



INSTITUTIONAL ANALYSIS OF MULTI-LEVEL COLLABORATIVE MANAGEMENT IN PERIYAR TIGER RESERVE, SOUTHERN INDIA

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ABSTRACT

There are few cases where institutional mappings of multi-level arrangements for collaborative management have been conducted. If at all documented, these experiences remain unevaluated. Periyar Tiger Reserve in the Southern Western Ghats is a well-resourced government-managed protected area that extends management interventions into the buffer zone. It has been designated as a Learning Centre of Excellence by the Government of India, and recognized internationally for effective management. This paper analyses the institutional arrangements of this reserve at different levels, from the landscape level to the individual village. The analysis reveals that a multi-stakeholder collaborative management body appears to be important to supervise landscape protected area management. The establishment of the Periyar Foundation, a dynamic Government-Organized Non-Government Organization (GONGO), is particularly innovative to facilitate flexible management responses, which has been replicated nationwide through the National Tiger Conservation Authority. The protected area management tasks are well-defined, with protected area management working groups established for four key fields of management, increasing constructive engagement with all priority stakeholders. However, the representation of protected area working group spokespersons on the landscape collaborative management body seems to be weak. These specialized working groups engage the 72 villages, 5,584 households and 28,000 villagers, through 76 eco-development committees. Institutional mapping of multi-level collaborative management shows promise for further investigation in landscape protected area management.

Key words: collaborative management, eco-development committee, government-managed protected area, protected area management tasks, protected area working groups

INTRODUCTION

During recent decades, there has been a rapid development of protected area management approaches, resulting in two alternative and sharply contrasting approaches. The 'fortress conservation' approach focuses investments on protection measures and largely excludes the economic and development aspirations of the local people (Terborgh et al. 2002; Sanderson & Redford, 2003). However, these enforcement investments are relatively costly, requiring fairly intensive, long-term funding commitments with no social benefits. They may also lead to social conflict and non-compliance with conservation-related regulations (Romero & Andrade, 2004; Robbins et al., 2006), and lose both local political and social support. In the absence of social fencing involving local informants in the buffer zones, notable declines in targeted large mammals have occurred from commercial poaching (Corlett, 2007).

The alternative approach takes account of the needs of communities and stakeholders within the broader social-ecological landscape, through buffer zone management (Wells et al., 1992; Ebregt & De Greve, 2000), integrated conservation and development (Hughes & Flintan, 2001) and collaborative management (Borrini-Feyerabend et al., 2004); all focus on local communities while aiming to conserve biodiversity within reserves. However, a number of reviews of integrated conservation and development projects (ICDPs) suggest that they have largely failed to reconcile conservation and development agendas (Wells et al., 1992; Wells et al., 1999; Agrawal & Gibson, 1999; Hughes & Flintan, 2001; Sandker et al., 2009). As far as is known from the literature, mapping of the institutional bodies conducting protected area management at the different levels has never been prioritized in Asia to understand how these landscape management systems (e.g. ICDPs) might break down, or



A mosaic of grassland and forest habitats inside the Periyar Tiger Reserve © N.P. Jayan

rather, how these management systems may be strengthened.

In 2013, Parr et al. mapped out the institutional arrangements for managing government-managed protected area landscapes through multi-level collaborative management, from the individual village to the landscape in and around the protected area. This theoretical management system tentatively made some notable recommendations. The paper highlighted the need to recognize the different fields of protected area management, and that conservation impacts in each of these fields of management could be optimized through the establishment of protected area working groups in each of these specialized fields. The operational functioning of these working groups could, in turn, be linked through a bridging supervisory body comprising key landscape stakeholders linking the core zone (biodiversity protection) and the buffer zone agendas (e.g. threat mitigation, poverty alleviation, climate change adaptation and illegal wildlife trade). However, the multi-level collaborative management system theory was based upon an unconnected assortment of management examples from four protected areas in Lao P.D.R. and Vietnam. Therefore these recommendations on landscape protected area management could only gain a certain level of credence.

This paper examines the multi-level collaborative management system in a single site, Periyar Tiger Reserve in southern India, which is deemed to be one of the best managed protected areas in Asia. The paper assesses the management system's potential as an

exemplar to protected areas practitioners elsewhere in the region, and discusses how such a system might be initiated.

PERIYAR TIGER RESERVE AS A CENTRE OF EXCELLENCE

India has one of the longest established protected area systems in Asia. In October 2012, the Periyar Tiger Reserve (PTR) was awarded the United Nations India Biodiversity Governance Award by the Government of India and the United Nations Development Programme (UNDP) for the best-managed protected area in the country (UNDP, 2012). Periyar was also designated a 'conservation model' by the Tiger Task Force commissioned by the Government of India in 2005 and has won several accolades in local and national media due to its efforts to improve the relationship between local communities and the Forest Department through various development initiatives (Narain et al., 2005).

