Poor health conditions with high levels of morbidity;
(3) Limited availability of energy sources and poor transportation networks;
(4) Lack of management plans to allow for economic development activities;
(5) Insufficient knowledge and understanding of market development and conditions for economic development.

Participants concluded that there are several opportunities for the development of the project areas. There is a growing demand for natural products and a favourable international and legal framework, which would allow indigenous groups to further their economic development. Nevertheless, development opportunities and alternative livelihoods based on sustainable harvesting of biological resources could run into difficulties because of insufficient output to meet market demand. It was also recognised that, in order to succeed, project interventions should be highly participatory and be based on traditional knowledge and customs. The presence of colonists and drug traffickers in Gueppi and Santiago Comaina poses a significant threat to the sustainable use of biodiversity and natural resources.

Table 1 summarises the main findings regarding the potential economic activities of given areas as well as the recommendations made concerning the status of project areas.

Emerging lessons and challenges

Although the project is only just starting, there are several issues that have emerged as challenges for which the project will provide important lessons. These are as follows:

(1) The apparently complementary objectives of biodiversity conservation and empowerment of indigenous people actually involve trade-offs, given that any level of resource use, no matter how modest, is likely to have a detrimental effect on biodiversity. A recent review by Putz *et al.* (2000) summarises this point succinctly: "All consumptive uses affect some components or attribute of biodiversity, commonly affecting not only the target resource but other elements as well. As a result, only fully protected areas will conserve all component and attributes of biodiversity. Nevertheless, biodiversity objectives can and should be established within production forests." In practical terms, this becomes an issue that can be addressed via proper zoning. The challenge is to balance, through participatory methodologies, the needs of local people with the goals of biodiversity conservation. Zoning makes it possible

area	findings	recommendations
El Sira	Economic development potential in ecotourism, medicinal plants and management and breeding of wild fauna	Limit threats caused by gold mining and building of the Tahuania road
Gueppi	Economic development potential in the production of camu (*Myrciaria dubia*)	Establish a definitive protection category for the present Reserved Zone Expand the present Reserved Zone to include areas of the Siona-Secoya indigenous communities
Purus	Economic development potential of handicrafts, medicinal plants, captive breeding of wild fauna	Take into account rights of the Mascho-Piro uncontacted indigenous groups by incorporating new areas
Santiago-Comaina	Economic development potential in reforestation, medicinal plants, handicrafts, captive breeding of sajino, venado and sachavaca	Further the establishment of a Biosphere Reserve and enlarge the present Reserved Zone area

Table 1. *Specific findings and recommendations by area.*

to accommodate both goals, particularly in large areas that can sustain various degrees of pressure, with strictly protected areas serving as biodiversity refugia while other, more intensely used areas act as corridors retaining some biodiversity attributes and components. In the Zona Reservada Santiago-Comina, which extends to 1.6 million ha, zoning has combined technical criteria with a respect for traditional hunting and religious areas.

Such an approach, however, can only work within large landscapes that maximise the maintenance of ecological processes and biodiversity conservation over large scales, such that even if some biodiversity losses occur at smaller, local scales, over the broader landscape the chances for sustainable natural resource utilisation will be enhanced. A carefully designed biological monitoring and evaluation component in this project will enable better understanding of this issue and allow for adjustments to be made during implementation.

(2) The project will also employ management plans as the basic tool to balance conservation and resource utilisation. These management plans will be developed by the communities themselves, with technical support from the project, and approved by the Directorate of National Parks. Once approved, however, their implementation becomes the communities' responsibility under contract with the Government. While in theory it is possible to use a management plan to regulate levels of resource extraction, in practice this proposition is very challenging, given the natural tendency of human populations to overexploit resources. Once again, careful socioeconomic and biological monitoring will serve to evaluate progress periodically and enable adjustments to be made as necessary, building upon the existing social structures of community self-regulation whenever possible.

(3) Even though the main thrust of the project involves working with indigenous communities, the demographic realities of these areas are complex, with many parts also settled by colonisers (colonos) with different cultures, values, and languages. Approaches to participatory management will have to take into account these very different sets of circumstances, and recognise that the priorities and interests of the various social groups may at times conflict. Careful attention during implementation is therefore needed to ensure that the participatory processes are properly responding to the needs and desires of all local parties.

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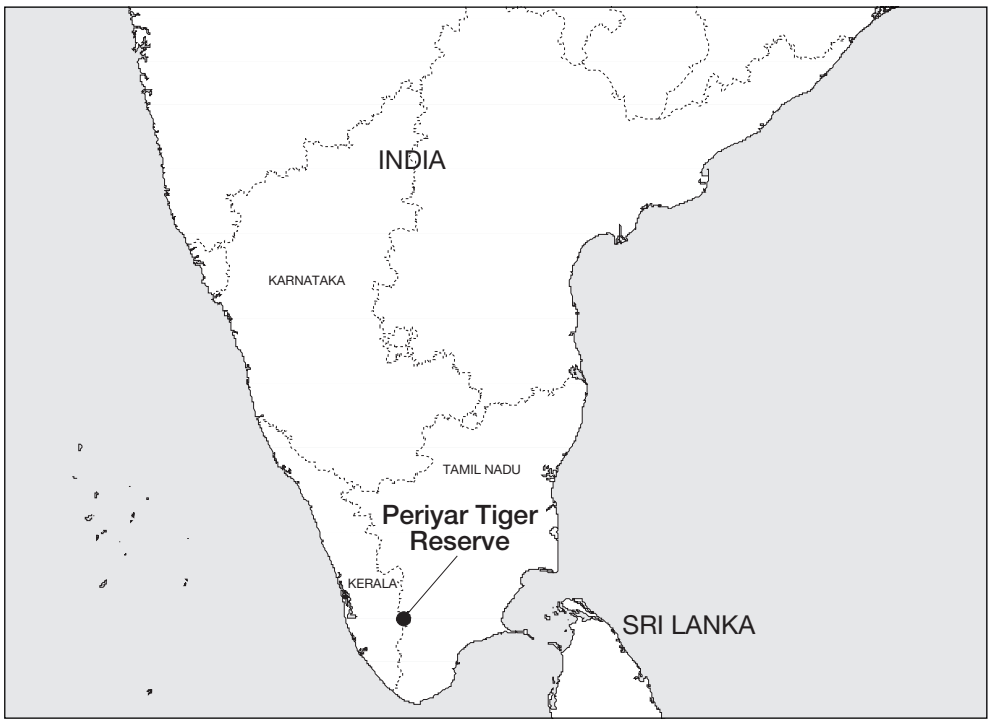
Periyar Tiger Reserve – building bridges with local communities for biodiversity conservation

V.K. UNIYAL AND JAMES ZACHARIAS

Periyar Tiger Reserve in the Western Ghats of India is one of seven national parks receiving funding under the India Ecodevelopment Project. The project seeks to promote conservation by addressing the impact of local people on the protected areas and their wildlife and by mitigating the impact on the local people of protected areas and their limitations on resource use. This ecodevelopment strategy, addressing the dual agendas of conservation and poverty alleviation, is being applied with some success in Periyar, where park staff are working with local communities and user groups to strengthen park protection and reduce pressure on park resources. Through participation and development opportunities provided by the project, the park has improved relationships with local communities and succeeded in engaging local support and collaboration to deal with management issues such as poaching, overharvesting of firewood and thatch and management of annual pilgrimages. A key concern is to ensure the sustainability of these efforts and to encourage local government support for activities that support the park's conservation objectives.

LYING IN THE BIODIVERSITY HOTSPOT of the Western Ghats, Periyar Tiger Reserve (PTR) extends over 777 km^2. It is the oldest and largest wildlife sanctuary in Kerala, comprising about 33% of the total protected area (PA) of Kerala. Part of the present day wildlife sanctuary was declared in 1935; today's boundaries date from 1950. It was brought under the national umbrella of Project Tiger in 1978. Along with the forests lying contiguous to it, PTR forms the largest compact tropical forest block in the Western Ghats and plays a key role in maintaining regional connectivity in an otherwise fragmented forest environment.

Figure 1. *Location of the Periyar Tiger Reserve, south India.*



The tropical climate provides PTR with luxuriant vegetation; evergreen forests cover more than 50% of the area and are interspersed with grasslands at higher elevations. In terms of area and species richness, PTR represents approximately half the biodiversity richness of Kerala, with records of 1,965 flowering plant species, 153 gymnosperms and pteridophytes, 62 mammals, 315 birds, 45 species of herpetofauna, 55 fishes and 160 species of butterfly (Uniyal 1997; World Bank 1996). Species richness is especially high among bryophytes, orchids, amphibians and invertebrates. More than 150 new plant species have been described in the last 30 years. Many of these organisms are endemic or endangered or both. Out of the 1,350 flowering plants endemic to the Western Ghats, 550 have been reported from PTR (Sasidharan 1998).

In addition to its biodiversity values, PTR is an important watershed and water provider. Probably India's first inter-state agreement on water sharing was signed about 100 years ago between the then Madras Presidency and the King of Travancore (now the states of Tamil Nadu and Kerala respectively). As a result, Mullaperiyar dam was commissioned in 1895; the reservoir of the dam covers about 26 km^2 within PTR. The Periyar Lake is an important water source to the state of Tamil Nadu for irrigation, drinking and power generation purposes. The beauty of Periyar Lake and the surrounding forests attracts about one million visitors annually. A cruise on the lake provides the opportunity of sighting wildlife at close quarters. Sabarimala temple within PTR is an important religious destination, which brings in about four million devotees every year over a two-month period to worship Lord Ayappa, the mountain god riding a tiger.

The fringe area environment and threats to park biodiversity

About 2,25,000 people reside within two kilometres of the protected area; of these some 35,000 people are dependent on the resources of PTR. A study conducted during 1998–1999 among these communities shows that 2% are tribals, 27% are scheduled castes, and the remainder, other castes and communities. The literacy rate is high but the people are generally poor with average incomes for men of about Rs 77 per day, and Rs 64 for women.

The tribals constitute the primary stakeholders and have seven hamlets, three within the protected area, which were transplanted from the interior forests to the fringe area during the 1950s. Now all of them coexist and interact with other fringe area dwellers; with a few exceptions, they exist as marginal agriculturists and semi-urban workers. There are 11 scheduled caste colonies; many of them grew up during the late 1970s as a result of land grants by the government in the forested areas. Most of the residents of these colonies are poor agriculturists with very small landholdings, or largely unskilled workers. The rest of the fringe area dwellers mostly arrived with settlement programmes initiated by the government during the late fifties and early sixties as part of the "grow more food programme" aimed mainly at ex-servicemen. These settlers/small-scale farmers are engaged in market-oriented agriculture. Collectively, these groups utilise the forests for subsistence, to over-exploitative levels, and engage in some illegal tree cutting and poaching. Tea and cardamom plantations were established on Periyar's fringe from the early 20th century. More than two dozen settlements of plantation labourers also utilise the forests to a significant extent. It is estimated that 57% of fringe area dwellers utilise PTR for fuelwood collection, 28% for grass, 13% for non-wood forest produce and about 1% for illegal activities including tree cutting and poaching. Some 1,500 cattle graze in the protected area, and annually approximately 30,000 tons of firewood are collected by the fringe area people for their own use. About 53% of fringe area people depend on PTR both for subsistence and supplementary purposes (School of Social Sciences, Mahatma Gandhi University 1999).

PTR also exerts negative impacts on the fringe area people in denying access to traditional use areas, especially in the case of tribals. Reduced access to resources has been estimated at a cost to tribals of approximately Rs10,000 per person per year. Moreover wildlife damage to crops and property in the settlements, caused by wild boar, sambar, elephant and tiger, often leads to

conflicts between PTR staff and local people. The impact of PTR on fringe area people is a constant source of conflict.

Threats to biodiversity

Tourism and visitor management in and around PTR are also major management issues for Periyar. Kumily, the main township, caters to both national and international visitors. Annually more than one million visitors visit the Mullaperiyar lake and adjacent park habitats. The Sabarimala temple lies within the reserve visitor management is a major issue for park staff during the two-month pilgramage period. Other potential environmental threats confronting PTR relate to the inter-state dispute on raising the water level of Mullaperiyar dam (which would submerge important wildlife habitat), extraction of eucalyptus for newspaper production from a corner of the park, illicit marijuana cultivation, smuggling of timber, especially sandalwood, and poaching, as well as proposed development activities in the region such as road and rail projects. Like other protected areas, resource use and harvesting in PTR depends on complex trade chains and market demands in distant centres, factors over which local field staff have little control.

Evolution of the ecodevelopment strategy

After the promulgation of the Wildlife Protection Act in 1972, the network of PAs was strengthened all over India and local access to resources was restricted. Increasing government protection and legal controls curtailed local communities' resource use, forced changes in

Indian elephants are partly responsible for damage to crops and property in the settlements. Photo: J. MacKinnon.

traditional livelihoods, and removed incentives to use resources sustainably. Subsequently, the promulgation of the National Forest Policy in 1988 recognised the historic, current and potential role of local communities and efforts were made to increase community participation, especially outside PAs. Seventy-two per cent of wildlife sanctuaries and 56% of national parks in India still have human settlements within their boundaries (Kothari 1989).

With people living inside PAs and around them, reliance on policing and enforcement alone could not safeguard them and their resources, and often led to conflicts between wildlife staff and local villagers. New strategies were initiated to develop small-scale, community-level conservation programmes and to involve local communities in the management of PAs. The ecodevelopment programmes in India began as a new tool for managing the conflict between parks and people while conserving biodiversity. In the early 1990s PTR staff began to work with local communities to provide amenities such as medical camps, drinking water facilities, school support, preferential employment to local people, and so on. A channel of dialogue was opened.

During the preparation stage of the India Ecodevelopment Project (IEP) from 1993 to 1994, park staff were trained in rapid appraisal and participatory planning. In December 1996 IEP became effective and provides funding for microplanning to work with local communities – the aim being to reduce the impact of villagers on parks and that of parks on villagers and their livelihoods. During 1998, the government of Kerala issued enabling orders to constitute Ecodevelopment Committees (EDCs) at the community level. In PTR, three microplanning support teams were set up, including trained forest staff, an ecologist, a sociologist and NGOs. Site-specific microplanning, using focused participatory rural appraisal techniques, was used to understand protected area/community interface issues and to prepare investment proposals for community activities which would not impact on park habitats and wildlife. By September 2000, microplans for 72 EDCs covering 5,407 families had been completed and were under implementation. As the microplanning progressed, it was realised that dependency on the PA varied between EDC's and that people tended to identify themselves in strong social and ethnic groups. Therefore, based on resource use patterns and social structure, the EDCs in PTR have been classified under the following three categories:

Neighbourhood-based EDCs are based in settlements/hamlets consisting of about 50–80 households which constitute one EDC. The tribal settlements, scheduled caste colonies and agricultural settlements fall into this category. The emphasis of microplanning in these units is on the socio-economic welfare of the committee members and their community as a whole. The microplan investments largely go towards building community assets such as EDC office buildings, tribal schools, provision stores, community farms and electric fences (to protect crops from wildlife damage), and for individual beneficiary support to improve livelihood opportunities.

User Group-based EDCs – A few EDCs were constituted by grouping together individuals who depended on a particular resource within the park, e.g. graziers, fuelwood and thatching grass collectors, vendors operating on forest routes during the Sabarimala pilgrimage season and so on. The members of such EDCs need not necessarily belong to one settlement; it is the use of a particular resource that links them together. The focus of microplanning is to reduce the negative impacts on PTR caused by their actions and to provide them with alternative livelihood opportunities so as to wean them away from dependency on the resources of PTR. Access rules and codes of conduct were defined in the microplans.

Professional Group-based EDCs – As microplanning advanced, a few professional groups were identified, such as smugglers of the bark of the vayana tree (*Cinnamomum* sp.), guards employed in the park for many years, tribal guides and so on. These groups have acquired specific skills to handle issues such as park protection, tourism management and impact monitoring. Such groups were constituted into EDCs with the focus on developing long-term positive interactions between these groups and PTR.

Some of the experiences of the IEP in PTR are described in the following case studies.

Case Study 1: Freeing tribals from the clutches of middlemen

The Mannan and Paliyan tribals were brought out from the interior forests of PTR in a gradual process going back to the 1940s and made to settle over an area of 88.4 ha in Mannakkudy and Paliyakkudy respectively (kudy means settlement). Most have very small landholdings; only 10% of families hold over one acre of land. Pepper (*Piper nigrum)* is the main commercial crop but sales were handled through middlemen and the tribals remained very poor and dependent on PTR.

The 252 Mannan families were constituted into three EDCs based on geographic demarcation, and 118 Paliyan families were made into one EDC. A series of meetings was held with all four EDCs and their executive committees. The park sociologist played an important role in building trust and respect between park staff and the tribals. A forester acted as secretary of the EDC. Mutual commitments and access rules were agreed in the microplans. Under the IEDP, financial support was made to each member of the EDC to improve the pepper yield and start centralised marketing. Project support helped the EDCs to build office buildings with an auction centre and a provision store. The first year's pepper yields were pooled and given to a cooperative society to be sold at the highest local market price, thereby removing the middlemen from the sales. Money borrowed from moneylenders was returned with interest. Each husband and wife opened a joint account in a nationalised bank and money received from the sale of pepper was deposited in their joint accounts. From 1999, the auctioning of pepper has been taken over by the EDCs themselves, with members retaining the choice to supply pepper at a certain price. By working cooperatively and removing the middlemen, the EDC members get a better price and have been able to escape the debt trap. The EDCs levy half a rupee per kilo of pepper sold to generate community welfare funds.

