

**Institutionalising
Biodiversity
Conservation**

**Herpetofauna of
Little Nicobar**

**British Tree
Management
in Lesotho**

**Re-Placing
Nature**

Issue no - 1
July 2007

**Reaching
Out!**

Current Conservation

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Reaching out!

Kartik Shanker and Ankila Hiremath

Amongst the many challenges of conservation in the 21st century is the business of effective communication of information. Both theory and practice seem to suggest that unless conservation and environmental stewardship have a much larger constituency than they currently do, they are unlikely to succeed in the long term. In order to do this, we have to communicate to a large audience not only the threats that face the environment today, which the popular media does to some extent, but the state of the art research in conservation science, accounts of success and failure, and stories from a diversity of landscapes.

One of the ironies of conservation is that while it is a fundamentally human enterprise, it has been dominated by biologists and other natural scientists. In almost all conservation contexts, there are human actions or societies that need to be managed, and yet, little emphasis has been given to understand these communities, their perceptions, and needs, which may be required to bring about social change. Several journals now deal with the interface between conservation and society. In their introductory editorial to *Conservation and Society*, “Why do we need a new journal on conservation?” Kamaljit Bawa and Vasant Saberwal commented on the need to publish rigorous research from interdisciplinary perspectives and to make information available to readers in the Third World. *Conservation and Society*, open access since 2005, has certainly achieved its primary goal.

Nevertheless, though it is an open access journal with subsidised subscriptions to the developing world, *Conservation and Society* still has a limited readership,

restricted to a largely academic audience. As a rigorous academic journal, it has little appeal for the interested lay reader. Conservation information, however, needs to reach out to a much wider cross-section of civil society and to a greater diversity of stakeholders.

With *Current Conservation* we look to fill this gap by providing the latest in conservation research in an attractive and accessible format, through open access online content and a hard copy version at affordable prices. *Current Conservation* will carry the latest in research news from the natural- and social-science facets of conservation, such as conservation biology, environmental history, anthropology and sociology, ecological economics, landscape ecology, etc. *Current Conservation* will also periodically translate the content of *Conservation and Society*, reprinting the articles in language that is accessible to a wide readership.

Current Conservation is similar to *Conservation and Society* in its objective of showcasing work representing various facets of conservation. Like *Conservation and Society*, it too will focus—though will not restrict itself—to information from the developing world. We hope that these two ventures will complement each other and help contribute to meeting the massive challenge that confronts conservation communication today.

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Why do we need a new journal on conservation?

Kamaljit S. Bawa and Vasant Saberwal

We live in an era of tremendous economic and environmental change. This change has significant consequences not only for the fate of natural ecosystems, but also for the human societies that are largely responsible for such change. We hope that *Conservation and Society* will serve as a platform for debate on the politics, the science and the history of change as well as the conservation of natural resources.

We are aware that there are several excellent journals devoted to conservation. The vast majority of them, however, are located in the West, with two consequences: First, most of these journals are expensive and hence difficult to access in the Third World. Second, much of what is published in these journals has relevance to the First rather than the Third World. We hope to make *Conservation and Society* available to readers at relatively cheap rates, readily accessible over the internet. We also hope to provide the space that will enable a more involved discussion around issues that have immediate relevance to the Third rather than the First World.

Our primary mandate is to bring interdisciplinary perspectives to bear upon the problem of environmental impoverishment. As can be seen from the editorial board, we have consciously chosen to work with both biologists and social scientists in the hope that we can initiate real discussions across the current disciplinary divides we are all familiar with.

Putting this first issue together has demonstrated just how challenging this task is likely to be. Even within the editorial board there have been differences over what

constitutes rigorous research. Editorial discussions have tended to follow disciplinary divides such that biologists have seen the absence of quantitative data as indicative of a piece being soft and lacking in analytical rigour. Equally, social scientists have struggled with work that is highly quantitative, often failing to understand the nuances or implications of data presented in some articles.