PTR is situated in the Cardamom and Pandalam Hills of the Southern Western Ghats. Administratively, the reserve falls in Idukki, Kottayam and Pathanamthitta Districts of Kerala State. The total area of the reserve is 925 km² of which 881 km² is core zone and the remaining 44 km² is designated as buffer zone. Periyar is one of the best protected areas for long-term tiger conservation due to its vastness, and the contiguity of the forests in Kerala and Tamil Nadu. A survey conducted in 2010, counted 36 -40 adult tigers in the Periyar landscape, between the PTR and Neyyar Wildlife Sanctuary. It also supports significant populations of other large mammals including 500-600 Asian elephants *Elephas maximus*, gaur *Bos*

guarus, sloth bear *Melursus ursinus* as well as two endemic primates of the Southern Western Ghats, the lion-tailed macaque *Macaca silenus* and Nilgiri langur *Trachypithecus johnii*. The site protects 62 species of mammals, 318 species of birds including 14 endemics, 44 species of reptiles, 16 species of amphibians, 38 species of fishes and 119 species of butterflies which have been formally identified to date. Six tribal communities, comprising the Mannan, Paliyan, Urali, Ulladan, Malayarayan and Malampandaram, live either in the interior of the Tiger Reserve, or on its fringes.

THE INDIA ECO-DEVELOPMENT PROJECT (1996-2004)

In 1996, PTR was one among seven protected areas in India selected for the implementation of the India Eco-Development Project (IEDP). The project was planned initially for a five year period, but was extended twice until 2004 (IEDP, 2004). The project had four major components. The first component comprised improved protected area management, improving the protected area planning process and capacity building, protecting and managing ecosystems and habitats within the protected area; and upgrading protected area amenities for the field staff. The second component, village eco-development, comprised conducting participatory micro-planning, providing implementation support, and implementing reciprocal commitments that foster alternative livelihood and resource uses. This component was financed by a village eco-development programme which specified measurable actions by local people to improve conservation. A third education and awareness component comprised promoting public support for conservation through environmental education and awareness campaigns. A fourth component comprised impact monitoring, and research. This last activity was aimed at improving the understanding of issues and solutions relevant to protected area management as well as the interactions between the protected area and local people. At the start of the IEDP in 1996, the Government of Kerala established a Protected Area Co-ordination Committee (PACC), to establish a system of decision making, involving the different stakeholders at the protected area level; in 1998, this landscape management body was renamed the Eco-development Implementation Committee. Seventy-two villages comprising 5,584 families (total population: 28,000) were targeted under the IEDP (IEDP, 2004).

PROTECTED AREA MANAGEMENT ACTIVITIES

Over the last three decades, the management authorities of PTR increasingly recognized the need to compartmentalize the management of the reserve into

specialized areas of work. In more recent years, each specialized field of protected area management was allotted a specific chapter in three successive 10-year management plans prepared from 1986 to 2012, (Nair, 1978; Kaler, 2001; and Shukla, 2012). These specialized fields of protected area management comprise: (i) research and monitoring, (ii) law enforcement involving patrolling, (iii) species and habitat management, (iv) community outreach and conservation awareness, (v) eco-development (including livelihood development) and (vi) tourism (see Figure 1). Unique to Periyar, the management plans also addressed pilgrim management, as some 10 million pilgrims enter the core of the reserve annually.

INSTITUTIONAL BODIES UNDERTAKING THE DIFFERENT SPECIALIZED FIELDS OF MANAGEMENT

A detailed description of the different bodies, their interactions and the management activities undertaken in PTR are outlined below and in Figure 1, as these have a direct bearing on how the reserve authority developed the management systems to address the landscape management tasks.

(i) Research and monitoring

Research and monitoring section: A core research and monitoring programme within the PTR is undertaken through a well-equipped research and monitoring section, comprising a Research Range Officer and his support staff. This team conducts routine monitoring activities, including making an inventory of park fauna and monitoring the tiger population.

Regional level Research Coordination Committee:

Over the years, the research programme was further supported by many national and international scientists, as well as research fellows. A regional level Research Coordination Committee was constituted through a Government Order under the chairmanship of the Field Director, in order to create a network of different research institutions and individuals to build synergy in research and monitoring initiatives.

(ii) Law enforcement

Camps and patrolling teams: Protection of the reserve is ensured through the implementation of protection strategies, comprising an integrated system of camping teams and patrolling teams, supported by a strike force/flying squad. This protection system has been strengthened over the last three decades. As of December 2013, five camps keep surveillance over the most vulnerable parts of the interstate border, while a

further two camps are located in the interior. Further anti-poaching camps are planned, bringing the total number of anti-poaching camps to 12. In addition, six special protection teams were constituted for effective patrolling operations. These patrolling teams are equipped with sufficient arms and ammunitions, wireless sets, camping equipment and vehicles to move around. Each patrolling team has a specific assignment.