Impact assessment: The increased income generated from the pepper harvest has resulted in reduction of poverty and reduced impact on park resources. Participatory monitoring conducted by the park sociologist indicates that more Paliyans (34% of families) are now considered to be "better off" than at the start of the project (15% of families). There is a corresponding reduction of families in the poorest category from 58% to 35%. Similar trends are seen in the Mannan settlement. There has been a reduction in firewood collection from 354 tons by the Paliyans and over 530 tons in the case of the Mannans. Collection of black dammar (*Canarium strictum*) resin, which was previously collected extensively within the PTR, has now completely stopped – see Tables 1 and 2. In addition, the tribals have undertaken to protect about 10 km^2 of forest from fire and illegal activities.

Although these results are encouraging, not all tribals are EDC members. Moreover during 2000–2001, the crisis in the agricultural sector has hit pepper prices in this area. The effects of globalisation and open markets have begun to influence prices. It is feared that a sudden drop in pepper income might lead participants to return to previous resource practices.

Case Study 2: Converting smugglers to forest protectors – ex-vayana bark collectors' EDC

Illicit collection of vayana bark (*Cinnamomum* sp.) had always been a serious protection problem in PTR. Using the opportunity provided by IEP, in 1997 PTR began to work with a group of vayana bark collectors, whose involvement in illegal harvesting had made them highly antagonistic towards the forest department; a local NGO facilitated the process. This EDC was formed on the basis of user activity rather than geographical identity. Drawing on its members' knowledge of the forest and their tough natures, this EDC has developed a new and innovative model of ecotourism, which is highly protection-oriented. This adventure trekking and camping scheme takes tourists into the poaching-prone areas of the tourism zone to camp for one or two

nights. These are areas where the vayana bark collectors previously poached. A five-member team of ex-vayana bark collectors and two forest officials may be accompanied by up to five tourists on these expeditions; the objective is to protect tigers and stop poaching, including illegal collection of vayana bark. Their presence is deterrent enough to ward off other poachers and smugglers. The EDC entered into an agreement with a travel agency to promote the tourist packages and won a local award for best ecotourism experience. A major part of the scheme's earnings (70%) goes into the EDC's account to be distributed equally among the members, while 10% is taken as government revenue and payments to accompanying forest field staff, 10% goes on food expenses and the remaining 10% goes to the community welfare fund.

Table 1. *Change in living standard of families in PTR since the beginning of the projects.*

EDC settlement	**beginning**			**now**		
Wealth ranking	A	B	C	A	B	C
Paliyakkudy	18	33	68	40	37	42
Mannakkudy 1, 2, 3	24	77	165	52	110	104
Sathram Colony	33	72	28	68	42	23
Vanchivayal	8	28	11	19	15	13
Ceylon Colony	6	24	11	6	13	22
Moolakkayam 1, 2	37	44	67	50	39	59
Kisumum 1, 2	46	55	40	60	63	18
Periyar Colony	7	6	7	10	9	1
Mattupetty – Puthuval	2	15	50	14	48	4
Mattupetty – Estate	6	1	83	6	5	79
Firewood and thatching grass collectors	25	48	25	48	22	27
Graziers	19	21	41	20	25	36

A: better, B: moderate, C: poor. All values indicate number of families.

Table 2. *Change in forest resource utilisation in PTR since the beginning of the project.*

EDC settlement	**beginning**				**now**			
	firewood		thatching grass	black dammar	firewood		thatching grass	black dammar
	own use	sale			own use	sale		
Paliyakkudy	572,000	1,064,880		10,200	217,540	408,660		0
Mannakkudy 1, 2, 3	1,439,200	291,200		162,560	908,160	0		0
Sathram Colony	463,320	170,680	231,200	360	136,080	0	18,000	0
Vanchivayal	263,200			122	263,200			45
Ceylon Colony	391,550	411,600	59,500		144,000	194,400	57,000	
Moolakkayam 1,2	216,150	0			177,870	0		
Kisumum 1,2	352,580	0			332,350	0		
Periyar Colony	172,980	84,600			138,260	4,920		
Mattupetty – Puthuval	155,400	0	36,000		117,600	0	12,000	
Mattupetty – Estate	278,050	0	99,840		271,350	0	32,480	
Firewood and thatching grass collectors	254,800	1,196,900	595,000		186,240	930,150	979,200	
Graziers	485,850	5,000	12,480		151,200	0	5,760	

All quantities in kilogrammes.

The scheme was developed in a highly participatory manner by involving local NGOs, especially the Thekkady Wildlife Society, hoteliers, PTR staff and tour operators. One week's rigorous training was given to the EDC members, most of whom are illiterate, on wildlife management, protection, tourist behaviour, human resource development, financial management, and EDC functioning. An active literacy programme has also been set up by the Forest Department.

Impact assessment: To monitor the impact of the scheme, a baseline survey was conducted in 1998 based on environmental indicators, such as regeneration status of vayana, animal sightings, tiger prints, poachers' camping sites, etc. A follow-up survey carried out in 2000. The following facts emerged:

- Total quantity of vayana bark removed from November 1996 to October 1997 – 30,135 kg;
- Total number of days spent poaching in the forest – 2,318 man-days;
- Total number of forest offences the members were involved in (prior to 1998) – 68 cases;
- Recorded reciprocal commitments from May 1998 to July 1999 – 32;
  (this includes information on poachers, seizure of materials including ivory and sandalwood, litter removal, joint patrolling etc.);
- Average annual earnings per person from sale of bark – Rs.60,000; and
- Average annual earnings now from the ecotourism programme – Rs.25,000.

Although the members used to earn more from the sale of vayana bark, a major portion of those earnings went as legal expenses, bribes to various officials, and cuts to middlemen. With the new programme their earnings went down, but there was considerable enhancement of their social status and improvement of their social relationships. Family ties also became stronger. For all members social recognition was the most alluring factor. Ecological monitoring during 2000 indicates that the density of the regeneration of vayana in different areas has improved from about 6% to more than 13%. Whereas prior to implementation of this programme almost all vayana trees would show evidence of debarking, no damage was recorded in the year 2000, except in one area where about 70 trees were debarked; EDC members caught the offenders and brought proceedings against them.

The group keeps meticulous records of wild animal sightings and park managers are currently analysing these records. It has also been noticed that the routes earlier used by smugglers and poachers are now abandoned. No illegal campsites or activities have been noticed during the last two years in the specified areas. Animal sightings in the tourism zone have increased. Frequent sightings of tiger in this zone are being reported and the incidence of fire has been reduced considerably. This scheme is an encouraging example of converting poachers to gamekeepers but continued support is necessary.

Case Study 3: Managing pilgrimage in the park through participation – the SAAP EDC

The Sabarimala shrine located in the southwest corner of PTR attracts about four to five million devotees annually over a two-month period. To reach it the pilgrims have to walk up to 35 km through forest lands within the PTR, and require elementary facilities along the route, such as temporary resting places, drinking water and food. Traditionally, the pilgrims who trekked along the routes used to camp in certain convenient areas known as *thavalam*. Local people, especially the tribals, began providing facilities, clearing sites and building sheds for them to rest. Over the years the number of pilgrims rose, and there was an influx of wayside vendors from neighbouring and more distant villages to provide them with services. This led to severe degradation of the PTR forests by felling of trees for firewood, removal of forest poles, reeds and bamboos, large-scale littering, fires and poaching.

It was at this juncture that the Forest Department decided to step in using the tool of participation under the umbrella of the IEP. The project provided a context, both legal and

Indian villagers gather to discuss an ecodevelopment microplan. Photo: K. MacKinnon.

ecological, to deal with a problem of such magnitude. The initial steps were taken in 1997 by preparing a list of all the vendors from neighbouring villages for each *thavalam* and informally constituting them into a group to prevent further ecological damage along the traditional route. During October 1998, after significant dialogue between PTR management and the vendors, it was decided to form an EDC, Swami Ayyappa Poonkavana Punarudharana Committee (SAPP-EDC). A microplan was formulated to provide facilities to the pilgrims without damaging the forests while generating income for local people and tribals. Small grants were made to the EDC to procure fuel-saving stoves, tarpaulin and plastic sheets. The members were encouraged to use some of the last season's leftover poles and bamboos for construction of temporary sheds, and to bring rubber wood from outside to serve as fuel. Concurrently, awareness programmes were launched under the project using boards, banners and signs, and joint patrolling for protection of the park was also organised.

During the second year (1999–2000), there was better organisation and management and EDC activities were extended to more *thavalams*, with unscrupulous vendors and intermediary agents being excluded from these sites. The existing water sources were developed to benefit the pilgrims as well as wildlife. Pit latrines were provided for the pilgrims. During the current year (2000–2001), an Action Plan for Sabarimala pilgrimage management was prepared, which identified approaches for joint action by PTR management and the EDCs. The scope of SAPP-EDC was enlarged by constituting a federal body of 26 EDCs to operate along the two main traditional routes. The vendors, under the umbrella of *thavalam*-based EDCs, were allocated spaces along the routes and all other village EDCs were asked to open one shop and a resting place under community-based management. The federal body of all EDCs took decisions to procure and distribute materials. PTR provided discretionary funding for purchase of construction materials (such as tin and tarpaulin sheets) and food items. The EDCs, jointly with the PTR management, organised the pilgrimage along 30 km of the route with tremendous success. A revolving fund has been created from the profits to enable EDC members to undertake similar activities next season. The programme is empowering communities to manage pilgrim pressure on the forest environment.

Impact assessment: Prior to this programme, activities were totally unregulated and damaging to forests and wildlife along the routes. In the second year the park ecologist did a participatory impact assessment and found 55 temporary structures operated by EDCs and an equal number run

by outsiders, as well as 485 shops and resting places managed by EDCs. There were 161 vendors from outside and 119 from the EDCs but all profits accrued to individuals, many of them non-local. After the season was over, the EDCs collected about four tons of non-biodegradable solid waste from various *thavalams* and along the route. This rubbish collection effectively controlled fires that had been a problem in previous seasons; plastic waste was sold for recycling.

During the current year, the entire operation was streamlined. EDC-based community facilities were provided at 55 shops and resting places in addition to about 400 shops run by the original vendors now part of the SAPP-EDC. No outside vendors were allowed to operate and there was strict supervision by the PTR management. More than 60 forest officials were associated with the EDCs all through the programme. Not only was there a reduction in the number of sheds, there was also a shift to encouraging communities rather than individuals to operate along the routes; discussions are under way to encourage this trend.

With regard to the ecological impact on the forest, no new wood was cut from PTR for construction of sheds – a saving of about 200,000 young poles of forest trees on previous years. An independent study was commissioned to evaluate the programme during January 2001, and found that "with respect to the pilgrim satisfaction and maintenance of the cleanliness of the routes, the project is a success…the project is replicable with some alterations in the next year" (School of Social Sciences, Mahatma Gandhi University 2001). Although the villagers are motivated to participate because of the attraction of profits, the ultimate outcome benefits conservation of the PA by reducing pressure on PA resources.

The long way ahead

A preliminary assessment of the efficiency of the ecodevelopment approach in building bridges between people and park management in PTR shows that ecodevelopment activities are paying dividends. The number of cattle grazing within PTR is the same but the area grazed has fallen to 30% of that used previously. There has been substantial reduction in personal fuel wood collection for consumption and sale as other opportunities for income generation have improved. Interactions between the park and the people are more positive than formerly and a number of EDC members have surrendered their guns and come forward to help PTR management in the protection of the park. About half the park staff have been trained in participatory management and one can sense the overall change in the perception and attitude of the staff towards local villagers. Thanks to such programmes, new channels of dialogue are opening up with other segments of society such as print and electronic media, local political leadership and government development departments.

However, the learning curve for these programmes is steep and time-consuming. Government institutions are not able to transform themselves overnight. Thus individuals still matter and the success or failure of a programme is often attributable to individual efforts. In PTR the initiatives of the last few years have begun to foster positive relationships between the stakeholders and park managers, yet it is still too early to pronounce a final judgement. The following constraints may adversely affect the continuation of the ecodevelopment programme in the future:

- Lack of sufficient awareness among EDC members about the ecodevelopment concept and the objectives of the IEP;
- Failure to internalise ecodevelopment concept within the forest hierarchy resulting in inadequate support from within the Forest Wildlife Department;
- Frequent changes of ex-officio secretaries (foresters) for administrative reasons, affecting the continuity of the programmes;
- Cumbersome accounting procedures leading to delays in providing timely finances to the EDCs;
- Lack of full understanding of microplans at the level of individual EDCs, thereby diluting people's commitment to the conservation of PTR;

- Infrequent meetings between forest staff and EDCs, and within the general bodies of the EDCs;
- Insufficient interest in building the programme on the part of Forest Range Officers, who are central to all Forest and Wildlife Department programmes;
- Non-representation of EDC members in major management decisions at park level and beyond;
- Inadequate coordination between park management and forest officials of adjacent forest areas;
- Absence of a mechanism to link the programmes with district administration, and lack of awareness of the ecodevelopment programme among district administration and political groups;
- Inadequate institutional commitment to the growth of the programme, which is still dependent on individuals;
- Extent of coverage of the targeted EDCs: of the 105 originally envisaged, microplanning has been completed for only 72, and thus a substantial group of stakeholders has not benefited;
- Wildlife damage continues to be a cause of antipathy towards wildlife conservation among local people; and
- The reckless spending of increased income on consumer goods, which are freely available, contradicts the principle of conservation of natural resources.

As the IEP approaches its final phase, there is some concern about sustainability beyond the project period. It is significant that the activities at PTR have reinforced the belief that parks and people can coexist in an environment of mutual trust and respect. The trust created between people and the park needs to be maintained in future. The continuance of such an arrangement will require constant interaction between the parties concerned, and the *quid pro quo* arrangement will necessitate inputs from the park into village systems on a sustained basis, as well as increased efforts to raise awareness of the benefits of PAs and the need for access rules, codes of conduct and mutual commitment to ensure resource sustainability through appropriate use.

We believe that ultimately biodiversity can only be conserved if the fringe area inhabitants and park management engage in an open dialogue and develop shared objectives. This requires flexibility and compromise between all the players. It will only happen when the buffer communities come to value the PA and the park custodians stop viewing people as a problem. The subtle purpose behind the activities of the ecodevelopment programme is to create a social environment in which the people of the fringe area feel a part of the PA. Nevertheless the olive branch of social development support in return for conservation is fraught with internal contradictions. In a market-driven economy, people constantly need more goods and services, whereas the essence of ecological consciousness calls for a desire for less and less. So far the PTR has not examined this issue.

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parks

An overview of integrated approaches to conservation and community development in the Lao People's Democratic Republic

STUART CHAPE

Integrating conservation and development, in particular at the local level, is one of the key challenges for protected area management in Lao PDR. This is particularly important as the country includes some of the most biologically rich natural areas within the South East Asia region, while at the same time is one of the economically poorest countries in the world, with almost 50% of the total population living in poverty and about 70% living in rural areas. The cultural diversity of the country is also high with more than 200 distinct ethnic groups. Ensuring positive linkages between conservation and development is essential as 10% of the total number of villages in the country are located inside protected areas and there is a specific policy decision made by the Lao government that these communities are not to be removed from protected areas. This paper reviews the history and basis for establishing a national system of protected areas, its importance for biodiversity conservation and the imperative to contribute to poverty alleviation and development objectives if protected areas are to be viable in the long-term. Selected protected area projects that have attempted to integrate conservation and development approaches are described.

INTEGRATING CONSERVATION OBJECTIVES with local development needs and mechanisms is one of the most challenging aspects of protected area management in the Lao People's Democratic Republic[1]. Protected area development in the Lao PDR occurred much later than in most countries of South-East Asia, which started establishing areas in the 1950s and 1960s. However, in many ways this late development was beneficial insofar as it enabled government and its technical advisors to take a more systematic approach to the evaluation of areas based on biogeographical and ecosystem methodologies. Importantly, development of a protected area system in the Lao PDR from the late 1980s onwards also enabled planners to benefit from lessons learned from other countries concerning resident peoples in the areas identified. A specific policy decision was made by the Lao government that existing communities would not be removed from areas that were declared as protected, in marked contrast to neighbouring Thailand (Sukwong 1999). This has meant that about 1,100 villages throughout the country are now located inside protected areas, or about 10% of the total number of villages in the country (Southammakot 1999). So far, open conflicts of the kind that have occurred in Thailand over use rights and resource extraction have been avoided. But it places a challenging responsibility on the government (and supporting donors) to ensure that communities that are resident in protected areas and buffer zones are not disadvantaged *in relation to* the rest of the population outside, while maintaining the conservation values of the protected area – in other words that integrated approaches to conservation and development are implemented. Such integration is also required at regional and national levels, because the protected area system is also seen by the government as an important contributor to national development objectives, especially watershed protection for hydro-energy production, and as a reservoir for timber and non-timber forest products and tourism.

Since the declaration of the protected area system through the Prime Minister's Decree 164 in 1993, when 18 areas were officially established (now 20) a number of donor-funded conservation projects have been implemented – all with varying foci on ICDP-related objectives. Most of these

1. The official name of the country, but Laos still has common usage and both names are used interchangeably here.

projects have reached the end of their funding life, or are about to end. The performance of ICDP approaches in the Lao PDR has been variable, largely reflecting the findings of the Wells *et al.* (1999) review of Indonesia's ICDPs for the World Bank.