Navigating this divide is of the utmost importance from a conservation perspective. Academics and professionals in the social and natural sciences profess to having identical interests with regard to conserving and better using natural resources. Yet these same individuals have rarely managed to engage in fruitful conversation with one another.

Pulling this journal together will push our limits as we attempt to work across disciplinary boundaries. We will write about these experiences as we go along for we feel that the very act of managing this journal is part of

a much larger process of unpacking the constituent elements of the disciplinary divide. We are hopeful that many of you will join what promises to be a challenging, and thoroughly bumpy ride.

We invite comments and manuscripts from our readers. Apart from letters, essays, reviews, commentaries and research contributions, we also welcome guest editorials. The journal will obviously be shaped by its contributors; hopefully many of these contributions will help shape contemporary debates on the question of the interaction between society and the environment.

We anticipate publishing the journal twice a year to start with, but are working our way towards a quarterly publication. While our editorial team has a definite slant towards South Asia (India really), we are hoping to have a more diverse board in time. We are committed, however, to publishing articles from across the world, and on any part of the world. Our only condition in accepting articles for review is that they fit our mandate of publishing articles on conservation with a demonstrable link to society.

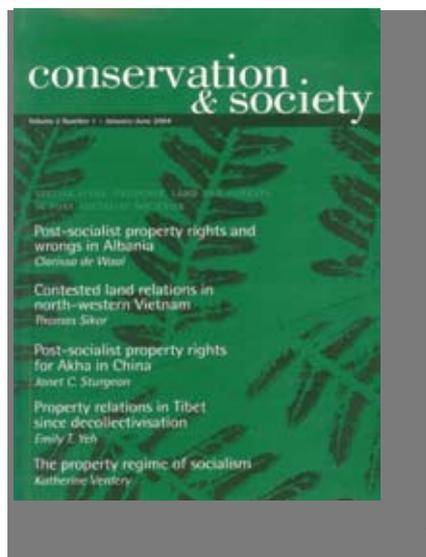
This first issue of *Conservation and Society* is dedicated to the memory of Dr T.N. Khoshoo. Khoshoo's work and commitment inspired a generation of scientists, including many on the editorial board of *Conservation and Society*.

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Bawa, K.S. and V. Saberwal. 2003. Why do we need a new journal on conservation? *Conservation and Society* 1(1):v-vi.

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Cattle and Conservation at Bharatpur

A case study in science and advocacy

Michael Lewis



Photo: Ghazala Shahabuddin

Few subjects can polarize a group of conservation practitioners more quickly than grazing in protected areas. For generations of ecologists and park managers throughout the world the destructive nature of livestock grazing on natural systems was so apparent that it never even needed to be discussed. In contrast, villagers and various social ecologists often see grazing as essential to individual (and village) economies, and an acceptable and traditional use of protected landscapes. While many conservationists can intuitively sense that overgrazing can destroy an ecosystem, and that there is a carrying capacity for even the most heavily modified pasture, the reverse proposition – that a complete ban on livestock grazing might be harmful in an ecosystem that has evolved in the context of grazing – is not so self-evident.

In response to the assumptions of conservationists,

and only rarely based upon scientific study, national parks throughout the world have been created as cattle-free sanctuaries. This applies equally in India, where the Wild Life (Protection) Act, 1972 defined Indian national parks as cattle-free zones. This law created a universal standard for Indian national parks, forbidding grazing even in places where it had been occurring for centuries. In some parks and places in India, domestic grazing has caused a great deal of harm. In almost all protected areas, overgrazing is a threat. But is it possible that in at least a few national parks, some low level of domestic grazing is perhaps necessary for ecosystem stability?

At Keoladeo Ghana National Park in Bharatpur, cattle removal did not have the desired effect of improving the health of the ecosystem. When cattle (as well as local fodder collection) were banned in 1982, a Bombay Natural History Society study showed that

the park's habitat and endangered bird populations began a slow decline. The waterways began to be clogged by a few weedy species (the non-domesticated herbivores would not eat them), and the grasslands were subject to repeated wild fires that were fueled by the abundant and ungrazed grasses. In conjunction, this reduced the suitable habitat for the birds (such as the Siberian crane) that had made the park so famous.