Protection watchers: The reserve engages about 120 protection watchers from the neighbouring area population on regular daily wages. The Eco-development Committees (EDCs) also monitor illegal sandalwood *Santalum album* activities. Guards are also temporarily employed. The PTR authorities claim that surveillance by villagers significantly reduces illegal poaching of animals and valuable trees like sandalwood.

(iii) Species and habitat management

Species management: This includes the annual removal of exotic weeds including *Lantana*, *Eupatorium*, *Mikania* and *Mimosa invisa*.

Habitat management: (a) *Forest fire management:* Fire prone areas are protected by various strategies including clearing fire lines, engaging fire gangs and practising participatory fire management. These activities are carried out in tall grass areas, protecting shola forests and small evergreen patches. Fire lines are also used as patrolling routes. In addition, controlled pre-burning is practised. Specific fire management plans at range-level are prepared annually before the fire season. Fire plans include details of fire prone areas, fire lines, the strategic locations of fire gangs with number of members to be deployed, monitoring mechanisms and reporting. Fire incidents are reported immediately along with the extent of the area burnt. (b) *Waterholes:* In addition to the natural water sources in the reserve, artificial waterholes have been created to ensure water availability to animals during peak summer.

The EDCs were established to undertake eco-development activities. As part of mutual commitments, they have become involved in removal of exotic weeds, fire prevention, afforestation and conservation in the fringe area (Government of Kerala, 2006).

(iv) Community outreach and conservation awareness

Nature education: Community outreach is undertaken through the eco-development programmes. The PTR management authority undertakes a variety of nature education activities in and around the reserve, promoting environmental awareness and love for nature. These

comprise nature camps for students, members of NGOs and the neighbouring communities; extension programmes including slide-shows and film shows in the buffer zone; conservation education programmes in local colleges and schools; and street plays, dance and music performed to the local communities. A plastic free day is organized regularly on the 28th of every month in Periyar with the active involvement of local people, visitors and park officials. Leaflets and brochures, stickers, posters and name slips carrying messages of conservation are distributed to different target groups. A newsletter for PTR is also published periodically.

(v) Eco-development

The PTR authorities created a livelihood development capacity led by an Eco-development Officer within the protected area agency in March 1998 to engage with communities in the buffer zone (within 2 km of the boundary) through the District level Coordination Committees and to promote EDCs.

Neighbourhood, professional and user group EDCs:

After initial surveys and consultation by the protected area staff, a number of village-level EDCs were established. The Government of Kerala issued guidelines for the process, structure and responsibilities of these committees in December 1996. Different communities had different dependencies within the reserve, such as the collection of fuelwood, cattle grazing, extraction of cinnamon bark, fishing, and running pilgrim service centres. These different dependencies necessitated different strategies/solutions to address and mitigate protection issues as well as livelihood issues. Consequently, prolonged discussions were held with various groups to help in establishing EDCs which were also based on locality, ethnicity, and professional backgrounds at the start of the project. The tribal groups on the fringes of the PTR also formed EDCs according to their ethnicity and culture. Labourers engaged by merchants and traders along the pilgrimage route to Sabarimala Temple formed a number of pilgrim related EDCs (*Swamy Ayyappan Poonkavanam Punaruddharana*) at different localities along the footpath to the temple.

Each neighbourhood EDC (otherwise known as a village-level EDC) was formed involving c. 100-150 families, and two adult members (a man and a woman) from each family would be included in the General Body. The General Body nominated seven representative members from within the Body to act as an Executive Committee. Micro-plans were then prepared jointly by the Executive Committee, protected area authorities and professionals from respective fields (e.g. ecologist, economist,



Nocturnal wildlife spotting, part of the community-based ecotourism programme © M. Ramesh Babu

sociologist, etc.) through Participatory Rural Appraisal (PRA). The micro-plans contained the eco-development activities. A fundamental component was the requirement for each committee to contribute to the protection and management of the reserve. In return, they were given opportunities, essentially granted tourist or resource concessions, to earn their livelihoods. The EDCs were categorized by the protected area staff and supporting IEDP project staff into four functional groups depending on their mode of operation:

- *Neighbourhood EDCs*: families in a particular geographical or administrative area
- *Professional EDCs*: organized along occupational lines
- *User Group EDCs*: organized to utilize a particular physical resource
- *Pilgrim Management EDCs*: organized to provide a specific service to pilgrims

As of January 2012, 76 Eco-Development Committees (EDCs) have been established from an overall target population of 28,000 people living within a 2 km radius of the PTR. These include 56 neighbourhood, seven professional, nine pilgrimage and four user group EDCs. All these EDCs are functional and require continued support from the Department to varying degrees. Members of the EDCs are considered assets to the management for sustained protection of the reserve

where, in turn, they benefit socially and economically with improved livelihoods. Many poachers have been converted to protectors through the eco-development programme. For example, two EDCs consist primarily of former cinnamon bark smugglers and poachers. Furthermore, there is one EDC comprised exclusively of women.