The basis for establishing a protected area system in the Lao PDR

Biodiversity values

Lao PDR has long been known as a land of forests, mountains and rivers. To the western world, the forests and landscapes of this unique part of South-East Asia became more widely known through European exploration in the nineteenth century, when Lao PDR still included a large area of present-day north-eastern Thailand and northern Cambodia. MacKinnon and MacKinnon (1986) estimated that 68% of Lao PDR was originally dominated by evergreen forest, with 23% under mixed deciduous and under seven per cent dry dipterocarp forest. Inevitably forest cover has declined; surveys in the 1990s by the National Office for Forest Inventory and Planning (NOFIP) noted a significant decline to only five per cent evergreen forests, 35% mixed deciduous and five per cent dry dipterocarp, possibly as a result of degradation of evergreen forest types to mixed deciduous forest (Berkmüller *et al.* 1995). The official estimate of total remaining forest cover is around 47%, although recent independent surveys have questioned this relatively high figure.

In terms of faunal diversity, the *Wildlife in Lao PDR: 1999 Status Report* (Duckworth *et al.* 1999) notes that a total of 319 out 1140 species included in the review are of national or global conservation significance. Within the last five years a number of new genera and species of mammals (e.g. the saola [*Pseudoryx nghetinhensis*] and giant-antlered muntjac [*Megamuntiacus vuquangensis*]), birds, reptiles, amphibians and fish have been discovered in the Lao PDR, while the known ranges of the many other species have been extended and new records confirmed for the country (or, in the case of the warty pig, rediscovered). The invertebrate fauna remains largely unsurveyed. Similarly, botanical diversity is known to be high but comprehensive surveys need to be undertaken as a priority, as the last records were made by Vidal (1960) in the 1950s. In spite of forest loss, Lao PDR' remaining forests are valuable for both biodiversity and ecological services. It is these values that have provided the impetus for the establishment of an ecologically representative forest protected areas system by the Lao government.

The protected area system planning and development process

Development of the protected area system in Lao PDR originated in two parallel and strategically linked processes. In 1988, a Conservation Sub-programme was established within an existing Lao-Swedish Forestry Cooperation Programme (LSFCP), with technical assistance provided by IUCN, and the government formed the Centre for Protected Areas and Watershed Management (CPAWM). Secondly, the need for a comprehensive approach to forest conservation and watershed protection was recognised at the First National Forestry Conference in 1989 and incorporated in the subsequent National Forestry Action Plan, which included policy concerns related to shifting cultivation and land allocation (Xaisida and Sayer 1989; Southammakot 2000). Thus a conservation process, focused on forests and human use, was initiated. Over the next six years, areas were assessed for inclusion in a comprehensive national protected areas system based on forest type and cover assessments and wildlife surveys (Salter 1993), using a framework based on ecological representativeness within biogeographical subregions.

Although the protected areas planning process has continued, the landmark Decree 164 officially established the protected area system in 1993. The English term used to describe protected areas in Lao PDR is "National Biodiversity Conservation Area" (NBCA), but the literal translation of the Lao title, *Pa Sanguan Heng*, is "National Reserved Forest". Nevertheless, NBCA has become the accepted official terminology used by the government and donors in describing the protected areas, which now cover about 33,000 km² or almost 14% of the total land area of the

Overharvesting of freshwater turtles and other wildlife is a major threat in Lao PDR and other Asian forest ecosystems; sustainable use is a limited option in tropical rainforests. Photo: K. MacKinnon.

country (Southammakot 2000). The NBCAs are most appropriately placed in IUCN Category VI (Managed Resource Areas) even though many are areas of high biological value and should more appropriately be classified as national parks and nature reserves (Chape 1996). However, this designation does emphasise an important aspect of Lao protected areas: the need to work closely with resident communities in the numerous villages within the NBCAs if conservation values are to be maintained.

Following Decree 164, individual NBCAs received technical assistance support for planning and management activities from various donors between 1995 and 2000, with total budgets in excess of US$ 12 million. In 1996, the National Assembly also passed the Forestry Law, setting out a policy framework for all aspects of forestry, including conservation forests. The law provides for the zoning of NBCAs into "Totally Protected Zones" and "Controlled Use Zones" (Southammakot 2000). The continuing emphasis on conservation areas as part of the forestry sector has meant that other natural systems, especially wetlands, have been largely ignored. The vast complex of wetlands in the Siphandon area on the Mekong River in southern Lao PDR is one such feature that has high national and international biodiversity value and should be declared an NBCA.

Government approaches to protected areas and development

Lao government policy identifies the sustainable use and ecological service aspects of protected areas, especially those concerned with forest and watershed protection, and their benefits for the economy at national and local levels. Elimination of upland shifting cultivation has been a priority objective of the government for many years, although it has adjusted its approach to

emphasise sustainable improvement of swidden-based livelihood systems. This is linked to a "Focal Site" approach to sustainable forest management that strongly advocates local participation in forest management and protection, promoting hand-in-hand socio-economic development and sustainable use of forest land and resources. Local governments and communities are, therefore, considered central participants in forest resource management and development. Activities implemented through donor technical assistance have attempted to support these approaches by government, but with variable results.

Watershed protection is a fundamental part of the government strategy to develop the country's hydropower potential, providing a source of energy for export sales to neighbouring countries, as well as to supplying domestic needs. Prior to the Asian economic downturn in 1997, Lao PDR was pursuing an ambitious scheme to build an additional 21 dams with an installed capacity in excess of 7,000 MW by 2009, with a commitment to supply Thailand with 3,000 MW. To date, only three of these dams have been completed: Houay Ho (150 MW), Theun Hinboun (210 MW) and the small Nam Leuk. Although the first two dam structures are not located within NBCAs, the catchment for Theun Hinboun is partly in Nakai-Nam Theun NBCA and its proposed extension, and the dam affects water flow downstream in the Nam Kading NBCA. Houay Ho has impacted on a proposed protected area on the Bolovans Plateau, especially through secondary impacts associated with poorly designed and implemented resettlement of indigenous inhabitants. The Nam Leuk dam is located within Phou Khao Khouay NBCA near Vientiane. Other dams that are still in the preliminary stages of planning and will impact on NBCAs include Xe Khaman near Dong Ampham NBCA in Attapeu Province and Nam Theun 2 (NT2) adjacent to Nakai-Nam Theun (NNT) NBCA. They will also be dependent on the water flow from catchments within the protected areas. In both cases major logging activities have taken place within the proposed reservoir areas. However, NT2 has been the subject of extensive planning, assessments and management activities, encompassing in the NNT NBCA that forms the proposed dam catchment.

Implications of culture, population and underdevelopment

The complexities of designing and implementing successful ICDP projects in Laos are compounded by the vast cultural diversity within the country. More than 200 distinct ethnic groups have been identified (Chape 1996). For example, in the Nakai-Nam Theun NBCA and environs (a 3,710 km^2 area) there are five distinct language groups with 28 different languages (CARE International 1996). Ethnic minorities are officially grouped into three broad "socio-geographic" zones: *Lao Loum* (lowland/river valley/wet rice culture Lao); *Lao Theung* (mid-upland/dry rice culture, predominantly Austro-Asiatic – the oldest and most diverse indigenous peoples); *Lao Sung* (high upland/dry rice, Hmong-Mien and Tibeto-Burman peoples). Of these groups, the Lao Loum constitute about 68% of the population, the Lao Theung 22% and the Lao Sung about 10%.

Although rich in culture, biodiversity and other resources, Laos is one of the economically poorest countries in the world. According to the 2000 UNDP Human Development Report (UNDP 2000) almost 50% of the total population live in poverty, and about 70% live in rural areas. With most of the protected areas in remote, mountainous and forested parts of the country, it is clear that conservation management cannot ignore local or macro-level development needs. Neither can it ignore the cultural attributes, perceptions and issues of the people resident in or near protected areas. Development of sustainable livelihood options is a general, accepted objective, but defining and implementing those options is very different when working with Hmong upland communities who practise pioneering shifting cultivation and a nomadic lifestyle, or Khmu people practising rotational fallow cultivation, or with Tai people who practise wet rice cultivation but also harvest forest products to supplement their income.

The underdeveloped status of Laos also has other implications for conservation management and ICDP approaches. Despite the high population growth rate of 2.5% (UNDP 2000), the

country has a low population level (5.2 million) and low levels of literacy and education, resulting in limited numbers of trained technical specialists and administrators. Most development assistance projects have 2–5 year implementation time-frames which, given the need for capacity building at all levels, is usually inadequate to make project outcomes sustainable.

The need to integrate conservation and development

Although the overall track record for ICDP implementation is less than satisfactory, it is essential that effective mechanisms be found to bridge the apparent gaps between conservation objectives and people's development needs – and even government development priorities. Laos is highly dependent on the sustainable utilisation of its natural resources, and likely to remain so for many years to come. Reliance on agricultural production on limited arable land, harvesting of timber and non-timber forest products, fisheries, water for irrigation and energy, tourism and possibly mining will be the mainstays of its economy. This emphasises the need for conservation and sustainable use strategies, including effective management of protected areas as a cornerstone of long-term national development.

Despite appropriate policies and laws, and the legal establishment of an extensive protected area system, forest cover continues to decline in Laos and its wild biodiversity is vanishing at an alarming rate (Nooren and Claridge 2001). Logging increased dramatically after the 1997 Asian economic crisis and in late 1999–early 2000 there were recorded instances of illegal logging in some protected areas. While the logging has reportedly brought little economic benefit to the rural poor, they play a major role in the growing trade in wildlife and non-timber forest products. For many of the remote villages in Laos trade in wild products generates income or enables exchange for market goods. Local hunters or collectors receive a pittance compared to the end sale price in China, Thailand or Vietnam. While many of the species that are hunted and traded are rare and endangered, others (such as pangolins, monitor lizards, malva nuts, orchids and certain bird species) could be harvested and/or cultivated sustainably by local people for controlled trade and local consumption. Instead even these "common" species are disappearing, with their last refuges inside protected areas. Some of the traded wildlife species are traditional buffers against food and rice crop shortages so depletion of forest resources has a human as well as a biological cost.

At the landscape-scale, the viability of protected areas as components of the national development framework, providing ecological services, will depend not only on productive collaboration with local people but also coordinated, integrated planning at provincial, regional and national levels. Roads, utility services, dams and timber harvesting all need to respect the value and function of protected areas. The ICDP concept should not be implemented only as an area- or community-specific activity, it is an approach that needs to be comprehensively implemented at the government level.

Specific ICDP approaches in the Lao PDR

Sustainable Use of Non-timber Forest Products Project

Non-timber forest products (NTFPs) make an important but often neglected contribution to the Lao national economy: subsistence use alone could contribute up to 20% of the GNP. Between 1995 and 2001, IUCN implemented a project designed with a primary focus on developing sustainable and economically viable approaches to the use of NTFPs in forests *outside* protected areas. Initially the project was to include only one protected area among its pilot sites, Xe Bang Nouan NBCA in Saravane and Savannakhet Provinces. During the project it was decided also to include pilot activities in Dong Hua Sao and Xe Piane NBCAs in Champassak Province, in conjunction with conservation projects in those areas since valuable NTFPs were being harvested from them.

Although this project was designed to promote sustainable rural livelihoods for forest-dependent communities and to develop the NTFP sector in the national economy, it successfully

developed effective ICDP approaches which led to conservation benefits. Village livelihoods were the primary focus of the project, not an add-on to an otherwise conservation/protected area management-based project. Yet it is this project that probably has the most to offer to protected area project implementation in Laos, in terms of methods and priorities, (Foppes and Sounthone 2000) for the following reasons:

- It identified models of sustainable use of NTFPs that contribute to poverty alleviation, forest and biodiversity conservation, land-use planning and allocation, substitution of shifting cultivation and industrial development;
- The diversity of NTFPs requires multiple, locally fine-tuned solutions;
- Local people can generate solutions in a framework of participatory group strengthening, but this requires a network of exchange and support services;
- NTFPs are the main reason local people go into the forest, so they are potentially a powerful incentive for rural communities to manage forest resources;
- Focus on NTFPs can assist communities in formulating use rules, especially in villages near protected areas.

Key constraints to sustainable NTFP use were also identified, including:

- *Social*: attitudes to forests and nature are not conducive to conservation;
- *Tenure/legal*: lack of security of community rights to forest land;
- *Economic*: Asian economic crisis, decline in market value;
- *Marketing*: lack of transparency, dominance of outside buyers, lack of marketing skills/concepts;
- *Technical*: forest management/monitoring, biodiversity values, domestication, etc, all need more research;
- *Capacity*: lack of trainers, recorded knowledge, and cooperation within the country and region.
- *Networking*: socio-political, technical.
- *Funding*: government budgets to support the sector.

Harvesting from the forest: a rattan collectors camp. Photo: K. MacKinnon.

Even though the project had many achievements during its six-year time-frame, Foppes and Sounthone concluded that "it is unlikely that these constraints can be overcome without continued support for the NTFP sub-sector". In other words, the project time-frame was too short.

Nakai-Nam Theun NBCA Community Development and Biodiversity Conservation

In 1997, IUCN undertook the preparation of a comprehensive environmental and social management strategy and social action plan for the NNT NBCA, at the request of the Lao government and the World Bank. NNT forms the catchment of the proposed NT2 hydropower dam, which at 900 MW would be the largest dam in the country. At almost 4,000 km², NNT is the country's single largest protected area, covering part of the Sai Phou Louang Range that borders Vietnam. In terms of biodiversity richness it is also the most valuable, but it is under severe pressure from almost uncontrolled transborder exploitation. Despite its critics, the proposed NT2 dam, under a joint Lao government-international consortium, presents an interesting model of an ICDP on a grand scale. Pending final social and environmental assessments and endorsement of international loan guarantees by the World Bank (WB), the dam consortium has committed to providing US$1 million per year for 25 years for conservation and social support to the NNT NBCA.

Following completion of an overall strategy, the WB provided grant funding to IUCN to enable the implementation of a range of conservation and livelihood development activities at selected pilot villages during a 13-month period prior to construction. By focusing on specific, achievable targets the project was able to:

- Establish an NBCA management team;
- Initiate alternative livelihood pilot activities in one village including an agricultural trial and demonstration farm, wet rice cultivation (for people who had never cultivated wet rice before), village health volunteer training, primary schooling, and so on;
- Establish a Guardian Village programme in three villages which received enthusiastic support, and bring about the adoption of provisional local rules on wildlife;
- Initiate wildlife trade control activities with district and provincial authorities, as well as joint patrolling in critical habitats, and gun collection.

These pilot field activities suffered from some of the typical hit and miss problems associated with resolving conservation and development issues at the local level, including a lack of continuity of funding support. It is ironic that the large-scale of the overall approach to NT2/NNT was responsible for the failure to maintain continuity for vital local activities. The local people and the biodiversity of the protected area have become hostages to the various machinations and processes associated with resolution of NT2, including delays in decision-making, dam assessment processes, and the search for sources of interim funding. A supplementary funding project, the WB "District Upland Development and Conservation Project" due to start early in 2000 has only just started, two years after it was proposed as a "fast track" mechanism to provide essential support. In the interim, IUCN continued with a smaller grant for six months, after a break in funding support of almost a year. Although interest in wildlife trade interdiction by local authorities continued for some time after funding ceased, other activities were not sustainable. A major cost has been the reduced commitment and faith of the local people, along with the continuing loss of biodiversity. Government commitment has also been disappointing, considering the important linkage to the country's major development project. When the funds ran out, so too did commitments to staffing levels, with the number of allocated NBCA staff falling to less than ten people for the largest conservation area in the country.

Forest Management and Conservation Project – NBCA Sub-programme

This five-year project, completed in 2000, was the US$5 million GEF-funded conservation component of a larger forest management project. The NBCA Sub-programme supported four protected areas. Although a principal objective of the project was the successful development of a pilot ICDP model, this was not achieved. The end-of-project review identified a number of reasons, including various delays and obstacles, inadequate project design, and lack of focus. Nevertheless, the project demonstrated the complexities and difficulties of developing ICDP processes in Laos's evolving political and administrative environment, and highlighted the inadequacies of five-year time-frames for achieving conservation objectives.

Other projects

A number of other protected area projects have been implemented with varying degrees of success over the past six years. These include four areas supported by the LSFCP and two through Netherlands funding. In separate reports Flint and others (1998, 2000) have noted that:

- "While… principles of participatory management and integrated conservation and development are widely accepted, it is their implementation in the local setting and with… local human resources which is a fundamental problem. They place a heavy burden on the technical and social skills, and the commitment of provincial, district and NBCA staff who must negotiate systems and rules, and deliver appropriate development interventions."
- "The trust building nature of these [development] projects may be doubtful… Ban Namphak villagers continue to clear forest in the NBCA for coffee plantations. [Families] in Ban Saming received… toilets and other benefits, yet the flow of wildlife products has not ceased… Similarly, tubewells in Km 33 village have not stopped them hunting tigers…"

In the broader landscape there are positive lessons to be learned from the Lao Community Fisheries and Dolphin Protection Project in southern Laos (Baird 1999). Participatory and co-management approaches to aquatic resource management have resulted in over 60 villages setting up successful co-management systems for fish and frog conservation. A remnant population of Irrawaddy dolphin (*Orcaella brevirostris*) has also been protected and economic benefits accrue to local villagers from tourists visiting the location.