This case study challenges the assumption that conservationists can apply seemingly universal truths such as “domesticated cattle are always harmful” on local landscapes. The attempt to use ecological insights from one scientific study or one region of the world to devise universal conservation practices is highly problematic, fraught with risks, easily politicised and frequently ineffective. Concretely, this suggests that protected area management needs to be based upon careful ecological study of each specific protected area, and that conservation advocacy (and legal frameworks) should allow for this. All too often though, conservation occurs in the midst of a crisis, and there does not seem to be time for local study. But as Bharatpur illustrates, the price of acting too hastily, and on the basis of non-scientific assumptions, is sometimes the very ecosystem crash that conservationists are trying to prevent.

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Community Conservation Inequality and Injustice

Myths of power in protected area management

Daniel Brockington

There is a clear belief in many conservation circles that protected areas cannot survive without the support of their neighbours. Protected areas' neighbours are more numerous than their guards. If these poor rural neighbours want to collect firewood, graze their livestock or hunt wild animals then they will, often with impunity, and conservation will suffer. I call this belief 'the principle of local support'.

The importance of local support has been observed in many instances, but it should not be built up to be a universal principle. There are occasions where it does not work, and we need to be wary of it for several reasons. First, the principle of local support assumes that the weak can obstruct the agendas of the strong. It ignores the fact that rural groups are often politically, militarily or financially weak. In contrast, conservationists can be relatively well-funded, well-connected, and well-armed. Second, the principle assumes that where rural people perceive they are being treated unfairly they will take effective action to achieve a more just distribution of resources.

This may be possible, but is in stark contrast to many instances around the world where inequality and injustice continue to be perpetrated regardless of

opposition to them.

I outline a detailed case study from the Mkomazi Game Reserve in Tanzania, which shows how conservation can flourish despite local opposition. I argue that advocates of community conservation need to pay more attention to such so-called fortress conservation's strengths and especially its powerful myths and representations.

If conservation's misfortunes are concentrated onto a relatively weak group it is quite possible for this inequity to be sustained. It is not existence of poverty or injustice that will cause problems for conservation, but their distribution within society. Understanding how inequality and unjust conservation are successfully perpetrated will make it easier to understand the politics of more participatory community conservation projects.

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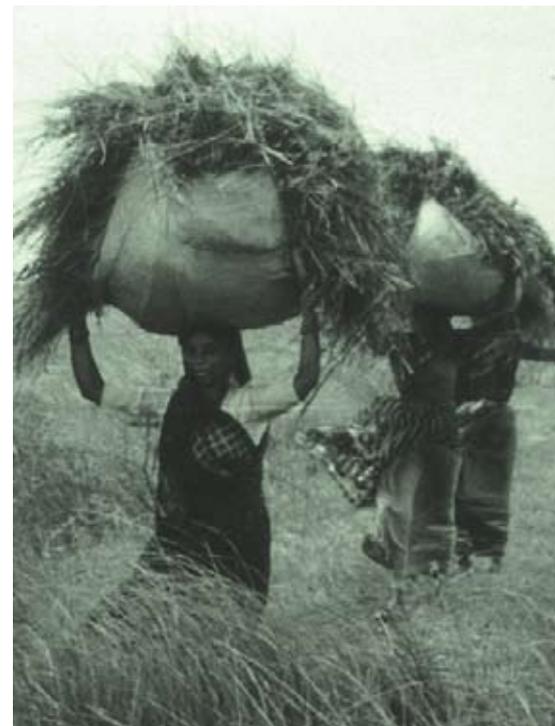


Photo: Ghazala Shahabuddin

Communities and their partners

Governance and community-based forest management

Nicholas K. Menzies

Since very early times, forests have been the site of conflicts between States and people whose livelihoods depend on forest resources. States have intervened to control forest resources in the name of 'public interest,' thereby restricting access to these resources by people who have traditionally or historically depended on them.