Confederations/Forest Development Agency

(FDA): The constitution of FDA was initiated in the year 2002, through a Government Order (No. 223/02/F&WLD dated 17.07.2002). All the EDCs, situated either within the East or West Divisions of the PTR, function under the East and West Confederation and Forest Development Agencies. The purpose was to create a platform through which the various line departments like tribal welfare, horticulture, village self-government organizations (*panchayat*), soil conservation, and others achieve synergy and convergence of various developmental activities within the Districts. It also prioritizes the developmental activities within the forest fringe areas thus benefitting the fringe area communities.

District level Coordination Committee: In 2006, a District level Coordination Committee for PTR was proposed to coordinate eco-development activities which promote afforestation and conservation activities in the

buffer zone (Government of Kerala, 2006), comprising protected area, forestry and district staff, representatives from other concerned government departments and the Deputy Director, Periyar East (Secretary). This committee also facilitates coordination and mainstreaming of wildlife concerns at the field level. The committee meets at least once every six months.

(vi) Tourism

Coordination Committee of Professional Group EDCs: During the phase of the India Eco-Development Project (IEDP), community-based and protection-oriented ecotourism (CBET) programmes were initiated in the PTR. The objectives of the community-based ecotourism programmes are to enhance reserve protection; help local people to earn subsistence and supplementary livelihoods; to wean local people away from illegal activities such as bark smuggling and poaching; to enhance visitor satisfaction; and disseminate conservation values. Traditional/local skills of the communities are utilized to operate the programmes in the buffer zone comprising trekking and camping in the forest, bamboo rafting, riding bullock carts and making artefacts. The CBET programmes are integrated into the micro-plans of the EDCs. The CBET programmes are monitored and co-ordinated by a Coordination Committee of Professional Group EDCs.

PROTECTED AREA MANAGEMENT WORKING GROUPS

At least four protected area management working groups have been established in Periyar over the last two decades, in four specialized fields of protected area management. These comprise:

1. A coordinated research programme in the Tiger Reserve was facilitated by the establishment of a regional level Research Coordination Committee in December 1996.
2. Law enforcement was largely mandated to the protected area agency, through comparatively high levels of government rangers. However, the law enforcement agenda was augmented by a network of protection watchers.
3. A District level Coordination Committee as well as the East and West Confederation and Forest Development Agencies coordinate the livelihood interventions as the core agenda of the eco-development programme undertaken by the Eco-development Committees (EDCs) of the East and West Divisions of PTR.
4. A Coordination Committee of Professional Group EDCs monitored and coordinated the community-based ecotourism programmes.

Developing landscape collaborative management arrangements

On 11 December 1996, the Government of Kerala established a protected area level coordination committee, to establish a system of decision making involving different stakeholders at the protected area level (Government Order (Rt) No.429/96/F&WLD). This PACC was established to oversee the formation and functioning of the EDCs, including investments and village work plans; co-ordination of the protected area mutual interaction assessment and finalizing the village micro-plans; monitoring the agreements on biodiversity conservation by the village EDCs; and finalizing a semi-annual progress report, annual work plan, as well as provide assistance in a mid-project review and the preparation of completion reports.

In May 1998, the membership of the PACC was revised, and focused on the eco-development agenda. It was thus renamed the Eco-development Implementation Committee (EIC) under the Chairmanship of the Field Director (Government Order (Rt) No. 251/98/F&WLD). The composition of this Committee comprised protected area staff, other forestry officials, two chairpersons from the Village EDCs, and elected members of local administrative bodies, among others.

The EIC was functional only during the project period of IEDP (implemented from 1996 to 2004). In order to continue the activities implemented during the IEDP period and sustain the eco-development activities, a Government-Organized Non-Government Organization (GONGO) – the Periyar Foundation – was established on 27 July 2004. This Foundation sustains the process of participatory management, which had grown and evolved manifold beyond the project period (Government of Kerala, 2004). The Foundation provides oversight over a Trust Fund which is largely sustained through the various community-based ecotourism activities carried out in PTR, including the entry fees from the pilgrimage and generated fees. These funds are earmarked through an Annual Plan of Operation approved by the Governing Body of the Foundation and are divided as follows: protected area management (30 per cent), village eco-development (40 per cent), education and awareness (5 per cent), research and monitoring (5 per cent), and administration of the Foundation (20 per cent). Significantly, the Foundation hires professional staff, including a conservation biologist, an ecologist, a sociologist, a nature education officer, an assistant nature education officer and administrative staff.

A schematic overview of the present institutional arrangements is presented in Figure 1.