Conclusion

The overarching conclusion from projects in Laos that have attempted ICDP approaches is that flexible implementation, effective long-term commitment of resources and technical assistance hold the key to success. However, it is also important to recognise that ICDPs have limitations. The ICDP concept has failed most significantly in dealing with urgent, priority issues, most notably preventing the decimation of Lao wildlife. As noted by Nooren and Claridge (2001): "reliance on the ICDP approach as the basic strategy for achieving changed community attitudes and behaviours has proved to be a major impediment to effective and timely action". ICDPs cannot be expected to achieve all conservation or development objectives – there is, for example, an important role for more "traditional" tools, such as law enforcement, in dealing with critical conservation issues.

Implementation of ICDP approaches in the Lao PDR will improve if:

- Government follows through with policy commitments at the operational level, especially by: supporting capacity at the central and provincial levels to assist local NBCA staff and communities; ensuring consistency in approach across sectors; recognising the needs and potential contributions of local people; and enabling not delaying agreed technical assistance projects and activities;

- Donors and government develop and implement long-term and continuous strategies of support, that include adaptive management and regular evaluative approaches to ensure that project objectives and methods remain relevant and achievable;
- Government builds the protected area system, at practical as well as policy levels, into a national sustainable development framework that recognises the role that protected areas can play in economic and social development planning. There has to be a conscious forging of links between development benefits and conservation;
- Integrated techniques of conservation and development are applied at all levels – neither filter down nor filter up approaches will work separately in Laos, both methods have to be applied together.
- Government and donors ensure that there is a "proper" balance between the delivery of development and conservation benefits and activities. Experience has shown that development add-ons do not turn a conservation-focused project into an ICDP. A combined or multi-sectoral approach may be more effective, even though it necessitates careful coordination in design and implementation. Thus the social and environmental complexity of protected area management in Laos demands a holistic approach from the government and those providing technical assistance.

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parks

The evolution and scope of ICDPs: the example of the Leuser Ecosystem, Sumatra, Indonesia

KATHRYN A. MONK

An ICDP that supports one of the newest and largest conservation areas in Indonesia under an undeveloped and novel managerial system is a significant experiment. The political, social, and economic upheavals that are occurring concurrently with its implementation are doing nothing to lessen the enormity of the struggle.

The Leuser Ecosystem covers 2.5 million ha of northern Sumatra, encompassing the old, designated Gunung Leuser National Park plus adjacent logging concessions, plantations, and protection forests. The Indonesian government delegated responsibility for its management to the newly formed Leuser International Foundation (LIF) for a period of 30 years. To support this experiment, the Indonesian government and the European Union jointly funded the Leuser Development Programme (LDP) for the first seven years to address shortcomings in technical expertise and related institutional development. In fact, much of the effort of the LDP has been directed at the creation of the new conservation area as a legal entity and attempting to mitigate major threats to the Leuser Ecosystem.

This complex ICDP has, therefore, had a very broad scope of action. This paper reviews the strategy it has taken and emphasises critical influencing factors.

IN NORTHERN SUMATRA, a seven-year integrated conservation and development programme, the Leuser Development Programme (LDP), is in its fifth year. The government of Indonesia (GoI) and the European Union (EU) are jointly funding the LDP with 053 million. Uniquely, GoI is giving cash to this project, rather than the normal in-kind support; cash allows more flexibility in staffing and project development. Originally, this financial support came from the Ministry of Forestry's Reforestation Fund, but following massive economic upheavals in 1997–1998, GoI's contributions now come from their normal financing systems. This brings its own problems as the traditional system cannot cope easily with this new funding idea.

The LDP is focused on a new conservation area called the Leuser Ecosystem, covering 2.5 million ha and encompassing an old, designated national park along with adjacent forestry concessions, plantations and protection forest. Some 2.5 million people live around the Leuser Ecosystem in two provinces (Aceh and North Sumatra), 11 regencies, and 71 districts. Nearly 1,000 villages with people from eight different ethnic groupings lie along the proposed 2,500 km boundary.

GoI delegated the management of the Leuser Ecosystem to a non-profit-making, non-governmental organisation called the Leuser International Foundation (LIF). The ICDP's project management office, the Leuser Management Unit (LMU), is setting up the managerial system and the technical expertise for the LIF, and trying to create the conditions whereby the LIF can continue long-term management of the Leuser Ecosystem. The ICDP started in March 1996. Six European long-term advisers work with Indonesian counterparts to form the core management team, which includes two co-directors (one Indonesian and one European). Headquarters are in Medan, and there are several field offices.

The LMU focuses on park management, buffer zone and rural development, communications, research, and monitoring. Apart from these traditional ICDP activities, the LDP has expanded its activities to address two key aspects: conservation in the broader ecosystem beyond the national park boundary and management by a private organisation. Neither the conservation area nor the foundation are yet fully accepted or established. Government structure and regulations affecting the LDP changed under decentralisation, and there was a breakdown of law and order due to major national political, social, and economic changes. An ability to

Ketambe Research Camp, Leuser. Photo: K. MacKinnon.

integrate ad-hoc crisis-based demands into a more deliberate programme to build consensus, increase participation, and avoid conflict is essential.

Development of the Leuser Ecosystem as a new concept in the Indonesian conservation system

Local people made their first official requests for the conservation of the forests of Leuser in 1924, resulting in the establishment of the Gunung Leuser Wildlife Sanctuary in 1928. Other conservation areas were established later, both during colonial times and after independence, culminating in a conservation complex of some 900,000 ha being declared the Gunung Leuser National Park (GLNP) in 1980 (Rijksen and Griffiths 1995; Wind 1996).

The GLNP protects mainly submontane and montane forest. Only 12% is covered by lowland dipterocarp rainforest. Adjacent to the park, however, lie 1.6 million ha of lowland forests under protection, production, and conversion forest classifications. These forests support the highest biodiversity levels in the region, as well as viable populations of several rare and endangered species such as Sumatran orang-utan (*Pongo pygmaeus*), rhinoceros (*Dicerorhinus sumatrensis*), tiger (*Panthera tigris sumatrae*) and smaller cats, elephant (*Elephas maximus sumatranus*) and serow (*Capricornis sumatraensis sumatraensis*). At least another 20 animal species currently recognised by IUCN as endangered (including otters, bats, lagomorphs, canids, mustelids, viverrids and procyonids, tortoises and freshwater turtles) may also be dependent on these forests outside the GLNP. Few of them live in the high mountainous areas that dominate the national park. Since the GLNP did not provide effective protection for local habitats and species, Decree No. 227 from the Minister of Forestry in 1995 and Presidential Decree No. 33 of 1998 recognised a new and expanded conservation area, the Leuser Ecosystem. It encompasses the national park and nine important water catchment areas, as well as lowland forest of high biodiversity value outside the existing GLNP. The Leuser Ecosystem is one of the most important remaining remnants of the original forest of Sumatra (Holmes 2000).

Although the concept of the Leuser Ecosystem is being increasingly accepted in northern Sumatra, there is no appropriate conservation area classification under the 1990 Conservation of Natural Resources and Ecosystems Act No. 5, which defined the country's protected area system. Moreover, although the Leuser Ecosystem has an integral buffer zone area, this lies outside the jurisdiction of the park management authority under the responsibility of other sectors, which makes it difficult to implement a coherent overall management strategy. The LMU has therefore approached the problem by trying to build a mosaic of conservation areas around the existing GLNP, closing existing logging concessions and lobbying for changes in

land-use to meet conservation objectives. A new, expanded national park may be one option. Meanwhile, criteria for setting boundaries for the Leuser Ecosystem have been established with local governments, and 1,500 km of boundaries in Aceh are delineated with concrete markers, signboards and radar reflectors. Farmers are planting trees between the markers from LMU nurseries.

Rapid decentralisation is also confusing the issue of who is responsible for conservation and production forests (Jepson *et al.* 2001). Regulations determining local communities' access to, and managerial responsibilities for, forest resources are in transition. Exactly how all the land within the Ecosystem will be legally brought into one management unit is still unclear. Until the area has an unambiguous legal identity, it will be difficult for any coherent management system to be developed.

Development of a new managerial system for the Leuser Ecosystem

Originally the GLNP was a typical national park managed by government staff under the Directorate General of Forest Protection and Nature Conservation, with an annual budget of some US$ 400,000. This standard conservation regime worked along bureaucratic government lines with little or no stakeholder participation. With the creation of the Leuser Ecosystem, GoI delegated managerial responsibility to a non-profit, non-governmental organisation, the Leuser International Foundation (LIF); a first in Indonesia. The foundation received a seven-year conservation concession to manage the Ecosystem through Decree No. 227 from the Minister of Forestry in 1995. This built on GoI's interest in alternative management models and two previous experiments in collaboration with profit-making companies to manage island conservation areas (Monk and Purba 2000).

Because the new LIF did not have the expertise to undertake direct management, GoI and the EC jointly agreed to fund a seven-year ICDP, the Leuser Development Programme (LDP) to develop the conditions necessary for the future long-term management of the Leuser Ecosystem

Orang-utans depend upon the lowland rainforest in the Greater Leuser Ecosystem. Photo: J. MacKinnon.

by the LIF. The Financial Memorandum between GoI and the EU allow the LIF to derive its running costs for the management of the Ecosystem from fees, royalties, and other revenues derived from sustainable, non-destructive activities such as ecotourism inside the Leuser Ecosystem.

Presidential Decree No. 33 of 1998 then extended LIF's conservation concession to 30 years but specifically forbade the collection of revenues from non-timber forest products (NTFPs), contradicting the Financial Memorandum and restricting the fund-raising capabilities of the LIF. The LMU has considered alternative financing mechanisms, and is developing a trust fund for the Leuser Ecosystem. This has forced the issue of the structure and operations of the LIF, as these need to be transparent for any donor to give money to such a fund.

The LIF is a new organisation. There are few members other than the decreasing number of founders, and stakeholder groups are not yet included in its emerging executive body. The LMU has therefore directed efforts away from traditional field ICDP activities to focus on establishing the conservation area, having the LIF recognised as the legitimate manager of the Leuser Ecosystem, and developing the LIF executive system. Many of the staff and much of the infrastructure of the LMU will become the LIF management unit, which will take over when the LDP ceases at the end of the seven-year ICDP.

The LMU consists of the co-directors and teams covering administration and finance, communications, and research, monitoring and information, plus three technical implementation teams covering park management, buffer zone development, and rural development/spatial planning. Apart from a core team of six European advisers with six senior Indonesian counterparts, over 300 other Indonesians are employed, mainly from North Sumatra and Aceh. The management unit envisaged for the LIF would be much smaller, as certain activities will no longer be required once the LIF and the Leuser Ecosystem exist and function as intended. The LMU/LIF reports to the Leuser Steering Committee (LSC) and the Leuser Coordination Committees (see Figure 1).

Stakeholders in the Leuser Ecosystem include central and provincial government, universities and schools, the military, the private sector, NGOs and villagers, as well as donor agencies and international parties (Monk and Purba 2000). The original level of participation by most stakeholders was low, partly because of the unfamiliar demands being made on them (Monk and Purba 2000). Since 1999, their increasingly sophisticated awareness and organisation have led to significantly more active consultation and involvement in LMU activities such as monitoring and surveys (NGOs and universities), and village patrol schemes. There is still little involvement of the private sector, however, and no direct representation of stakeholders in the LMU/LIF. Decision-making remains largely with the LMU and with GoI. Although over 250 NGOs in North Sumatra and Aceh profess an interest in the LDP and are involved in LMU field interventions, such as local awareness development, monitoring, and lobbying, they are not represented in the decision-making process within the LMU. Similarly other stakeholders comment intensively on LMU activities, but their direct involvement in the LMU is minimal; thus widening representation in strategic decision-making must be a priority for the future.

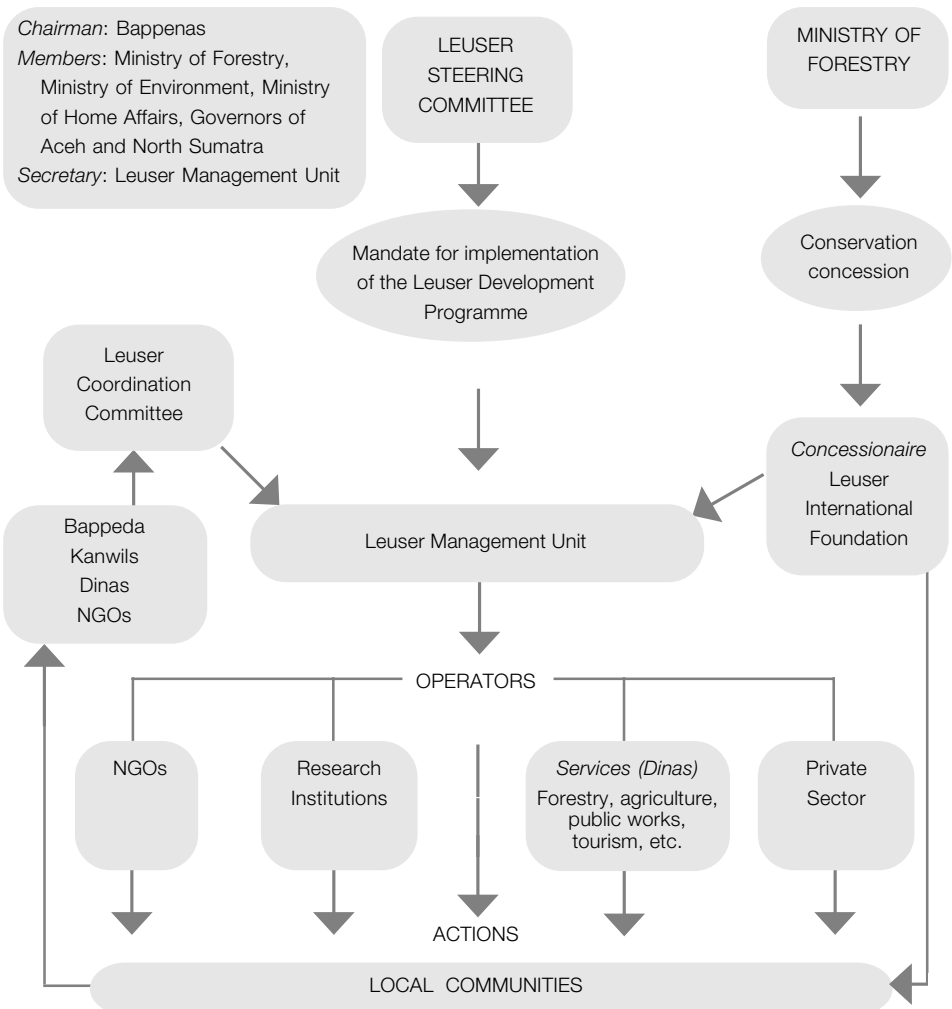
Threats affecting the Leuser Ecosystem

Within the Leuser Ecosystem, forests and their functions are threatened by overharvesting (direct legal and illegal extraction of wildlife and plants), habitat fragmentation, habitat destruction through timber extraction, clear-felling, fire, conversion to plantations, and local encroachment. Introduction of exotic species has not been seen as a threat to the Leuser Ecosystem, although the Siam weed (*Chromolaena odorata*) is extremely widespread in northern Sumatra and may threaten the Ecosystem as more forest is degraded. Historically, overharvesting and poaching were identified as the main threats to the biodiversity of the Leuser area, both inside the GLNP and in surrounding lowland forests, this stimulated the orang-utan rehabilitation schemes in Ketambe, Aceh in 1971, and in Bukit Lawang, North Sumatra in 1973 (Rijksen and

Meijaard 1999). Plans for a remodelled orang-utan rehabilitation programme are now well under way. Poaching of rhinoceros for their horn and gathering of swiftlet nests for soup are two other serious problems. Extraction rates of highly valued plant species such as gaharu (*Aquilaria malaccensis*), and certain rattan and fruit species are not sustainable, with local people searching well into the GLNP itself (Monk 1999a; Wind 1996; Yayasan Leuser Lestari pers. comm.).

Today overharvesting is less of a threat than extensive habitat fragmentation and conversion, which have accelerated alarmingly since 1997 (McCarthy 2000). In a six to seven year period during the 1990s, for example, orang-utan numbers declined by some 45%, from an estimated 12,000 in 1990 to only 6,000 individuals in 2000, because of habitat disturbance and destruction (van Schaik *et al.* 2001). Although the lowland forests around the GLNP are officially listed as protection and production forests, much of Leuser Ecosystem has been granted for logging or full conversion to plantations and transmigration (Monk and Purba 2000). The Ministry of Forestry has issued instructions to close five logging concessions, cancel four road construction proposals, reclassify the production forests to protection forest, and move sawmills inside the Leuser Ecosystem, but provincial-level implementation does not always follow.