It has been about 20 years since governments, international donors, and others initiated community-based forest management (CBFM) programs involving forest communities in the management of forests, which had formerly been the exclusive preserve of state agencies. The Ford Foundation is one of a number of international organisations that have recently commissioned reviews to assess the impacts of CBFM on communities, the forests they depend on, and on government forest management agencies. This review consisted of case studies from China, India, Mexico, the Philippines, and the United States. The Ford Foundation review also assessed the impacts of national, regional, and global networks promoting CBFM. It found that despite the differences between the countries and the activities involved, governance is emerging as a central concern of all the partners involved with the evolution of CBFM.

Community-based forest management initiatives have attempted to create a favorable policy environment for devolving management of forested lands to communities or entities other than government agencies. In reality, though, the various actors in CBFM have different perspectives on the origins and objectives of CBFM. In some places, forestry departments saw CBFM as a route to more effective forest management, to higher success rates in reforestation programs, or as a strategy to reduce erosion and land degradation in upland areas. While a plurality of motives for participating in CBFM programs is not in itself a problem, experience has shown the importance of managing the different expectations of diverse partners through principles of good governance such as open fora for discussion of issues, and mutually accepted procedures for making and implementing decisions.

Many communities complain that CBFM has devolved the most burdensome responsibilities for protection, monitoring, and planting to them without a symmetrical devolution of decision-making authorities, which tend to remain firmly in the hands of government agencies. CBFM institutions are also easily dominated by their

more powerful and more articulate members, entrenching inequitable relations within communities. Good governance must therefore give equitable access to decision-making about forest resources, and CBFM institutions must consciously craft rules and procedures to ensure that the voices of the weak and disenfranchised are heard.

Community-based forest management will not in itself resolve long-standing conflicts over resources, but it has the potential to play an important role in strategies for sustainable management if there is a realignment of relations among households, community, and government. To realize this potential, it will be important to place more emphasis on crafting inclusive, equitable and accountable mechanisms to mediate relations between partners from the national, and even international level to the local.

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Institutionalising Biodiversity Conservation

The case of Ethiopian coffee forests

Franz W. Gatzweiler

In Ethiopia, as in many other countries, the conservation of biological diversity poses a challenge requiring social re-organisation at different levels. Encouraging experiences with co-management approaches in participatory forest management show that local resource users can sustainably use biodiversity when rights and responsibilities are fairly shared. A diversity of institutions and governance structures, at multiple levels, is required, however, to achieve the conservation of biodiversity. This is due to both the manifold features and functions of biodiversity at different scales and to the varying attributes of the actors directly or indirectly involved

Current approaches to biodiversity conservation very often entail inventorying plant and animal species, modelling ecosystem dynamics, or harnessing traditional plant medicines. Approaches that recognise the importance of institutions in biodiversity conservation often propagate the market, the State, or the community as the most suitable form of governance. I argue that none of these forms of governance is a panacea for biodiversity conservation, and that the various components of biodiversity require to be managed by a diversity of institutions.

Institutional diversity, per se, however, cannot ensure successful biodiversity conservation. Nor is it useful for identifying practical starting points for action. The Ethiopian case demonstrates what happens when the government ‘steps aside’ to allow the market to ‘work its wonders.’ For governments

and markets to function properly, trust is an inevitable ingredient of institutional design for sustainability. Therefore, the entire range of institutions, from the level of informal local institutions to the level of bureaucracies, markets, and prices (see Figure) needs to be considered in that design. In the words of Prof. H. Vogtman, president of the German Federal Agency for Nature Conservation, on a recent trip to Ethiopia, “All keys of the piano need to be played.”