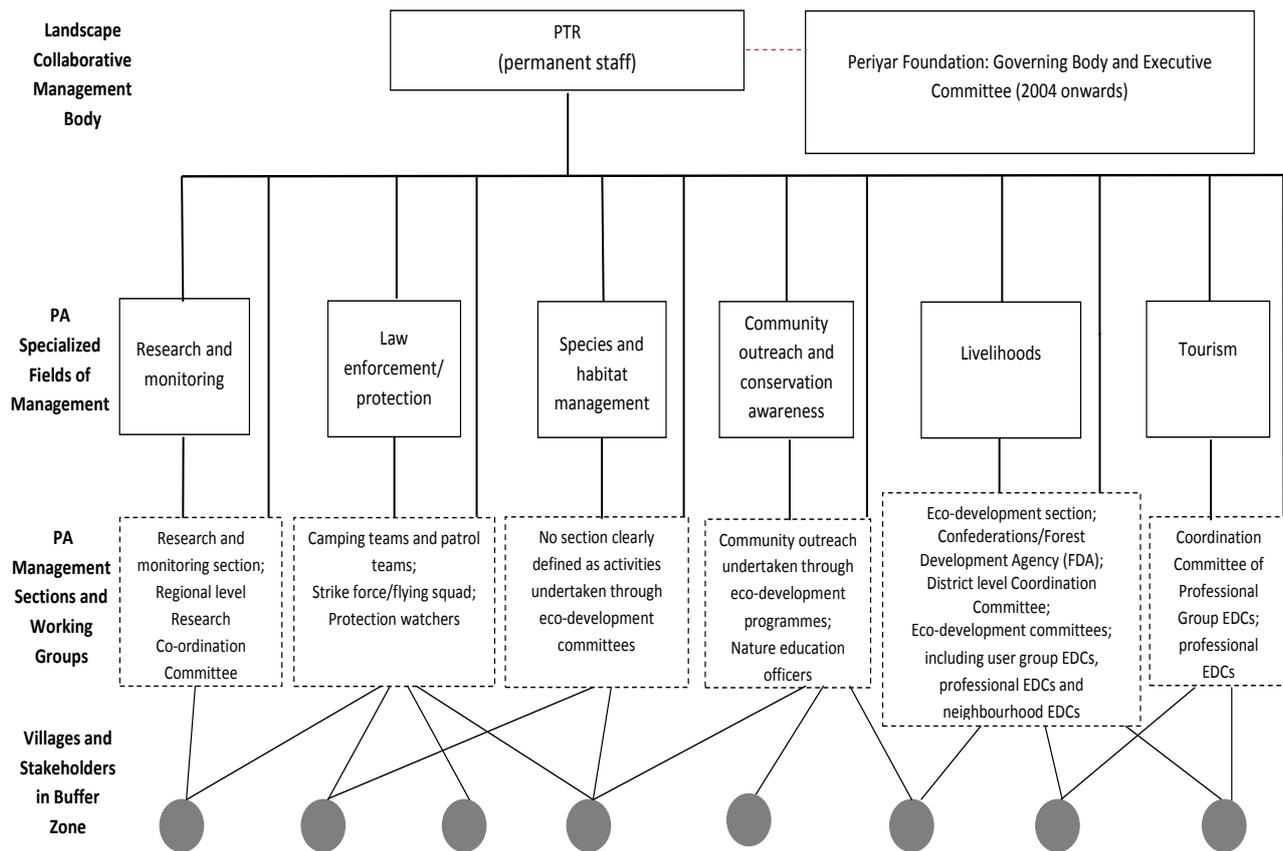


Figure 1. Multi-level collaborative management arrangements in Periyar Tiger Reserve (as of 2014)

DISCUSSION

Mapping of the institutional arrangements in a multi-level collaborative management system like PTR can only identify the institutional bodies and their presumed working relations between management levels, and within the management bodies themselves. The effectiveness of the institutional bodies described at the different management levels is based solely upon the relatively extensive literature on Periyar. The primary objective of this paper is to outline a holistic picture of the landscape management arrangements for the Tiger Reserve, which is still evolving and is therefore dynamic (PTR Director, pers. comm.). It also needs further assessment by protected area practitioners, particularly regarding its feasibility and applicability involving more modest funding streams (i.e. without World Bank funding or pilgrimage entrance fees) and in developing countries with lower government capacity.

LANDSCAPE-LEVEL INSTITUTIONAL MANAGEMENT ARRANGEMENTS

During the past three decades, two landscape management systems, namely the PACC (1996-1998) and the EIC (1998-2001) operated under the auspices of the IEDP. The former had a broader agenda of protected

area management while the latter was established to ensure successful implementation of sustainable eco-development activities, and ultimately to ensure biodiversity conservation with community participation. Both systems were ultimately established to achieve the goal of biodiversity conservation. The third landscape management body, the Periyar Foundation, was devised after the termination of the IEDP specifically to have a high level of adaptive management flexibility, but also with the ability to construct a landscape-level stakeholder group. The establishment and subsequent functioning of these three institutional bodies suggests that these landscape level coordination bodies may constitute a critical institutional body to provide overall direction to collaborative management undertaken within a protected area landscape, encompassing both the core zone and the peripheral villages.