Figure 1. *Structural diagram of the Leuser Development Programme and the Leuser International Foundation (LIF/LSC/LCC).*



Innumerable illegal operations occur within these lowland areas. Classically, a 'legal' logging concession causes significant damage during extraction, and then illegal loggers move in, sometimes in cooperation with the legal concessionaire. Subsequently or alternatively, the degraded forest may be legally or illegally converted to plantations or invaded by local farmers, who claim the land for their own smallholdings. In the latter case, after a few years, a plantation company may buy out these farmers. Rogue elements of the security forces are also both legally and illegally exploiting the forest resources of Leuser (Brown 1999; Robertson and van Schaik 2001). Indeed there is evidence of military involvement in support of a company to exploit the forest within the GLNP itself (Monk and Purba 2000). This is not a new problem. In the 1980s, trucks carrying illegal wood were leaving the park at the rate of ten a day and it was listed as one of the ten worst-managed national parks in Asia (Wind 1996). Unfortunately continued logging and forest loss mean that all the lowland forest within the Leuser Ecosystem could be fragmented or lost within the next few years (Holmes 2000; Robertson and van Schaik 2001; van Schaik *et al.* 2001).

Reviewing these problems, Robertson and van Schaik (2001) advise more international lobbying and more money for enforcement operations. To date lobbying has not brought the results desired; cases are attracting much national and international attention but are still unresolved (Environmental Investigation Agency and Telapak Indonesia 1999). Big business interests, whether civilian or military, are generally unaffected by lobbying, and money provided for law enforcement has not produced the expected results. The long-term political uncertainties produce short-term targets, compliance and enforcement of the law is weak, and the judiciary service is unreliable. Changing this situation in a country as big as Indonesia is not simple.

Development of local people's direct participation in forest management

The LDP, as with many other ICDPs, originally interpreted the concept of an ICDP as a direct *quid pro quo* between people and the conservation area, with buffer zone and rural development components being implemented in return for park protection. Microprojects were introduced in the preparation phase, and expectations of rapid rural development benefits from massive interventions were high among all stakeholders when the LDP started in 1996. The pressure from the government to begin implementation was so great that insufficient time was allotted to clarify the aims of participation and to select the most effective techniques and developments to encourage participation and support for conservation. This must be a major problem for many ICDPs and is a difficult one to alleviate. The LMU itself implemented some 400 field interventions during the first four years (LMU, 2000). Few could be said to have a direct biodiversity conservation value, although many may have improved local income generation options.

Agreements to provide direct biodiversity protection have not succeeded. In the highly volatile and unregulated situation in Indonesia, these agreements are vulnerable and difficult to enforce. Even though encroachment into the Ecosystem by local people acting on their own behalf is generally not the major threat, sponsored illegal logging and conversion involves local people (McCarthy 2000). Hence, from the start, expectations of forest protection coming from a *quid pro quo* with local people were unrealistic. They cannot stop outsiders, especially those with powerful backers. They have no interest in stopping other locals, even if they realise that they themselves stand to lose access to goods and services, as long as they have no feeling of ownership or custodianship over the forests (McCarthy 2000). Moreover, changes in forest management law are still uncertain, so that the LMU has difficulty facilitating the development of community management systems.

The LMU attempted to promote sustainable use of forest resources (e.g. rattan and bamboo), but developing alternative benefits from forest harvests for local people, even when they have clear legal access and responsibilities, is more than just a matter of technical improvements. Commercialisation and marketing skills are also necessary and the variability of demand for NTFPs should be understood. For example, local collectors of dammar within the Leuser

Ecosystem were involved in a community-based management system with WWF (McCarthy 2000). (Dammar is a resin from *Shorea* and *Hopea* species used in the production of paints and varnishes, which is becoming more popular again as demand for natural products increases.) They requested help from the LMU to learn new extraction techniques, which they applied. The single middleman from Medan decreased his prices as production increased. Those promoting such activities within ICDPs need to look at the whole picture, and understand crucial market forces at work in their areas, including closed shops and 'mafia' type commercial organisations that control certain businesses (Neumann and Hirsch 2000). The situation in northern Sumatra is particularly complex in this respect.

Quid pro quos developed at regency and district levels have included implementing developments unrelated directly to the protection of the forests, but given in return for promises of stopping either certain high-impact projects or other damaging activities. In the chaotic situation of local government change, with many inappropriate development projects being suggested, it is difficult to see how else these actions could be stopped. These agreements are, however, almost impossible to enforce. When the quid pro quo is for a delay or necessary only for a short time, the agreement may meet its purpose but it is often difficult to justify transparently.

In comparison with the lack of success at a local level, the LMU has had much success in obtaining broad statements of commitment for conservation from communities. This follows a tradition within the Leuser region of statements of intent from prominent groups since the Tapatoean Declaration in 1934. Recent examples are the Karo and Dairi Declarations of 1999. These provide publicity, goodwill, and some consensus.

The LMU, concomitantly with many other ICDPs, is now linking conservation with regional and spatial planning. The first steps were taken at the start of the LMU's work, when it strove to produce accurate, standardised maps for use throughout the programme area and in all involved government sectors (Monk 1999b). Recently, decentralisation occurred at a surprising speed, and few regencies have detailed spatial and development planning capacity for sustainable development, nor do they have the mechanisms to coordinate with neighbouring districts regarding forest and watershed management (Jepson *et al.* 2001). In response, the LMU moved much of its development resources from direct microproject intervention in the field to helping regencies develop spatial plans. Appreciation and understanding of the long-term benefits of the Leuser Ecosystem, especially in appropriate water, soil and biodiversity conservation, is still low and yet these concerns must be now immediately integrated into mainstream development plans if important forest areas are not to be lost.

Conclusion

The overriding problems for the conservation of the Leuser Ecosystem may be beyond solution through an ICDP model. Leuser is nested within a major political conflict situation that even national and international lobbyists have difficulty in influencing. Specific examples show that it is possible for central influence to curb and control local activities. Only if the judiciary system and the policing system work, however, is there a chance to save the last essential forest remnants from massive illegal destruction by powerful elements. Extra money is not enough. Political will must be there.

If outsiders did not threaten the forest resources, would the local communities take responsibility for community-based sustainable forest management? The scale and coordination of biodiversity-linked income generation development within the LDP is still too small to have much impact on local people's lives and perceptions. Because of the present uncertain legal situation, there has been little attempt to involve local people directly in managing the forest. Communities are unlikely to take on this responsibility if they feel disenfranchised and land tenure and rights are still unclear. A greater role for local communities in forest management is, however, a desirable option for the future.

Much effort is focused presently on setting up a basis for environmentally sound spatial planning within the emerging local and district governments in the hope that future conditions will allow their full and legal implementation. A linked strategy for developing local community conservation agreements and participatory management plans in potential utilisation areas could then be realised.

The LIF has yet to demonstrate a functioning executive body that is accepted as legitimately representing the stakeholders of the Leuser Ecosystem. Whilst major improvements in awareness have occurred in the past two years, the LIF is still developing functional processes for representation and assessing the level and timing of involvement of stakeholders. Better representation is essential if the experiment in government delegation of conservation management is to succeed.

The LDP has just over one year left to run. Several unexpected and serious factors mean that it has not yet completed the development of the conditions required for the effective management of the Leuser Ecosystem. It would be premature to declare the LDP ICDP a failure; instead, analysis of current shortcomings and needs should be used as a basis to ensure the very necessary continuation of efforts to conserve the Leuser Ecosystem (see Redford and Taber [2000] for general observations). Regardless of the reasons for the delay hitherto, the GoI needs to decide quickly whether it fully supports the concept of the Leuser Ecosystem and the delegation of its management to the LIF. If so, the LIF must develop as a fully-fledged representative body capable of taking on management of the whole ecosystem. If the political and security situation allows, it may be appropriate to extend the current ICDP or to establish a new programme. The most difficult question is whether the forests, especially lowland forests, will be still be there and how much can be saved.

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Good fences make good neighbours: Area de Conservación Guanacaste, Costa Rica

DANIEL H. JANZEN

The 153,000 ha Area de Conservación Guanacaste (ACG) and World Heritage Site in north-western Costa Rica is one example of place-based restoration and conservation of a tropical dry forest ecosystem and its adjacent ecosystems through its integration with local, national and international society. Fifteen years and $45 million have generated substantial progress down this path. There have been no spectacular breakthroughs, but success has required single-minded attention to the goal. The classical national park structure that gave us the raw biological materials to work with in 1986 requires substantial modification to survive in today's world of privatisation, decentralisation, global markets and technical feasibilities. Restoration is easy – stop the assault and let nature do its thing. Multi-faceted integration and self-sufficiency have required much more effort. Perhaps the largest impediments are that national society has a tendency to want to manipulate the conserved area to its own ends rather than let it be what it is meant to be, and international society continually changes the rules of the game and the structure of the playing field.

THE AREA DE CONSERVACIÓN GUANACASTE in north-western Costa Rica is place-based conservation of a tropical dry forest ecosystem. It is an attempt to learn by doing the pragmatic, frontier approach. Here, I reflect on some of the trials and tribulations of the first 15 years of the ACG as ongoing construction of a tropical conserved wildland that is integrating with its local, national and international constituencies in order that its biodiversity and ecosystems may survive into perpetuity.

A brief history

Today's ACG consists of 110,000 ha of land and 43,000 ha of the adjacent Pacific Ocean. It was born in 1966 as a tiny national monument, and then in 1971 became the 33,000 ha dry forest and marine Parque Nacional Santa Rosa, a key part of Costa Rica's new Servicio de Parques Nacionales (Boza and Mendoza 1981, Cornelius 1986, Wallace 1991). By 1985, the stresses of annual anthropogenic fires, poaching, small size, neighbouring wars, centralised government, shrinking budgets, national inflation, militaristic park guarding, and a host of more minor ills were already rapidly reducing its biodiversity conservation potential to not much more than that of a brushy dry forest cattle pasture around forest fragments in ravines.

In the same year, my biologist wife Winnie Hallwachs and I had two experiences in conservation biology that turned us into volunteer biodiversity developers for this small national park. First, Costa Rica's rainforest Parque Nacional Corcovado was invaded by 1,500 gold miners who felt socially legitimate because the place "had no owner", and the solution to their removal was found to be largely that of convincing them that indeed a national park did have an owner (Janzen *et al.* 1985). Second, the government of Australia asked us to offer ideas as to how to make its enormous expanse of seemingly unoccupied tropical dry forest less attractive to the land-hungry populations to the north. And, in the course of our field inspection, we found that the land-hungry had also managed to burn the area so thoroughly that a fire-cycle wooded grassland now appeared to be the natural state (Janzen 1986a, 1988a).

We returned to Santa Rosa and realised that we had never asked how one goes about stopping the anthropogenic fires, letting the forest recover, enabling the place to be viewed as owned by society, and to become large enough and developed enough to pay its own bills as well as be home to its biodiversity (Allen 1988, 2001, Janzen 1986b, 1987a, 1988b-c). Once conservation

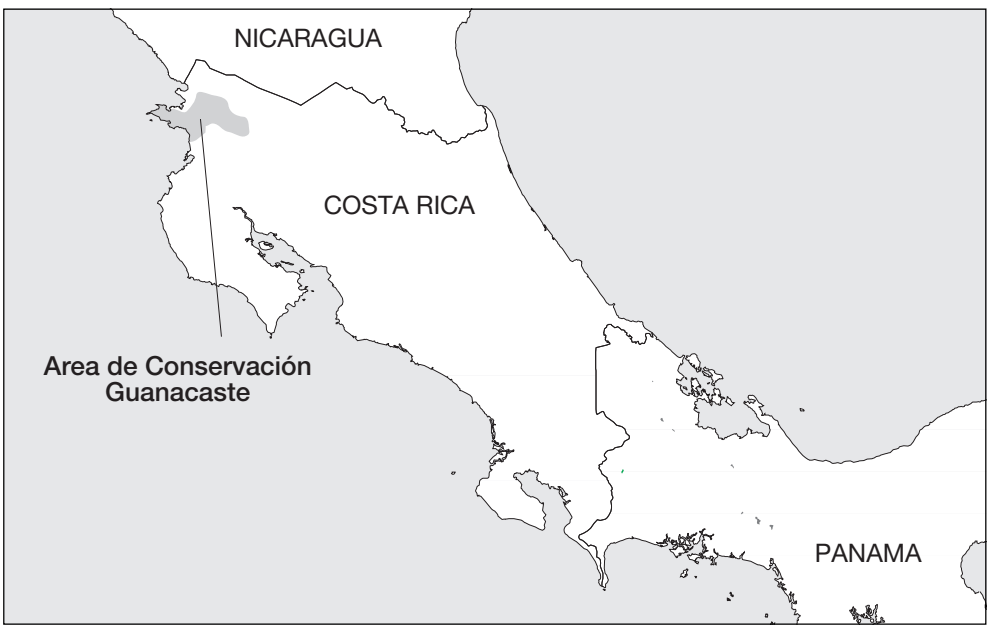
had been posited in that form, rather than as "guarding", the newborn ACG became an exercise in biological and social engineering (Janzen 1988a-f, 1989a-d, 1990, 1991, 1992a-d, 1993, 1994a-b, 1995, 1996a, 1997a-c, 1998a-c, 1999a-b, 2000a-e, Janzen and Gamez 1997, Janzen and Hallwachs 1992, 1994, Janzen *et al.* 1993a-b, Livernash 1998, Williams 1994). First called the "Guanacaste National Park project" (GNP), it was then decreed the Unidad Regional de Conservación Guanacaste (16 August 1989), and then the Area de Conservación Guanacaste (9 July 1991). It became an amalgam of three national parks, two wildlife refuges, one forest reserve, one *zona protectora*, and the surrounding matrix of private land purchased for inclusion. It became a single biophysical unit – all with one budget, one director, one staff, one local board of directors, and one goal (Janzen 2000a-d).

There have been no new wheels to discover in the ACG. But there has been a great deal of borrowing of wheels from other carts, cars and aeroplanes, and levelling of roads on which they can run, and adjusting the loads they are expected to bear. Axle-grease and fuel are resources always in short supply. There are lots of quarrels about who gets to drive the bus, who gets to be a passenger, who changes the flat tyres, and who gets to draw the road map. But the bus continues to get there because it has one overriding destination – the conservation of the ACG's wild biodiversity and ecosystems into perpetuity.

Status and biodiversity values of the ACG

The ACG is a UNESCO World Heritage Site, 90 km in length and 5–30 km wide, crossing nine Holdridge Life Zones in its continuous transect from marine through Pacific coastal dry forest and cloud forest (1,500–2,000 m) to Atlantic rainforest in north-western Costa Rica (www.acguanacaste.ac.cr and http://janzen.sas.upenn.edu/caterpillars/RR/rincon_rainforest.htm). It is spread across recent to ancient volcanic soils, recent marine deposits, and ancient serpentine. Its range of species rivals the biodiversity of the continental United States and Canada (Janzen 1996b). The ACG is a fine-scale mosaic of ecosystems constituted of old-growth and 0–400-year-old secondary succession, all being allowed to restore themselves (by stopping

Figure 1. *Area de Conservación Guanacaste in north-western Costa Rica, extends from the Pacific Ocean to the Caribbean lowlands. Further detail may be found at www.acguanacaste.ac.cr and http://janzen.sas.upenn and click on Rincon Rainforest.*



the anthropogenic fires, hunting, farming and logging) to a conserved wildland that exists as a large island in a sea of agricultural landscape. This geographic status is the unavoidable destiny of the ACG, no matter what kinds of "corridors" eventually appear between it and other large conserved wildlands. The ACG is the only large conserved wildland in the Neotropics that extends from the Pacific Ocean to the rainforest of the Atlantic coastal plain. The ACG is also restoring and conserving one entire dry forest ecosystem and its adjacent marine, cloud forest and rainforest complementary habitats (among which, thousands of species annually migrate, e.g. Janzen 1987b-c, 1988g, Hunt *et al.* 1999).

The ACG is a decentralised portion of the Sistema Nacional de Areas de Conservación of the Ministerio del Ambiente y Energía (MINAE) of the government of Costa Rica. Its administration is an irregular and still adjusting government-private alliance conducted on land owned by the State but paying its own bills and guided by principles more common in the private sector than in state bureaucracies.

The entrance sign to the ACG says "*Area de Conservación Guanacaste, fuente de vida y desarrollo*" (fountain of life and development). The key word is "development". While today this is the only "national park" in the tropical world with such a mission statement on its entrance, it is an easy prediction that others will find themselves seeking the same path (Janzen 1998a, 2000e). If the ACG is to allow for biodevelopment and yet conserve itself, it must remain a single entity that does not dissolve into the agricultural landscape.

Local and other development threats, and root causes of biodiversity loss

If tropical rainforests were as friendly to the farmer and rancher as are dry forests, there would be essentially no rainforest left to try to conserve. The ACG dry forests, like tropical dry forests everywhere, have long been favoured sites for pre-Columbian and European agriculture (Janzen 1986a,b). The simple root causes of biodiversity and ecosystem loss are ecosystem conversion (to agricultural landscape), habitat reduction and fragmentation, species-specific harvest of desired animals and trees, and dry-season free-running fires set both for management (to maintain cleaner pastures) and through indifference (who cares if the forest burns?).

The indigenous impact on ACG dry forest (and cloud forest and rainforest) was hunter-gatherer and light agriculture – light because its soils in general are among the worst in Costa Rica. Beginning in the late 1500s, the ACG dry forest became a low-yield livestock ranch and a site of timber harvesting, lightly hunted and semi-annually burned (to open pastures and keep them free of forest reinvasion). However, it was never sufficiently profitable to have been thoroughly cleaned of its biodiversity.