Although federal officials willingly pass on responsibilities and duties to the regions, the institutional grounds for biodiversity conservation have not been fully laid in Ethiopia. What is required is a better recognition of local rights. So also, a better

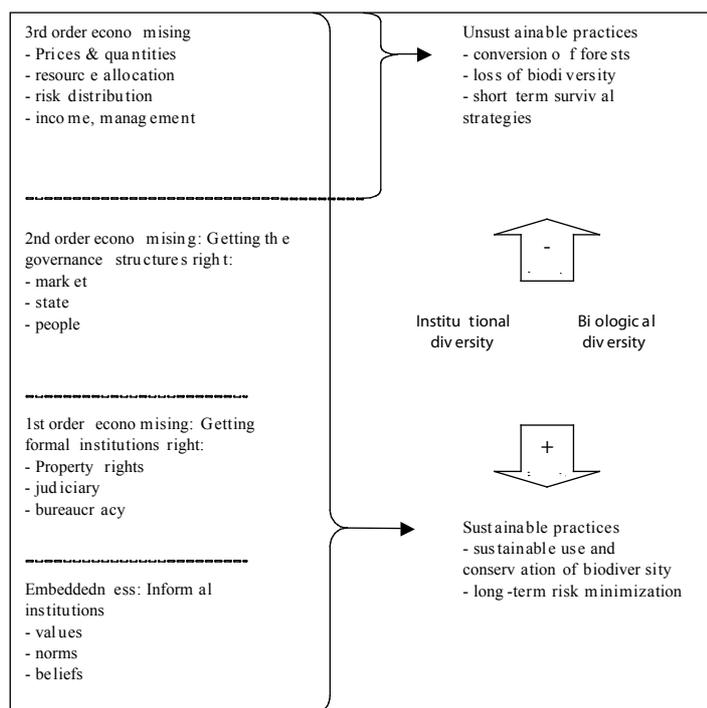


Figure: The entire range of institutions, from the level of informal institutions to the level of bureaucracies, markets, and prices needs to be engaged in well coordinated, collective action for achieving the sustainable use and conservation of biodiversity

endowing of the regions with the financial and human resources they need to fulfil additional duties such as safeguarding the provision of public goods and services from forests, instead of additional tax disincentives on the benefits derived from successful community management of forest resources. After recognising the importance of institutional diversity, the challenge is to shape the context-specific patterns of that diversity and to identify starting points for action.

This requires awareness building, communication, trust-building, guidance, and mediation. In Ethiopia today those measures are still heavily supported by NGOs and the international aid community. Governmental support in the form of tax and other incentives and extension services do not exist, or fail to reach local resource users. The attempt to conserve Ethiopia's wild coffee forests illustrates that all stakeholders have their individual interests but also share a common vision. Well co-ordinated collective action is a necessary consequence of institutional diversity.

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Ankila Hiremath

Non timber forest products – the fruits, roots, bark, flowers, resins, and fibres that people collect from forests – make an important contribution to both subsistence and market economies, worldwide. In India alone, more than 50 million people are estimated to depend on forests for non-timber products (hereafter, NTFP). Locally, NTFP can account for 30–40 % of cash incomes for forest-dependent communities, and at a global scale the value of trade in NTFP runs into billions of dollars.

Our relationship with NTFP has a long history – humans were hunter-gatherers much before they learnt settled agriculture. But managing forests for NTFP has only captured the imagination of conservation scientists in the last couple of decades. This change can be traced back to an influential article by Charles Peters and others, written in 1989, suggesting that the long term economic benefits from managing tropical forests for NTFP far exceeded the benefits from converting them to agriculture or other land uses. This provided a justification for tropical forest conservation that was socioeconomic as well, and not just biological: Forests and their

Non Timber Forest Products

component biodiversity could be conserved, while at the same time enhancing livelihoods of forest-dependent communities through their sustainable extraction of NTFP. Enthusiasm for the dual promise of this “good extractivism” has since had to be tempered – it turns out that managing forests for NTFP often has higher ecological costs and lower economic benefits than originally expected. Yet, understanding the constraints to good extractivism may enable us to seek solutions for sustainably managing forests for NTFP. The set of pan-tropical articles in this special collection attempts to do just that.