However, the rejigging of the committee membership over the two decades indicates that Periyar has had teething problems with the functioning of this umbrella landscape body, which still remain. There has been a strong slant in membership towards government officials, and particularly representatives from the Forest Department and conservation sectors. This bias



The EDC making recyclable bags for the pilgrimage © Ramesh Mohan

constrains the full range of stakeholder viewpoints to be heard, understood and responded to, through management actions. This is of particular concern, given that the protected area has successfully established a number of protected area working groups, and each of these working groups could be providing feedback on different aspects of protected area management.

THE SIGNIFICANCE OF ESTABLISHING A GONGO AND TRUST FUND FOR PILOTING COLLABORATIVE MANAGEMENT

PTR established the Periyar Foundation in 2004, primarily as a means to extend the IEDP and buffer zone engagement, which was also devised specifically to have a high level of adaptive management flexibility, and promote landscape protected area management. As such, the Foundation was a pioneering effort. This institutional mechanism permits the government protected area agency to promote and actively engage in a wide variety of livelihood development activities in the buffer zone, which are directly linked to conservation (Joseph, 2009). The Foundation has maintained the eco-development programme through hiring professional livelihood

development personnel and other specialists. Being a tiger reserve, the Foundation is now under the National Tiger Conservation Authority. Following the success of the Foundation concept, each tiger reserve in the country is now meant to establish a Tiger Conservation Foundation. Sharma (2008) noted that the GONGO management approach permits the protected area authority to overcome mandate constraints and undertake self-directed agendas, particularly with respect to community engagement in the buffer zone.

In the broader Asian regional context, this institutional/funding mechanism permits a conservation agency with negligible livelihood development experience to initiate an entire suite of activities undertaken in their protected area landscapes, and to pilot livelihood interventions linked to threat mitigation and collaborative management at a pace and level that they are content with. Government protected area agency personnel as well as conservation NGO personnel, particularly those supporting the fortress conservation philosophy, may also be more comfortable with supporting a collaborative management approach under these evolving management systems.

ESTABLISHING SPECIALIZED FIELDS FOR EFFECTIVE LANDSCAPE MANAGEMENT

Protected area management tasks: It is an important first step for the protected area staff to be organized into the different specialized fields of management and then trained in the respective fields for effective management, rather than undertaking multi-tasking roles in protected area management. Over the last three decades, PTR has recognized six different fields of specialization (see Figure 1) in protected area management (e.g. Kaler, 2001). These management arrangements conform with the proposed field management arrangements for a government-managed protected area described elsewhere, under which landscape collaborative management functions (Appleton et al., 2003; Parr, 2006, Parr et al., 2013). Mishra et al. (2009) endorse this fundamental first step, noting that the success in Periyar was achieved because of strong leadership as well as committed and trained teams in the different fields of management for proper implementation of the activities.

Protected Area Management Working Groups: At least four protected area management working groups have been established in Periyar over the last two decades, in four specialized fields of protected area management. These comprise the (i) Regional level Research Co-ordination Committee, (ii) patrol teams supported by an informants' network, (iii) District level Co-ordination Committees promoting livelihood agendas linked to the eco-development committees, and (iv) a Coordination Committee of Professional Group EDCs for tourism. These working groups appear to be some of the institutional engines that drive effective landscape protected area management, optimizing impact through partnership relationships with concerned stakeholders, including the EDCs themselves. At Periyar, these protected area management working groups were established and sustained in response to the funding from the IEDP project. The Government of Kerala has made every effort to maintain these working groups, and the multi-level collaborative management system, using government funding streams. McShane and Wells (2004) concluded that most ICDPs need ongoing financial support or they collapse, Periyar has had the advantage of World Bank funding, augmented by ongoing pilgrimage entrance fees.

The establishment of protected area management working groups introduces potentially interesting human resource dynamics to protected area management in Asia and the way it is conducted. Rather than rely on large numbers of protected area staff running these field

programmes single-handedly, the conservation agency can look for government partners and other interested individuals to work with the local communities, and thence build up constituency support for the protected area and its well-being. Consequently, fewer protected area staff are required to run the different specialized programmes, law enforcement aside, which may be significant in developing countries with low staffing levels and high threat levels. However, the protected area staff who lead these protected area working group programmes need to be well-qualified to maintain the functioning of the working groups and their programmes of work, to maintain the interest of their members, and deal with financial aspects.

The concept of protected area management working groups has rarely been discussed amongst protected area practitioners as a notable institutional body, but given the ratio of protected area staff to local communities, the capability to maximize interactions with these stakeholders through tiered institutional bodies must be deemed beneficial. Further investigation of the role and functioning of these working groups should be conducted in other protected areas in Asia. It is presently impossible to conjecture in any Asian scenario whether as these working groups become more robust, particularly in the buffer zones, we should expect a corresponding reduction in the need to maintain intensive patrolling in the core zone.