Because of this low agricultural value, and a variety of historical, sociological, and other biological reasons, in 1985 the ACG dry forest area was chosen for ecosystem-level restoration through stopping the anthropogenic fires, eliminating further farming, logging, ranching and hunting (by land purchase and management), and consolidating all the pieces into one large biophysical and administrative unit. Since there was no large piece of Mesoamerican dry forest to be conserved in its old-growth state, the decision was made to restore one. Furthermore, the decision was made for it to be large enough and user-friendly enough that it would be a welcome member of local, national and international society. If it had been a tiny jewel, as are so many national parks, every hectare would have had to be nursed and protected as a national treasure. Because the ACG had never been a successful agri-ranching operation, because it is very large and biotopographically diverse, and because it is far from the national seat of power, the only species lost in its 400 years of European-style assault were those that are nationally extinct (e.g. giant anteater *Myrmecophaga tridactyla*) or nearly so (green macaw *Ara ambigua*). Costa Rica lost its megafauna – except for the tapir, horse and jaguar – to hunters 9,500 years ago (Janzen and Martin 1982, Barlow 2001).

Beginning in 1985–1986, the threats were mostly handled by:

(1) raising the money to purchase the land to be restored on the open market (rather than attempt to take it forcibly),
(2) extinguishing fires both within the ACG and before they arrived,
(3) intensively reaching out to the community through on-site teaching basic biology in fourth, fifth and sixth grades for all 42 neighbouring schools (2,500 students per year),
(4) employing and managing locally,
(5) establishing an endowment fund to meet annual operation costs,
(6) inspiring and professionalising staff to be accountable and responsible for their particular specialisation, and
(7) placing the overall policy of the ACG both under the control of a local board of directors who share power with the central government and its NGO and, simultaneously, in the hands of the ACG staff. The entire operation has cost about $45 million over 15 years, to restore and conserve two per cent of the country.

As the ACG became a consolidated administrative and biophysical entity – essentially a very large ranch among other large ranches and a smattering of small farm-ranches – the nature of the threats to it as a whole changed from "the little guy with a chain saw" to today's quite different society. During this 15-year period the social and biological environment of north-western Costa Rica, to say nothing of the world at large, also changed dramatically. Sociologically, the region is undergoing the same flight to the cities, or urbanisation, characteristic of much of the Neotropics occupied by European immigrants and their descendents. This is not only a geographic flight. Today's young adults have neither the inclination nor the technical ability to be frontier farmers or hunter-gatherers. Equally important, the globalisation of the beef industry (rendering it no longer viable on many of Costa Rica's young and old marginal pastures), and the tightening of national legislation on the cutting of tropical hardwoods, has meant that land

*Jaragua grass-forest edge that was characteristic of tens of thousands of hectares of the ACG at the beginning of the restoration process (30 December 1980), by native grasses, and had been burned every 1–3 years. The forest to the left and background is old secondary succession oak (*Quercus oleoides*) with more than 100 other species of trees mixed in.* Photo: Dan Janzen.

could be purchased relatively freely and cheaply for both the rescue of remnant forest and restoration of any forest. In short, conversion of the ACG from low-grade agri-ranching to a hopeful beginning of wildland biodevelopment is widely viewed as good local and national policy, and also fits well with current international trends.

Today's threats to the ACG are a combination of national and international factors. Internationally, we watch with apprehension the sweep and change of agricultural fashion and disease. Biotechnology can, today, design a crop for any square metre of land. A crop plant is merely a photosynthesis-driven machine and we are fast losing 'agricultural unviability' as the single greatest friend that conservation ever had (Janzen 1987d). If the European beef industry succumbs to 'mad cow disease', what was our neighbouring worthless cattle pasture, in line for forest restoration, may abruptly become pricey real estate. If the Kyoto Protocols, or other similar agreements, are not adopted internationally, the ACG, and Costa Rica as a whole, will lose a major opportunity to capitalise its forest restoration process, and hence have a weaker base for biodevelopment and direct biodiversity conservation. If the global orange juice market continues in its decline, the ACG will have weaker neighbours who are less able to purchase the ACG's environmental services (Livernash 1998, Janzen 2000a, Escofet 2000). As other tropical countries make their societies ever more ecotourist-friendly, Costa Rica loses its comparative advantage and can no longer rely on bed-and-breakfast and a beautiful forest to bring in the tourist dollar. In other words, some of the enabling conditions for carrying out the local survival of the ACG through biodevelopment – employment, intellectual development, equal opportunity for women, market development for specific products, poverty alleviation, contribution to the GNP, national political acceptability, etc. – depend very heavily on actions in the international arena as well as the ACG's ability to respond to them.

A conservation area must survive in a national as well as a local arena. A biodeveloped conserved wildland may benefit neighbouring communities sufficiently to be well received

Same view as in photo opposite (4 November 2000), following 17 years of elimination of anthropogenic fire. The canopy of the oak forest is still visible as horizon, and Winnie Hallwach's hand is 2 m above ground. The isolated Crescentia alata *(Bignoniaceae) tree in Figure 2 is now totally hidden by the young forest. The bulk of the young forest is wind-dispersed* Rehdera trinervis *(Verbenaceae), intermixed with another 70 woody species. Such rapid natural forest invasion of pasture in the absence of fire is characteristic of tens of thousands of hectares of the ACG.* Photo: Dan Janzen.

locally, yet still be viewed as economically unattractive to centralised governments and societies. Moving the decision-making and spending process from a centralised government to a decentralised ACG automatically reduces political and economic resources of the very centralised government whose consciousness spawned the conservation area in the first place. The single largest national-level threat to the construction, growth and biodevelopment of the ACG is the mass of traditions, legislation and income streams in central government and centralised society, all of which are organised around keeping the income stream flowing to the central system. No society has much interest in moving control of the source of production to that source of production.

A national government of a tiny tropical country like Costa Rica operates on a minuscule budget and a per person GNP that is about 10% of that of the developed world. The annual operating budget of the government of Costa Rica is about the same size as that of an upper rank US university. While it may be reasonable to expect a national government to be a minimal contributor to the initiation of conserved wildlands, it is unreasonable to expect them also to sustain the much greater costs of their long-term survival as a resource for the globe as well as the country. However, for a conserved wildland like the ACG to become self-sustaining, both through development of its own endowment (trust fund) and through non-damaging remunerative environmental services (ranging from ecotourism to carbon sequestration to biodegradation of agricultural waste), it must be allowed freedom to do so rather than being viewed as a low-investment ward of the state that supports the central treasury.

The major national 'threat' to the ACG is, then, that of not being allowed to be the ACG, but rather being forced back into the traditional "national park protected by a *guardaparque* with a gun" model. This model has (fortunately in many cases) given society the raw materials with which to conduct biodevelopment, but will not sustain those raw materials in the face of normal human avarice and the simple desire for 'more'. In other words, the establishment of a national park is the purchase of biodiversity existence value by the conservation donor. However, if only purchased but not developed, it has no survival ability. Buying a new car is only the first step in winning a car race.

Institutional arrangements, including local conservation agreements

There were at least seven key founding institutional arrangements and local conservation agreements for the ACG. First, the directors of the (then) existing Servicio de Parques Nacionales, Dirección General Forestal, Dirección General de Vida Silvestre, and the government-controlled NGO (Fundación de Parques Nacionales) agreed to relinquish their political/administrative power over personnel and land to the control of a single administration, budget and goal (restoration and conservation). This far-reaching step of 1986 also paved the way for today's Sistema Nacional de Areas de Conservación (SINAC), which is the amalgamation of the three government agencies. The ACG is today one of the eleven divisions of SINAC.

Second, the decision was taken that what was to be conserved would be bought on the open market and transferred to the state (as classical 'national park'), and that all possible efforts would be made to leave the adjacent farmers in peace as good neighbours. This policy has been muddled by the central government's insistence that the ACG also take over the enforcement of various environmental regulations in the agricultural landscape.

Third, the policy was adopted that all ACG staff would be trained for specific tasks (education, fire control, administration, ecotourism, research, restoration, etc.), permanent, resident, largely trained 'on the job', and Costa Rican, whether local or newly immigrant from other parts of Costa Rica. Implicit in this policy is that essentially all of the $1.7 million annual ACG budget is spent locally, and that the ACG is among the largest employers in the agricultural landscape.

Fourth, a local board of directors and assembly for the ACG was appointed by the ACG itself (subsequently becoming self-replacing) and charged with the responsibility of approving annual budgets, work plans and the director. This power is irregularly shared with the central Ministry of the Environment and Energy, a relationship that requires considerably more polishing.

Fifth, it was agreed that about 20% of the annual budget should be directed to carrying out the biological education programme in all neighbouring schools on-site within the ACG. The simple goal is to create a bioliterate community that has also had early and positive interactions with the ACG as a biophysical place and social institution.

Sixth, it was agreed that all costs of the ACG would be met through fund-raising, subsequent interest income from its endowment (generated by fund-raising), and payments for environmental goods and services. The latter aspect, involving the development of a diverse income portfolio for the ACG, has been slow to come about because of central government obstruction and possessiveness. However, the process is gradually moving forward. The reality is that conservation of this two per cent of the country will not cost the national budget anything, and that it will eventually contribute at least as much to the national economy as it would if converted to average agricultural landscape. However, it is assumed that were it to fail in the latter aim, it would remain a conserved wildland – and in that key way it differs from traditional agricultural landscape.

Seventh, it quickly became apparent that the highest quality conservation would be achieved through simply stopping the major threats (fire, hunting, logging) on land owned by the ACG, and expanding the size and ecosystem coverage of the ACG to include maximum area and diversity of habitats and ecosystems – in other words, leaving nature to itself. The task is not to apply "conservation biology" so much as to focus on the integration of this wild area with local, national and international society.

The details of how this integration is being achieved are extremely place- and circumstance-specific, as they will be with any conserved wildland. The ACG happens to have a major rice-growing area downstream from its principal river; this will bring both the bounty of future water charging, and the ire of those charged. The ACG happens to have a major orange plantation on one boundary; this offers a market for the ACG's orange pulp biodegradation services, but brings attacks from those who feel a conserved wildland should be "pure" and do not understand (or want to understand) the forest restoration process (Livernash 1998, Janzen 2000a, Escofet 2000). The ACG happens to be in a society where all children go to school through sixth grade; this produces an excellent opportunity to introduce bioliteracy, though urbanisation is rapidly taking the children away from nature's books. The ACG happens to be embedded in an urbanising European/Mediterranean immigrant community; love of forest living is not an obstacle to conservation, but neither is it a motor for conservation.

The ACG is being constructed at a time when the world is moving from typewriters to the Internet, when there is too much carbon in the air, and when some fraction of the global community is getting ever more tired of its urban-agricultural landscape and appreciates the existence of some remnants of what once was. In this socio-political climate, the institutional arrangement of the ACG has to be pro-active and opportunist, seeking out markets for its environmental services, claiming the right and responsibility to take care of itself, and seeking whatever paths to survival it can find in an ever more anthropomorphised world.

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parks

ICDPs: imperfect solutions for imperilled forests in South-East Asia

KATHY MACKINNON AND WAHJUDI WARDOJO

Integrated conservation and development projects (ICDPs) aim to link the conservation of biological diversity in parks with local social and economic development. Reconciling the needs of conservation and local communities is a complex and difficult task. Indonesia has adopted the ICDP model to support conservation objectives and strengthen protected area management. This paper examines the challenges, opportunities and lessons learned from more than a decade of ICDP projects in Indonesia which have attempted to link conservation to rural development to foster local stewardship and better integrate protected areas, conservation and sustainable use with regional planning and mainstream development programmes.

CONSERVATION BIOLOGISTS are spending considerable effort and resources on setting and re-setting conservation priorities, yet scientific planning, based on biological values, is just the first step in the process of establishing and maintaining a protected area network. The long-term survival, protection and management of these areas will depend on a whole host of other political, social and economic factors (MacKinnon 1997, Brandon *et al.* 1998). At a landscape scale, protected area viability depends on commitment from government and other agencies to protect these reserves, including recognition of conservation areas as a valuable land use and an integral part of regional development. At a local level, some communities may have derived parts of their livelihoods from the designated conservation area and are now likely to see their rights curtailed; others may be recent immigrants exploiting forest resources and clearing land for agriculture. In both cases their legitimate need for land and livelihoods must be addressed. Integrated conservation and development projects (ICDPs) have evolved as one response to that need.

ICDPs aim to link the conservation of biological diversity in parks with local social and economic development (Wells and Brandon 1992). Reconciling the needs of conservation and local communities is a complex and difficult task. Often such initiatives have met with only limited success, satisfying neither the conservation nor the rural development agenda (Brandon *et al.* 1998, Wells *et al.* 1999). Three case studies from Indonesia illustrate the challenges and opportunities in linking conservation with development.

Empowering local communities in Papua (formerly Irian Jaya)

Empowering local communities to take an active role in boundary demarcation, protection and stewardship of a protected area and its resource, has proved to be an effective conservation tool in the Arfak Mountains Nature Reserve in Papua. The Arfak forests harbour over 110 species of mammals and 320 species of birds, with more than half of these being island endemics. Traditionally this land was owned by the Hatam people, and it was obvious that it would be futile to try to stop them from collecting resources in the reserve. Instead the World Wide Fund for Nature (WWF) worked with local Hatam villagers to develop a management strategy that would enable them to continue their traditional lifestyles but engage them as guardians of the area against outsiders.

The reserve and adjacent outlying lands were divided into sixteen nature reserve management areas (NRMAs), defined by the extent to which each collective group of landowners was willing to work together. A committee of influential people, such as village heads and church leaders, was assigned to manage each NRMA in accordance with tribal customs and community decisions. The committee was responsible for identifying official landowners and overseeing the correct marking of the boundaries. The Hatam were allowed to retain enough land outside the reserve for future

subsistence needs. The Hatam worked unpaid to mark the western boundary of the reserve which all villagers had agreed. These boundary markers have survived, while those planted by the Indonesian authorities, without consultation, have not (Mandosir and Stark 1993).

The management system developed with the Hatam works because the boundary falls under multiple jurisdiction and allows rapid identification of violators as either landowners or outsiders. No-one is allowed to establish permanent houses or gardens in the reserve but the indigenous people are allowed to collect firewood and timber for home use and to hunt with traditional weapons such as bows and arrows. Members of one community may not take forest resources belonging to another community without permission of the owners. Fires may be built for cooking and comfort but not to aid hunting. The Hatam can continue their traditional lifestyles but outsiders are not allowed to hunt, to make temporary shelters from forest materials or to remove plants, trees or animals. Infringements are initially dealt with by the committees, which have government-sanctioned powers to enforce reserve regulations. Usually violations cease after warnings and fines at the community level, but options exist to pass the matter higher to the reserve management authority or to the district government officer (*camat*) if necessary. The local communities have seized the opportunity to play an active role in protecting their own traditional lands and resources.

As well as promoting local stewardship of the reserve, WWF also worked with the communities to provide alternative income-generating activities in order to reduce the need to extend gardens within the reserve. One project involves farming of birdwing butterflies (*Ornithoptera* spp.), whose larvae feed on the *Aristolochia* vine in secondary forest adjacent to the reserve (Mandosir and Stark 1993). Villagers harvest the live pupae which are then sold to a marketing centre; no adult butterflies can be caught or sold. Since many pupae are not found, wild populations are continually being replenished. With careful control of collection and marketing by the committees and a local NGO, the butterfly farming should be sustainable. This activity is directly linked to protection of the nature reserve, where wild butterflies spend most of their lives, yet it provides local people with a cash 'crop' that is light to transport and yields high returns ($1.50 to $60 according to species) without damaging the natural forest.

WWF are also working with local communities to strengthen park management in Wasur National Park (412,000 ha) in south-east Papua, on land owned traditionally by 2,000 members of the Kanum, Marind, Marori and Yei tribes, who use it for shifting garden cultivation. Another 65,000 people live around the fringes, many of them subsistence farmers. The need for cash to buy household essentials has led these local communities to engage in small-scale logging, hunting and selling land. The WWF project is working with local community groups and government agencies to recognise the park as a traditional use area where indigenous people and long-term residents are allowed to continue their traditional agricultural and hunting activities (Craven and Wardojo 1993).

Part of the management strategy has been to stop illegal hunting with firearms by outsiders while allowing local people to continue hunting traditionally with bows and arrows within their clan ranges. Deer are an introduced species and keeping their numbers in check probably helps native wildlife. Furthermore, the income generated alleviates rural poverty and wins support for protection of the park. Other income-generating options are also being tested: they include ecotourism and the extraction of essential oils from the leaves of the native paperbark trees (*Melaleuca*). The involvement of local villagers in the protection, management and controlled exploitation of common natural resources is proving an effective tool for conservation (Craven and Wardojo 1993).