Shahabuddin and Prasad, review research on the ecology of NTFP harvesting in India, and provide an overview of the kinds of ecological costs potentially associated with NTFP harvesting. There can be direct deleterious impacts on the target NTFP species, either due to over-harvesting, or due to destructive harvesting practices. In India one of the few places where there has been extensive research on various aspects of NTFP harvesting is the Biligiri Rangaswamy Temple Wildlife Sanctuary, Karnataka. Uma Shaanker and colleagues

summarise a series of studies that demonstrate how the NTFP harvesting can have consequences that range from genes to ecosystems: Trees of three important NTFP species – *Phyllanthus emblica*, *Terminalia chebula*, and *Terminalia bellerica* – showed reduced genetic variability closer to human settlements, as compared to further away, a difference that the authors associate with a gradient in harvesting intensity. This same effect of harvest intensity was reflected in the number of seedlings and saplings of these NTFP species, a sign of whether or not there is a next generation of individuals necessary to maintain the population. These studies also show that there may be effects of harvesting and other associated human use that extend to other non-target species. For example, they describe altered species composition in forests closer to human settlements relative to forests further from settlements, and lower total biomass in forests closer to human settlements relative to forests further from settlements.

In another study, also in the Biligiri Rangaswamy Temple Wildlife Sanctuary, Ganesan and Setty describe the case of two species of amla, *Phyllanthus emblica* and *P. indofischeri*, which both occur in this area. *P. emblica* occurs in moist deciduous forests, whereas *P. indofischeri* occurs in drier scrub forest. Both species of amla are subject to similar harvest pressure, but *P. emblica* shows very little regeneration of young individuals,

unlike *P. indofischeri*. The authors suggest that anthropogenic disturbances not directly related to harvesting (e.g., fire and grazing) can also have an impact on NTFP species.

Ecological effects of NTFP harvesting can vary according to the plant part harvested. This is



Photo: Nitin D. Rai

illustrated by Runk and others, from a study in the Darién Province of Panama, where the Wounan and Emberá communities rely on several important NTFP such as fruits of the tagua palm (*Phytelephas seemannii*) for its vegetable ivory, and fronds of the chung palm (*Astrocaryum standleyanum*) for fibre that is woven into fine baskets. Tagua harvest does not

jeopardize regeneration of the palm, but the chung palm is killed to obtain its fronds. The authors also draw attention to the year-to-year variation in availability of certain products, as well as to the variation in harvest amounts, relative to proximity to tourist markets. They use these findings to make the important point that most studies on harvesting of NTFP are based on short-term observations, made on small populations, which thereby limit the recommendations that can be made on their basis.

But ecological consequences of NTFP harvesting are not just a consequence of the biology or natural history of the plant or animal concerned. Socio-economic factors such as equity in access to resources, and tenure regime, can also have important impacts on harvest practices, thus on ecological sustainability. Rai and Uhl, in their study of uppage (*Garcinia gummi-gutta*) rind harvesting in Uttara Kannada district, Karnataka, show that Brahmins, who have tenurial rights in Soppinabettas, can afford to wait until the fruit

is ripe and the rind falls to the ground. This way, there is no damage to the trees, nor competition for fruits with fruit-eating animals, and seeds are left in the forest to germinate. On the other hand, people – largely lower caste non-Brahmins, as it happens – who rely on open-access reserve forests for their harvest of uppage, are compelled to harvest the fruit before it is ripe, often cutting

branches in order to maximize their gains and pre-empt others from getting the fruit. In the process, the trees are damaged, other non-human consumers of the fruit are deprived of their food, future regeneration is jeopardized, not to mention that collectors get less income per kilo harvested for the lower-quality rind from unripe fruit.