Eco-Development Committees: The establishment of EDCs appears to have been an extremely successful initiative (Balasubramaniam & Veeramani, 2008). These village level committees were established according to their functionality, and establishing EDCs on the basis of social, ethnic and occupational groups gave each EDC a strong degree of homogeneity that helped to develop and nurture mutual cooperation and trust. The promotion of site-specific micro-plans enabled the prioritization of grassroots level social realities to influence the design and implementation of the India Eco-development Project. The funding of these EDCs was maintained through the establishment of revolving community development funds by the IEDP.

According to Bhardwaj & Badola (2007), the eco-development initiatives had a number of progressive points. The PTR authorities began to understand the people's needs, and the negative impact of protected area policies. They also focused on the needs of the less privileged and poorest people, and attempted to support these households in programme design, and stressed 'ownership' of the eco-development programme by the local communities, by stipulating cost-sharing. The



Birdwatching in Periyar Tiger Reserve with local guides © M. Ramesh Babu

development of human capital through continued capacity building of local people and Forest Department personnel was emphasized. The involvement of vibrant and representative grassroots level institutions was recognized as being necessary for the success of the programme. Above all, they recognized and laid emphasis on social issues in conservation. Success was sustained by the robust grass-root level institutions, the creation of social capital, policy support, networking, strong conservation and development linkages, and by dovetailing with the mainstream development activities. More importantly, the Eco-development Project improved the *relationships* between the local communities and the PTR (Chaudhuri, 2013).

A recent study based on a survey of attitudes of local communities living around protected areas in India and Nepal shows that most people have favourable attitudes towards protected areas, as long as they gain economic benefits from ecotourism and collection of minor forest products (Karnath & Nepal, 2012). The ongoing eco-development activities resulted in the emergence of new social relationships not only between the local

communities and the PTR as well as the Forest Department, but also between the community members themselves, resulting in new social networks and an emerging moral economy amongst the villagers-turned-conservation workers that could not have been anticipated at the onset of the World Bank project (Chaudhuri, 2009).

Weak linkages in the multi-level collaborative management system: PTR has established a diverse system of EDCs at the village level. A number of institutional bodies, including four protected area working groups, support the operation of these EDCs. However, there seems to be a lack of representation of spokespersons from the working groups and related institutional bodies on the landscape protected area committees, including the Periyar Foundation. Improved stakeholder representation on the landscape protected area committee might facilitate better grassroots feedback to senior reserve management on field activities and constraints to effective management. Ebregt and De Greve (2000) stated that it usually takes a long time to establish a stable institutional structure, as the multi-

disciplinary planning process for landscape management involving the buffer zone is complicated, due to the many stakeholders involved at different levels, ranging from indigenous people to government officials.

Evidence of multi-level collaborative management in a government designated protected area: Sandker et al. (2009) recommended devoting greater attention to improving local environmental governance as the highest priority for investment for developing effective integrated conservation and development initiatives. Mishra et al. (2009) stated that an elaborate institutional mechanism for implementation of the IEDP in PTR had been put in place. PTR demonstrates a good example of multi-level collaborative management, involving landscape level collaborative management, strong recognition of the different fields of management specialization, a number of structured protected area management working groups and a strong village level agenda through the 76 EDCs. These management arrangements appear to endorse the need for joint management of living resources (Berkes et al., 1991) and multi-level governance (Bloomquist, 2009), as well as the generic multi-level collaborative management arrangements for a government-managed protected area proposed by Parr et al. (2013).

CONCLUSIONS

The Forest Department in Kerala State has developed some fascinating multi-level collaborative management arrangements to manage the PTR. These arrangements have evolved through the methodical problem-solving of dedicated forestry officers over a 20-year period. They have introduced practical institutional solutions, including a GONGO, village level EDCs, a number of protected area working groups and several evolving 'takes' on the landscape collaborative management arrangements. While the number and diversity of these institutional arrangements may have been established and maintained by sizable catalytic funding streams from the India Eco-development Project, the institutional arrangements within PTR are worthy of further in-depth analysis, understanding and monitoring.

The relative obscurity of multi-level collaborative management arrangements in government-managed reserves in the protected area literature could be a consequence of several factors. Firstly, many countries in Asia find the transition from the fortress approach to participatory collaborative-management approaches simply too complex, and with too many hurdles. Secondly, the institutional arrangements may exist, but are deemed either uninteresting or unimportant to

report. Lastly, the project staff and/or conservation NGO personnel piloting innovative landscape management may have substituted themselves for several of the key collaborative management bodies, for smoother, unhindered protected area management during project implementation, and effectively became the protected area working group coordinators.

RECOMMENDATIONS

All protected area agencies in Asia should review their protected area arrangements at the field level, and assess whether they are supporting organizational arrangements that recognize the different fields of specialization. The organizational arrangements within the respective protected area agencies themselves should also be geared towards supporting the respective field units; in many countries in the region they are not.