The Papua programmes have worked well, through a mixture of acknowledgement and extension of traditional rights and customs and the provision of small-scale economic activities. They offer some simple lessons and ingredients for success: close consultation with local people; identification of key players; understanding of community needs; provision of alternative

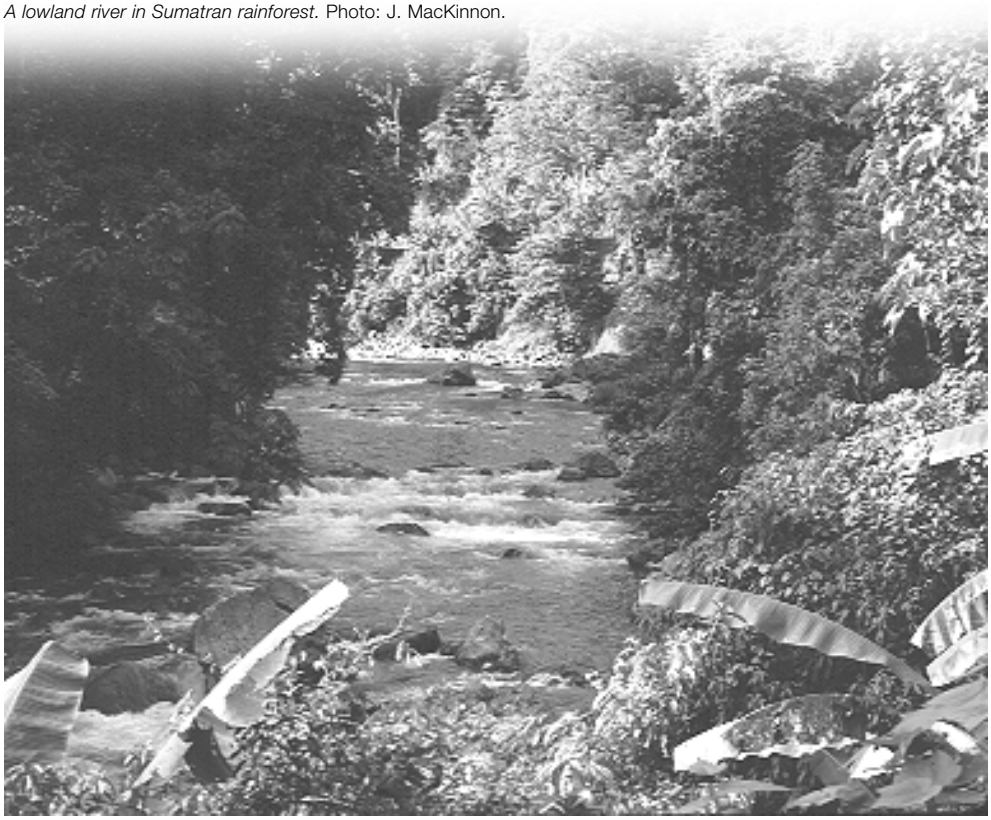
income-generation or social benefits which come 'on stream' quickly; strict enforcement of agreed boundaries and regulations, with the communities themselves engaged in guarding the reserves; employment opportunities for local people; flexibility to adapt management strategies to local needs and situations; and clear linkages between economic benefits and the park. Perhaps most important of all, the ICDPs have empowered indigenous communities to decide on the development of the area and to protect their traditional lands against outsiders. It could be argued that the situation in Papua was predisposed to conservation since the tribes live close to the land and are dependent on natural resources. As community aspirations and opportunities change, other management solutions may be needed.

Integrating conservation with regional development in Sumatra

Most ICDPs, in Indonesia and elsewhere in South-East Asia, have been local efforts to relieve pressure on parks and reserves by offering small-scale economic activities to surrounding communities. They are based on the perception that most threats are local and that local development opportunities will reduce these pressures. A few ICDPs, like those focusing on Gunung Leuser National Park (Monk, this issue) and Kerinci-Seblat National Park, both on Sumatra, are much more ambitious and attempt to fully integrate the park with local spatial planning and regional development programmes.

These ICDPs strive to address development at both the local and the regional level. Both take an ecosystem approach to biodiversity conservation and attempt to work with logging concessions around the parks to maintain conservation efforts over a wide spectrum of habitats, spanning all altitudinal gradients from lowland rainforests to montane habitats. Both are generously resourced with donor and government funds (Leuser National Park is financed by the European

A lowland river in Sumatran rainforest. Photo: J. MacKinnon.



Union while Kerinci-Seblat National Park is funded by the World Bank and the Global Environment Facility). Both have produced detailed spatial plans, attempted integration with regional spatial planning, and invested heavily in local developments. As well as strengthening park management and attempting to integrate the parks with provincial planning, both are also following the more traditional ICDP model by providing financing to adjacent communities to develop alternative livelihood opportunities and rural development consistent with park conservation objectives. Communities are expected to enter into conservation agreements.

These larger ICDPs have met with mixed success (Wells *et al.* 1999; Monk, this issue). In 1999, after lengthy consultations, the Kerinci boundaries were finally marked and Kerinci-Seblat became the first national park in Indonesia to be fully gazetted. Leuser has built upon 30 years of testing different conservation models, and has initiated new institutional and financial mechanisms to support the park and the surrounding forest ecosystem. Both have created new partnerships. The Kerinci project has established an inter-provincial steering committee with representatives of local government and NGOs from all four provinces which overlap the protected area. Some 60 villages around Kerinci have mapped community land use, committed to conservation agreements and chosen development options, ranging from improved infrastructure to new crop varieties. Often the linkages between the development outcome and conservation are unclear, but there seems to be some evidence that villages which have received benefits are encroaching less on forest lands than villages which have not entered into such agreements. Nevertheless forest loss and encroachment to grow valuable cash crops such as cinnamon continue, often with the connivance of local authorities. Enforcement and management are difficult in a period of political uncertainty and local government is generally weak. At least one local *bupati* (regent) still regards the park as a lost opportunity, even though in recent months his constituents have suffered floods, landslides, loss of rice crops and severe hardship as a result of heavy rains washing away illegally logged hillsides.

Regional development strategies also threaten park integrity. In Kerinci, proposed road developments would bisect the park and provide further access for agricultural expansion and poaching. Mining companies have exploration concessions which overlap with park boundaries. While government has agreed that any future road or economic developments must be consistent with park management plans, political upheaval, decentralisation and devolution of responsibility to local governments has fuelled demands for greater local development and exacerbated pressures on the park (Jepson *et al.* 2001). The Kerinci case study highlights many of the challenges facing parks and reserves in South-East Asia, stemming from the conflict between conservation and human development in a highly populated landscape. By encouraging an ICDP approach, donors may unwillingly have put Kerinci into an even more vulnerable position as an expected provider of development programmes for buffer zone communities. Once the project ends, and donor funding is finished, the Conservation Department (PHKA) will have neither the expertise nor the financial resources to deliver on such 'obligations'.

Making development work for conservation

Although their ecological and environmental values are almost never taken into account, the benefits of many conservation areas (eg: watershed protection, genetic resources, research and recreation potential) probably outweigh their costs in staff salaries and agricultural opportunities forgone. Many protected areas can be justified according to traditional cost-benefit criteria (MacKinnon *et al.* 1986, McNeely 1988) yet few are resourced to protect such functions. Dumoga-Bone National Park is one of the few exceptions, a park established to protect an important watershed.

The Dumoga-Bone National Park (now re-named Bogani Nani Wartabone National Park) was established in 1984 to protect 300,000 ha of forests in northern Sulawesi as part of a major irrigation scheme funded by the World Bank. The eastern part of the park protects the upper

watershed of the Dumoga river which is used to irrigate 11,000 ha of rice fields cultivated by 8,500 farmers, mainly migrants from Java and Bali. The park has a very high biodiversity value, conserving many of Sulawesi's endemic plants and animals. Nevertheless, it was justified solely on economic grounds in terms of protecting the watershed, ensuring constant and regular water flow and reducing sedimentation rates in the irrigation canals. Park protection and enforcement were supported by district-level government authorities and included a) settling land tenure issues and boundary demarcation b) improving land registration procedures and c) setting up a special task force to end illegal encroachment, with representatives from the police, military and judiciary as well as the park staff. Illegal cultivations within the park were destroyed and the areas were replanted with trees. These activities were all funded by government borrowing through the World Bank loan.

Dumoga-Bone is exceptional among Indonesian ICDPs. Instead of the development activities being initiated to support biodiversity conservation, the reverse is true. A park of high biological value was created to support an economic goal, in that effective watershed protection protects the investment in the irrigation scheme. As a result, rice production increased dramatically in the Dumoga valley, and north Sulawesi moved from being a net rice importer to a net exporter. Both biodiversity and development goals were achieved.

Since its establishment, Dumoga-Bone has not been totally free from threats; it has suffered from agricultural encroachment, some illegal logging, and the activities of artisanal miners as part of a local gold rush. Nevertheless, the park still remains one of the most important conservation areas in Sulawesi and is perceived by local government to provide important economic benefits. As a model for linking conservation with regional development it offers some interesting lessons in exploiting synergies and development financing.

Policies and disincentives: the root causes of biodiversity loss

Although most ICDPs seek to change behaviour at the local level, there is a growing awareness that often it is not the small-scale illegal activities of local communities that are the greatest threat to protected areas. A recent review of the range of ICDP initiatives around 24 protected areas in Indonesia (Wells *et al.* 1999) suggests that most have met with only limited success because they are often not addressing the main threats to protected areas. Often perfectly legal and government-sponsored development activities (including new roads, logging concessions, land conversion and mining) are a much greater threat to conservation areas than small-scale illegal actions perpetrated by local communities. Moreover the very limited development opportunities that ICDP projects provide to local communities are generally insufficient incentive for those communities to change their behaviours and stop exploiting natural resources or encroaching on protected areas. The study concluded that ICDPs work best where conservation and development are explicitly linked and there is strong local support (at government and/or community level) for the protected area. It further suggested that the menu of conservation measures could be expanded to give consideration to more radical models such as providing incentive development grants to local governments or NGOs in return for demonstrable forest and biodiversity protection, monitored through independent performance reviews.

In an unfavourable policy environment, the small-scale community development activities initiated through ICDPs are unlikely to achieve conservation success beyond the most local scale. Moreover the proponents of ICDPs have often ignored the inherent conflict between development and conservation, especially when dealing with marginalised communities in remote forest areas or on poor soils where agricultural opportunities are limited. Rather than using conservation areas and conservation funds to support rural livelihoods in such areas, a better alternative for reducing pressure on biodiversity and forests may be to promote development far from the conservation site (Kramer and van Schaik 1997). The trade-offs and conflicts between conservation and development could be ameliorated by wise land-use

planning, with development concentrated in the most appropriate areas for agriculture or production – those offering good soils, level ground and adequate water supply. This requires the adoption of policies and programmes that encourage agricultural intensification rather than extensification, promote more sustainable forest management, and slow or stop the expansion of agricultural frontiers into native forests. It also requires an awareness among policy-makers, government and local planners of the values derived from protected areas, including an understanding of the benefits (both economic and environmental) of ecosystem services such as watershed protection and protection against natural disasters, such as floods and landslides.

Sustainable use as a conservation measure

Two major IUCN documents, the *World Conservation Strategy* (1980) and *Caring for the Earth* (IUCN with UNEP and WWF, 1991) articulated the concept of sustainable use as a conservation strategy and development as a conservation tool. Although the concept was, and continues to be challenged by many respected biologists and conservationists (Robinson 1993) this premise lies at the heart of many integrated conservation and development projects (ICDPs) today (Wells and Brandon 1992, Wells *et al. 1999).*

Conservationists are caught in a painful dilemma. With increasing pressure on land and natural resources in many parts of the tropics, it is probably unrealistic to hope that many more large areas will be designated purely for conservation. Instead opportunities are being sought to extend conservation practices within and beyond park borders through promoting sustainable use in the broader landscape. In the forests of South-East Asia, there is increasing pressure to establish protected areas on a multiple-use basis, aiming to conserve habitats and wildlife while

The slow loris, a shy mammal, active only at night, is threatened by habitat loss. Photo: J. MacKinnon.

allowing local communities to harvest forest products. This is based on the rationale that sustainable use within protected areas can justify the conservation of areas of natural habitat rather than conversion to other alternative forms of land-use, and that sustainable harvesting of biological resources in buffer zones can provide communities with alternative livelihoods that reduce destructive and exploitative practices within conservation areas. These scenarios will require the active and willing cooperation of local communities. Whether they will help to conserve biodiversity, however, may still depend on the way biological resources are valued, on the balance between benefits that accrue to local communities or to central government and/or big business interests and on issues of ownership.

Harvesting of non-timber forest products

Throughout the tropics many forest resources have been harvested for hundreds of years, both for subsistence and sale (MacKinnon 1998). Because of this history of human use, it is often assumed that such resource extraction is sustainable and that harvesting of non-timber forest products (NTFPs) or wildlife has little or no ecological impact on tropical forests. In fact there is a very high probability that intensive resource extraction, as promoted by many ICDPs, will gradually lead to depletion of resources over time. Access to new technologies and new markets may put additional pressures upon these resources to the point where harvesting is no longer sustainable.

With many different types of resource extraction under many different socio-economic conditions, sustainable use may be impossible (Robinson 1993). Any type of collecting activities, from hunting for meat or trophies to highly selective logging or collection of NTFPs, will impact on both the species harvested and the forest community within which it occurs.

In many parts of the tropics utilisation of forest products may already be unsustainable. Research in Sarawak and Amazonia, has shown that hunting, at least of some species, is unsustainable even where it is only done for subsistence (Bennett and Robinson 2000). Similarly throughout South-East Asia many plant products such as rattans, gaharu (incense wood) and ironwood are also being overexploited. To encourage these activities within protected areas can only exacerbate the problem. It is doubtful that current levels of utilisation of timber, NTFPs and bushmeat can continue without destroying the resource base; and that would be a disaster for the forests, for the wildlife and the local people. Forest-dependent communities will lose access to wild meat, other forest products, potential tourism revenues, reliable water supplies and cultural benefits.

Ecotourism

Nature-based tourism, including small-scale ecotourism, seems to be one of the few alternative livelihoods based on sustainable use that does have clear conservation benefits and indeed relies on maintenance of habitats and species; as a result ecotourism is promoted through many ICDP projects with varying success. Globally, nature-based tourism accounts for only a small proportion of the tourism market, but it is one of the fastest-growing tourism sectors. It appears to offer the potential of mobilising resources through the private sector that can contribute to local and national economic development while providing an incentive for conservation land uses and helping to finance biodiversity conservation. Unfortunately there is still a significant gap between the potential of ecotourism and its actual contribution to protected area financing and local community livelihoods (Brandon 1996). Very few protected areas have such high tourism potential that visitor fees can contribute both to recurrent park costs and to local development. Rainforest parks, for example, do not offer the wildlife spectacle that has made the African savanna parks so profitable. Moreover, many of the economic benefits of tourism tend to be captured by commercial operators far from the remote rural areas where the nature tourism destinations are located. To date, relatively few local communities have

Looking to the future: the challenge of linking conservation to development to protect biodiversity and these children's futures. Photo: K. MacKinnon.

realised significant benefits from nature tourism on their own lands or in nearby protected areas.

Conservationists must look for innovative opportunities for conservation and more sustainable use in the production landscape, but they need to do this honestly and critically. Sustainable use will only be a useful tool if it is used with a proper understanding of its limitations and constraints. A forest can be managed for extraction of forest products, logging, swidden agriculture, or converted for intensive agriculture. These represent increasing levels of utilisation; all are conceivably sustainable but each has a different and increasing impact on biological diversity (Robinson 1993). Even extraction of non-timber forest products, the lowest level of forest manipulation, may eventually lead to loss of some forest species. Moreover higher prices for fruits or other NTFPs will not necessarily induce better management of renewable natural resources nor generate benefits to rural households. Ultimately the contribution of extractivism to rainforest conservation may turn out to be very limited indeed. Similarly ecotourism may generate revenues and support for biodiversity conservation and benefits to rural communities, but such benefits are not automatic. They will be site-specific and dependent on unique visitor experiences, and communities will need investment and capacity building to provide and market visitor services (Brandon 1996).

Challenges for the future

ICDPs were offered as a panacea for conservation problems and have often failed to live up to expectations. There is a naïve assumption that poverty is the driving force in biodiversity loss and that providing development will remove threats to protected areas. Yet it is clear from

studies in South-East Asia that very few ICDPs can realistically claim to be effective in addressing either conservation needs or poverty alleviation. In many ICDPs it is hard to see how biodiversity conservation will be enhanced as a result of current or planned activities, especially when the development options on offer have no direct linkages to conservation. Nevertheless, some ICDPs do work and work well. Successes may be site, and time-specific and rely on local champions and local aspirations; empowerment to take stewardship of traditional lands may be a more powerful tool than opportunities for rural development. Experiences in Indonesia and elsewhere highlight some of the ingredients and conditions which can contribute to success – see Box 1.

The end of the 20th century saw a period of heightened awareness of biological values and the need for conservation, of which was reflected in the establishment of many new protected areas and generous international support for the biodiversity agenda. But donors are fickle creatures and biodiversity was last year's fashion. As governments and donors become even more focused on poverty alleviation it is clear that protected areas will increasingly have to be justified in terms of their linkages and synergies with sustainable development, the provision

Box 1. Some ingredients for ICDP success.