In addition to ecological sustainability, there are a variety of other considerations that constrain good extractivism. These include the low density at which most NTFP occur, their low (and variable yields from year to year), their relative remoteness from markets, and the variability in these markets, thereby making harvest economically unprofitable, even if ecologically sustainable. Plowden illustrates this in his study of andiroba (*Carapa guianensis*) in humid tropical forests of the Brazilian Amazon region. Andiroba seeds have traditionally been harvested for their oil used as an insect repellent and to relieve rheumatism. There is now growing interest in it as a source of oil for medicinal soaps and natural insect repellent candles. Traditional methods of oil extraction yield small amounts of oil compared to mechanized methods, and investment in the required machinery for local processing may help overcome this difficulty. Nonetheless, the small quantities of andiroba available for harvesting remains a constraint to profits from collection, and Plowden suggests enrichment planting of this species as a means to achieve economic profitability. Enrichment planting of NTFP has also been suggested by Kathriarachchi and others, from Sri Lanka. They present the case of two important lianas, *Calamus ovoideus* and *Coscinium fenestratum*, the former, a rattan used to make furniture and baskets, the latter, an

indigenous medicinal plant. Both have been over-harvested in the wild, and the authors describe results from experiments that suggest they can be grown on degraded land, or in buffer zone plantations outside protected areas.

In contrast to andiroba, açai (*Euterpe oleraceae*) is a rather atypical NTFP. It occurs at high densities, it grows in flood plain forests in the Amazon region, making it relatively accessible (by boat), and it is a multi-stemmed palm, so it is possible to harvest both its high value fruits, and the heart of the palm, without killing the tree. However, there is a downside to açai: given its high value, and the increasing demand for it, regionally and internationally, there is an increasing trend of forest enrichment with açai, which is converting mixed flood plain forests to near monocultures. While this type of conversion is not damaging or degrading to ecological processes when compared with clear felling for timber, or forest conversion to ranches, it nonetheless comes at the cost of other native biodiversity. Weinstein and Moegenburg suggest that there may be ways of achieving a win-win situation with açai, for instance, by invoking market instruments such as certification, thereby providing people an incentive to maintain native diversity.

A win-win situation is something that Uma Shaanker and others also discuss. They stress the need to monitor impacts of harvesting at several scales in order that they can be mitigated or prevented. In fact, Uma Shaanker et al. suggest that a win-win situation is not merely achievable, but essential, for both ecological security and livelihood security in the long term.



Photo: Rucha Ghate

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Re-Placing Nature

Ben Campbell



Photo: Ben Campbell

As the environment has become an object of global concern, anthropologists have increasingly paid attention to the ways in which conservation projects and approaches have understood and reconfigured, local patterns of human-environment interactions. The articles in this special section compare the historical and cultural particularity of the idea of nature as a non-human domain, with the changes represented by the adoption of more people-friendly conservation policies.

North American-style wilderness preservation is now recognised as not viable for many areas of biodiversity that contain, or are surrounded by, human communities. But just as conservationists' understanding of nature has shifted, anthropologists also no longer see cultures as the discrete, formative meaning-

structures they were once presumed to be. The case studies from Nepal, Portugal, Spain, Finland, Cameroon, Greece and Brazil investigate how policies and discourses of conservation have made interventions that produce meanings of cultural diversity, as much as they have demarcated and regulated activities to protect areas of biodiversity. Who comes to be recognised as a local in areas designated for conservation, and what attendant rights and expectations follow from this?

Conservation solutions from the 1870s to 1970s tended to ghetto-ise nature in enclaves of bio-authenticity, or as resource reserves that excluded human intervention. The outcome of such conservation was a territorial nature-society divide. Nature was 'purified' of its social networks. As Ingold argues in his commentary on the collection, the terms nature and society do

not so much describe the world as make certain kinds of claims for it. The ways in which environmental protection is now thought about are deeply entwined with developments in global economy and social change. Post-Cold War adjustments of trading patterns, investment, and rural subsidies have rendered many areas of agricultural production unprofitable, while the market for ecotourism, and scientific interest in bio-prospecting have grown, all of which have consequences for how claims are made for valuing nature. In order to evaluate the extent to which conservation has become socially reflexive, these ethnographic case studies present the view points of people who are on the end of chains of policy-impact. These studies make apparent the cultural forms and terms of relevance in which conservation appears to them. These people have often had no comparable sense of a non-human context implied by a conservation worldview, yet they have to face, on a daily basis, the socially powerful consequences of this worldview.