Protected area agencies in Asia in which the agencies are constrained in their mandates to engage communities in their buffer zones should consider the merits of piloting GONGOs, involving the establishment of site-level trust funds, as a means to deliver highly flexible conservation and development agendas in their protected area landscapes.

Protected area agencies and conservation organizations should conduct detailed assessments of understanding, attitudes, and constraints within the protected area agencies towards the benefits of promoting landscape protected area management. It is important that the legal constraints, the management constraints and the government civil servant constraints are fully understood, particularly regarding community engagement in the buffer zone. A detailed assessment should also be undertaken of the understanding, attitudes and constraints towards collaborative management and fortress management approaches within protected area agencies, and their pros and cons, particularly targeting the most competent protected area managers as they may become potential change agents for their colleagues.

Protected area agencies and conservation organizations should promote and evaluate the establishment and functioning of protected area working groups in protected areas. Priority collaborative management areas are enforcement, community outreach and livelihood promotion, piloting small grants towards threat mitigation to buffer zone villages.



The Periyar landscape supports a population of some 500-600 Asian elephants © N.P. Jayan

ABOUT THE AUTHOR

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RESUMEN

Son pocos los casos en los que se han realizado mapeos institucionales sobre los acuerdos de múltiples niveles para la gestión participativa. Si acaso están documentadas, estas experiencias no han sido evaluadas. La Reserva de tigres de Periyar en los Ghats Occidentales en India es un área protegida estatal adecuadamente administrada y con recursos suficientes cuyas intervenciones de gestión se extienden a la zona de amortiguamiento. Ha sido designada por el Gobierno de la India como un Centro de excelencia para el aprendizaje, y es reconocida a nivel internacional por las prácticas eficaces de gestión. Este trabajo analiza los acuerdos institucionales de esta reserva en los diferentes niveles, desde la gestión a nivel de paisaje hasta el nivel de aldea. El análisis revela que un órgano de gestión participativa entre múltiples interesados parece ser importante para supervisar el manejo de áreas de paisaje protegido. La creación de la Fundación Periyar, una dinámica organización gubernamental-no gubernamental (GONGO), es

particularmente innovadora en términos de la facilitación de respuestas de gestión más ágiles, que han sido replicadas a nivel nacional a través de la Autoridad Nacional de Conservación del Tigre. Las tareas de gestión de áreas protegidas están adecuadamente definidas, con grupos de trabajo en gestión de áreas protegidas establecidos para cuatro esferas claves de gestión, con el consiguiente aumento en la participación constructiva con todos los grupos de interés prioritarios. Sin embargo, la representación de los interlocutores del grupo de trabajo en áreas protegidas en el órgano encargado de la gestión participativa del paisaje parece ser débil. Estos grupos de trabajo especializados interactúan con las 72 aldeas, 5584 hogares y 28.000 habitantes, a través de 76 comités de desarrollo ecológico. El mapeo institucional sobre la gestión participativa de múltiples niveles ofrece esperanzas para profundizar en la gestión de áreas de paisaje protegido.

RÉSUMÉ

Quelques cartographies institutionnelles de gestion collaborative multilatérale ont été réalisées, mais même pour celles qui sont documentées, ces expériences n'ont pas encore été évaluées. La réserve naturelle de Periyar dans les Ghâts occidentaux du sud est une aire protégée dotée de ressources gérées par le gouvernement dont les interventions de gestion se déploient jusqu'à dans la zone tampon. Elle a été désignée comme un centre d'apprentissage de l'excellence par le gouvernement de l'Inde, et est internationalement reconnue pour sa gestion efficace. Ce document tente d'analyser les dispositions institutionnelles de cette réserve, de l'échelle du paysage terrestre protégé à celle du village individuel. L'analyse révèle qu'un organe de gestion collaborative multilatérale paraît être important pour superviser la gestion à l'échelle du paysage terrestre protégé. La Fondation de Periyar, une organisation non gouvernementale dynamique organisée par le gouvernement (GONGO), s'est avérée particulièrement innovante pour faciliter des solutions de gestion souples, et ses méthodes ont été reproduites à l'échelle nationale par le biais de l'Autorité Nationale de Conservation du Tigre. Les tâches de gestion de l'aire protégée sont bien définies; des groupes de travail ont été créés autour de quatre domaines clés de gestion, augmentant ainsi l'engagement constructif de toutes les principales parties prenantes. Toutefois, la représentation des porte-paroles du groupe de travail dans l'organe de gestion collective du paysage terrestre protégé paraît plutôt faible. Ces groupes de travail spécialisés couvrent 72 villages, 5 584 ménages et 28 000 villageois, par le biais de 76 comités d'écodéveloppement. Une analyse plus approfondie de la cartographie institutionnelle de gestion collaborative multilatérale paraît opportune pour la gestion des paysages terrestres protégés