1. Clear definition of protected area objectives and conservation targets , with management, zoning and development activities that support those objectives.
2. Consultation with all stakeholders, especially local indigenous communities, to allow participation in planning and management, building on local knowledge and resource management systems as appropriate, and ensuring consistency with conservation objectives.
3. Clear and agreed boundaries of protected areas with local communities involved in demarcation. Firm but fair enforcement of boundaries, park regulations and land-use rules, through local community and local government structures as well as conservation agencies.
4. Appropriate institutional arrangements, mandate and resources for strong protected area management, with flexibility to adapt resource use to real needs to meet conservation objectives. This will include establishing partnerships with key individuals and groups, including community leaders and women's groups as appropriate.
5. Strong capacity within the responsible conservation agency, whether this is run by government, NGOs or community groups or a mix of these groups.
6. High-level and sustained political and financial commitment, including financial mechanisms to cover recurrent core costs of protected areas and associated necessary/linked development activities.
7. Inter-sectoral cooperation and sectoral/regional impact assessments, to ensure that parks and conservation are integrated into regional development plans, and to avoid conflicting strategies between different government agencies, e.g. public works and conservation. Involvement of park managers in spatial planning and public and private investment decisions likely to impact on protected areas.
8. Clear and explicit linkages between conservation and development. Where alternative livelihood opportunities are offered to communities they should be consistent with park conservation objectives, delivered in a timely fashion and preferably funded through regular development programmes to encourage mainstreaming.
9. Support for education and awareness programmes aimed at all levels of stakeholders from local communities to policy-makers, to increase understanding and awareness of protected area value and benefits, including their crucial role in providing ecosystem services.
10. Appropriate indicators to monitor the biodiversity, social and management effectiveness impacts of ICDP activities, and adaptive management to respond to changing needs.
11. Long-term commitment to areas and programmes, starting with a few simple, small-scale pilot activities with modest aims, and building on successes and lessons learned.
12. Incentives and a policy environment which encourage protected area conservation, by exploiting synergies between habitat protection and development and/or linking future or additional development opportunities to environmental performance.

of livelihoods, and the benefits they offer society in the form of ecosystem services – benefits that often go unrecognised. Conservationists will increasingly need to identify opportunities, as illustrated by the Dumoga-Bone story, where the meeting of development objectives requires sound environmental management and habitat protection, and biodiversity is a secondary beneficiary. The future for protected areas and biodiversity conservation may well depend on whether they are seen as essential parts of mainstream development and necessary building blocks for social development and welfare.

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Résumés

Un partenariat entre gouvernement et peuples indigènes pour la gestion des aires protégées au Pérou

GONZALO CASTRO, LUIS ALFARO ET PIERRE WERBROUK

La réalisation d'une gestion efficace des aires protégées avec la participation des communautés locales est décisive pour la conservation de la biodiversité. Cet article décrit les differentes sortes d'aires protégées au Pérou et la législation qui les sous-tend, ainsi que la mesure de participation communautaire dans la gestion des diverses sortes d'aires. Les auteurs décrivent la situation actuelle des aires protégées et les défis auxquels ces aires font face. L'importance de réaliser des plans de gestion participatifs est souligné, aussi bien que les compromis entre la conservation de la biodiversité et la valorisation des peuples indigènes. De nouveaux efforts restent nécessaires pour atteindre un niveau suffisant de gestion pour le système entier; le gouvernement s'est pourtant engagé à l'expansion des aires protégées et l'amélioration de leur gestion. Quatre nouvelles aires ont ainsi été proposées, dont cet article considère les caractéristiques sociales et biologiques, ainsi que les défis que présente leur gestion, tels que l'application des zones et le mélange de différentes communautés dans une seule aire qui rend plus difficiles les démarches participatives. Pour chaque aire, les perspectives de la gestion communautaire et les conclusions et recommandations spécifiques sont exposées.

La Réserve de tigres de Periyar – rapprochements avec des communautés locales pour la conservation de la biodiversité

V.K. UNIYAL ET JAMES ZACHARIAS

La Réserve de tigres de Periyar, aux Ghâtes occidentales de l'Inde, compte parmi les sept parcs nationaux financés sous le India Ecodevelopment Project (projet indien d'écodéveloppement). Le projet cherche à promouvoir la conservation en s'adressant à l'impact des habitants sur les aires protégées et leur faune et flore, et en atténuant l'impact sur les habitants des aires protégées et des restrictions qu'elles imposent sur l'utilisation des ressources. Cette stratégie d'écodéveloppement, s'adressant aux deux priorités de la conservation et de la réduction de la pauvreté, connaît actuellement un certain succès à Periyar, où les employés du parc travaillent avec des communautés locales et des groupes d'utilisateurs pour renforcer la protection du parc et pour réduire la pression sur ses ressources. Grâce à la participation et aux opportunités de développement que fournit le projet, le parc a amélioré ses relations avec les communautés locales et a réussi à engager l'appui et la collaboration des habitants pour faire face à des problèmes de gestion tels que le braconnage, la récolte excessive du bois à bruler et du chaume, et la gestion des pèlerinages annuels. Une préoccupation capitale est d'assurer la durabilité de ces efforts et d'encourager le soutien de l'administration locale pour des activités qui contribuent aux objectifs de conservation du parc.

Un résumé des approches intégrées à la conservation et au développement communautaire à la République Populaire Démocratique Lao

STUART CHAPE

L'intégration de la conservation et du développement, surtout au niveau local, compte parmi les défis capitaux pour la gestion des aires protégées à la RPD Lao. Elle est d'une importance particulière dans la mesure où le pays comporte des zones naturelles parmi les plus riches du Sud-Est asiatique sur le plan biologique, en même temps que d'être parmi les pays les plus pauvres du monde sur le plan économique, avec presque 50% de sa population totale vivant dans la misère et environ 70% habitant la campagne. La diversité culturelle du pays est également considérable, avec plus de 200 groupes ethniques distincts. Il est indispensable d'assurer des liens positifs entre la conservation et le développement, car 10% des villages du pays se trouvent dans des aires protégées, et le gouvernement de la RPD Lao a pris une décision spécifique que ces communautés ne seront pas expulsées des aires protégées. Cet article examine l'histoire et les conditions d'établissement d'un système national d'aires protégées, son importance pour la conservation de la biodiversité et la nécessité de contribuer à la réduction de la pauvreté et aux objectifs du développement afin d'assurer une viabilité durable pour les aires protégées. Est décrite une sélection de projets d'aire protégée qui ont tenté d'intégrer les approches de la conservation et du développement.

L'évolution et l'envergure des PICD: l'exemple de l'Ecosystème Leuser, Sumatra, Indonésie

KATHRYN A. MONK

Un PICD qui entretient une aire de conservation parmi les plus récentes et les plus grandes de l'Indonésie représente une expérience significative. Les bouleversements politiques, sociaux et économiques qui déroulent en même temps que son implémentation ne font rien pour diminuer l'énormité de la lutte.

L'Ecosystème Leuser s'étend sur 2.5 millions d'hectares dans le nord de Sumatra, et comprend l'ancien parc national désigné de Gunung Leuser ainsi que des concessions forestières, des plantations et des forêts protégées voisines. Le gouvernement de l'Indonésie a délégué la responsabilité pour sa gestion à la Leuser International Foundation (LIF – Fondation Internationale Leuser) nouvellement formée, pour une période de 30 ans. Afin d'entretenir cette expérience, le gouvernement de l'Indonésie et l'Union Européenne ont financé ensemble le Leuser Development Programme (Programme de Développement Leuser) pendant les sept premiers ans pour faire face aux défauts en matière de compétences techniques et de développement institutionnel associé. En fait, une grande partie des efforts de l'LDP a été orientée vers la création de la nouvelle aire de conservation en tant que personne morale et vers les tentatives d'atténuer les menaces importantes à l'Ecosystème Leuser.

Ce PICD complexe a donc connu un champ d'activités très large. Cet article considère la stratégie qu'il a suivie et souligne les facteurs décisifs qui ont porté là-dessus.

De bonnes clôtures font de bons voisins: l'*Area de Conservación* Guanacaste, Costa Rica

DANIEL H. JANZEN

L'*Area de Conservación* et Site de Patrimoine Mondial Guanacaste au nord-ouest du Costa Rica, qui s'étend sur 153,000 ha, est un exemple de la restauration et de la conservation sur place d'un écosystème de forêt sèche tropicale, et de ses écosystèmes voisins, au moyen de son intégration dans la société locale, nationale et internationale. Quinze ans de travail et $45 millions ont généré des progrès considérables dans ce but. Il n'y a pas eu de percées sensationnelles, mais le succès a exigé une attention suivie à l'objectif. La structure classique d'un parc national, qui nous a fourni la matière première biologique en 1986, nécessite des modifications importantes afin de survivre dans le monde contemporain de la privatisation, la décentralisation, les marchés mondiaux et les possibilités techniques. La restauration est facile – il suffit d'arrêter l'assaut et de donner libre cours à la nature. L'intégration de nombreux aspects et l'autosuffisance ont demandé beaucoup plus d'effort. Les plus grands obstacles sont peut-être la tendance da la société nationale de vouloir manipuler l'aire protégée pour ses propres buts au lieu de la permettre de rester ce qu'elle est censée être, et celle de la société internationale de changer sans cesse les règles du jeu et la structure du terrain.

Projets Intégrés de Conservation et de Développement – solutions imparfaits pour des forêts menacées dans le Sud-Est asiatique

KATHY MACKINNON ET WAHJUDI WARDOJO

Les Projets Intégrés de Conservation et de Développement (PICD) ont pour but de lier la conservation de la diversité biologique dans les parcs au développement social et économique local. Concilier les besoins de la conservation et des communautés locales présente une tâche complexe et difficile. L'Indonésie a adopté le modèle PICD pour soutenir les objectifs de la conservation et pour renforcer la gestion des aires protégées. Cet article considère les défis, les opportunités et les leçons apprises au cours de plus d'une décennie de projets PICD en Indonésie, qui ont tenté de lier la conservation au développement rural afin de promouvoir l'engagement local et de mieux intégrer les aires protégées, la conservation et l'utilisation durable à la planification régionale et aux programmes de développement traditionnel.

Resumenes

Una sociedad entre el gobierno y la población indígena para el manejo de áreas protegidas en Perú

GONZALO CASTRO, LUIS ALFARO Y PIERRE WERBROUK

El logro efectivo del manejo de las áreas protegidas con el envolvimiento de las comunidades locales es crucial para la conservación de la biodiversidad. Este artículo describe los distintos tipos de áreas protegidas en Perú, la legislación que respalda a estas áreas así como el grado de intervención de la comunidad en el manejo de los distintos tipos de áreas. Los autores describen la situación actual de las áreas protegidas y los desafíos que estas áreas tienen que enfrentar. Se enfatiza también la importancia de implementar planes de administración con participación mutua y el comercio que puede resultar de la conservación de la biodiversidad y el poder otorgado al pueblo indígena. Se necesitan esfuerzos adicionales para obtener un nivel adecuado de administración para el sistema total, pero el gobierno de ha comprometido a extender las áreas protegidas y mejorar su manejo. Así es que se han designado cuatro áreas nuevas y este informe reseña sus características sociales y biológicas y los desafíos para su administración tales como: la aplicación de zonas y la mezcla de comunidades diferentes dentro de un área, que hacen más dificultosos los procesos de participación. Tanto los prospectos para el manejo de la comunidad como los hallazgos específicos y las recomendaciones se dan por área.

La Reserva Periyar Tiger: construyendo puentes con las comunidades locales para la conservación de la diversidad

V.K. UNIYAL Y JAMES ZACHARIAS

La reserva Periyar Tiger en el Ghats Oriental de la India es uno de los siete parques nacionles que están recibiendo fondos bajo el Proyecto de Ecodesarrollo de la India. Este proyecto busca promover la conservación a través de la toma en consideración del impacto que la población local produce en las áreas protegidas y en su población salvaje y de la mitigación del impacto en la población local de las áreas protegidas y sus limitaciones en el uso de recursos. Esta estrategia del ecodesarrollo que toma en cuenta las dos órdenes del día: la conservación y el alivio de la pobreza, está siendo aplicada con cierto éxito en Periyar, donde el personal del parque está trabajando con las comunidades locales y los grupos de usuarios a fin de fortalecer la protección del parque y reducir la presión en sus recursos. A través de la participación y el desarrollo de oportunidades que este proyecto provee, el parque ha mejorado las relaciones con las comunidades locales y ha conseguido atraer el apoyo local y la colaboración necesaria para tratar con las cuestiones administrativas tales como: los cazadores furtivos, excesiva cosecha de madera para hacer fuego y techados y el control de peregrinajes anuales. Una preocupación clave es la de asegurar que estos esfuerzos se puedan mantener y alentar el apoyo del gobierno local a las actividades que sostienen los objetivos de la conservación del parque.

Una vista general de los enfoques integrados hacia la conservación y el desarrollo de la comunidad en la República Democrática Popular de Laos

STUART CHAPE

La integración de la conservación y el desarrollo, particularmente a nivel local, es uno de los desafíos claves para el manejo de las áreas protegidas en la RDP de Laos. Esto es particularmente importante ya que incluye algunas de las áreas naturales más ricas biológicamente dentro de la región del Sudeste Asiático, mientras que simultáneamente es uno de los países del mundo más pobres económicamente con casi el 50% de su población total viviendo en pobreza y aproximadamente el 70% viviendo en zonas rurales. La diversidad cultural del país también es muy amplia con más de 200 grupos étnicos definidos. Es esencial que se aseguren vínculos positivos entre la conservación y el desarrollo ya que el 10% del número total de poblados en el país están situados dentro de las áreas protegidas y existe una decisión política específica de parte del gobierno de Laos, de que estas comunidades no deben ser movidas fuera de las áreas protegidas. Este artículo reseña la historia y las bases para el establecimiento de un sistema de áreas protegidas, su importancia para la conservación de la biodiversidad y el imperativo de contribuir al alivio de la pobreza y al desarrollo de objetivos para el desarrollo, si es que las áreas protegidas han de ser viables a largo plazo. Se describen también proyectos para áreas protegidas selectas que han tratado de integrar los enfoques de conservación y desarrollo.

El desarrollo y alcance de los ICDPs : el ejemplo del Ecosistema Leuser, Sumatra, Indonesia

KATHRYN A. MONK

Un ICDP que sostiene una de las más grandes y nuevas de las áreas de conservación de Indonesia, bajo un novedoso y no muy desarrollado sistema de manejo, es un experimento significante. Los tumultos políticos, sociales y económicos que están ocurriendo simultáneamente con su implementación, no hacen nada para disminuir la enormidad de la lucha.

El Ecosistema Leuser cubre 2,5 millones de hectáreas en el norte de Sumatra, abarcando el antiguamente designado Parque Nacional Gunung Leuser más las concesiones para la explotación forestal adyacentes, las plantaciones y las selvas protegidas. El gobierno de Indonesia delegó la responsabilidad de su manejo a la recientemente formada Fundación Internacional Leuser (LIF) por un período de 30 años. Para apoyar este experimento, el gobienno de Indonesia y la Unión Europea amortizaron conjuntamente el Programa de Desarrollo Leuser (LDP) durante los primeros siete años con el propósito de resolver los problemas de falta de pericia tecnológica y el desarrollo institucional con el que se relaciona. De hecho, muchos de los esfuerzos del LDP se han dirigido a la creación de un área de conservación nueva como entidad legal y a tratado de mitigar las amenazas más graves al Ecosistema Leuser.

Este ICDP complejo ha tenido, por lo tanto, un campo de acción mucho más grande que lo normal. Este artículo reseña aquí la estrategia que se ha tomado y enfatiza los factores críticos de influencia.

Buenas cercas hacen buenos vecinos: el área de conservación Guanacaste, Costa Rica

DANIEL H. JANZEN

Las 153.000 hectáreas del área de conservación y sitio del Patrimonio Mundial Guanacaste en el noroeste de Costa Rica son un ejemplo de restauración in-situ y de conservación de un ecosistema de selva tropical seca y de los ecosistemas adyacentes a través de su integración con las sociedades locales, nacionales e internacionales. Quince años y 45 millones de dólares han generado un progreso substancial a lo largo de esta ruta. No ha habido descubrimientos espectaculares pero los sucesos han requerido una atención firme en la meta. La estructura clásica del parque nacional que nos dio la materia prima biológica para trabajar en 1986 requiere una modificación considerable para poder sobrevivir en el mundo de hoy con privatización, descentralización, mercados globales y posibilidades técnicas. La restauración es fácil, se detiene el asalto y se deja que la naturaleza haga lo demás. La integración multifacética y la autosuficiencia han requerido mucho más esfuerzo. Tal vez el impedimento más grande es que la sociedad nacional tiene una tendencia a querer manipular el área conservada para sus propios fines, en lugar de dejarla que sea lo que tiene que ser, y la sociedad internacional cambia continuamente las reglas del juego y la estructura del campo de acción.

La Conservación Integrada y los Proyectos de Desarrollo – soluciones imperfectas para selvas en peligro en el Sudeste de Asia

KATHY MACKINNON Y WAHJUDI WARDOJO

La conservación integrada y los proyectos de desarrollo (ICDPs) intentan unir la conservación de la diversidad biológica en parques con el desarrollo económico y social local. La reconciliación de las necesidades de conservación y de las comunidades locales es una tarea compleja y difícil. Indonesia ha adoptado el modelo ICDP para sostener los objetivos de conservación y reforzar el manejo de las áreas protegidas. Este artículo examina los desafíos, oportunidades y lecciones aprendidas después de más de una década de proyectos ICDP en Indonesia, los cuales han tratado de unir la conservación con los desarrollos rurales para fomentar la mayordomía local e integrar mejor las áreas protegidas, la conservación y el uso sostenible con el planeamiento regional y los programas de desarrollo actuales.

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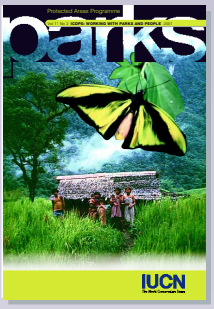

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