Ethnographers increasingly record encounters with explicit formulations of the environment as being materially threatened by human activity. These formulations were once perhaps recognisable as culturally specific. They are now no longer a straightforward criterion for defining the difference between cultural universes. There are now several examples of people's adoption of the language of environmental protection as a discourse of the powerful to position themselves for instance, as 'forest people'-- in order to make claims for environmental entitlements.

The principal means by which communities are encouraged to view conservation favourably is through the provision of incentives

and material benefits to compensate for their loss of access to resources. This follows from the logic that resistance to conservation has been due to economic consequences for people's livelihoods. O'Neil's commentary on the collection argues against this kind of analogy between environmental and use values. Many of the articles develop the 'dwelling perspective' of Ingold to highlight the dissonance that can be expected when the environment is regarded merely as a source of income detached from human involvement, rather than as part of a way of life.

It is not then merely a matter of compensation or alternatives for livelihood support that is necessary to forge consent for conservation. These kinds of solutions, based on economic assumptions of human behaviour being motivated by rational cost-benefit calculations of resource alternatives, appear from the policy perspective as the more benign and people-friendly components of 'participatory conservation'. Such measures of replacing ecological dependence with alternative livelihoods do not address a key anthropological reality. This reality is that managing the environment by the regulation of resource use implies conceiving of the environment as something that is external, quantifiable and controllable, and frequently involves a 'cultural' transformation in the ways that people place themselves in their relational life contexts. In other words the expectation of convergence between traditional relationships with ecology and modern conservation has an important gulf to contemplate - the latter views nature as a non-human domain subject to human intentions, as opposed to a cosmology in which environmental entities are accorded all manner of responsive agency, including the care of humans.

This is not a simple matter of clearly identifiable 'moderns' and 'pre-moderns'. The studies discuss ways in which discourses of social

and ethnic identity enter the moral contexts of environmental projects in different contemporary states. In Greece, Portugal, Spain and Finland, examples are presented where people are exhorted to conform to stereotypes of communities with iconic ecological livelihoods: artisanal fishermen, transhumant pastoralists, and specialist reindeer herders. Those who find difficulty transforming themselves into folkloric images of national nostalgia, whose livelihood practices are more hybrid, and whose communities are more global, often find themselves subject to censure from environmental authorities that only permit culturally prescribed varieties of resource use, corresponding to 'proper' indigenous behaviour.

Practices of eco-governance in protected areas put into place regulations on movements of people, animals and 'natural' things within desired topological states. This effects a new territorialisation of life process, mediated through bureaucratic surveillance, check-posts, patrols, and permits. Legitimate user groups or other collectivities are established on the basis of property, birth, ethnic affiliation, or licensing arrangement. Likewise, non-human species are subject to an accounting of presence, recruitment, and loss, as if species can be pinned to the ground. Ingold argues that this 'parking' of nature is a distinct kind of place-making that assumes illusory borderlines between nature and humanity.

For O'Neill, the abstract, un-placed, discourse of global environmentalism makes assertions about environmental goods and ethics that are taken as universal and not relative to time, place, and culture. The authors of this collection of articles suggest that context-rich ethnographic environmental description is of as much intrinsic value for understanding how to make conservation politically and culturally sustainable.



Photo: Ben Campbell

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Role of Monitoring in Institutional Performance

Forest management in Maharashtra, India

Rucha Ghate and Harini Nagendra

Research on common property has pointed to the crucial role of ‘monitoring’ for its effective management. Institutions governing a common property resource such as forests need to safeguard themselves against situations where individuals extract more than their share. Monitoring is essential to guard forest areas against excessive forest use by community members and also against outsider entry. In addition, it is crucial to deal strictly with infractions to ensure compliance with rules.

Concentrating on ‘rule compliance’ as an indicator of monitoring by community members, we assessed the relationship between institutional structure, monitoring, and forest condition. Three frequently encountered institutional structures engaged in forest protection are those that are community-initiated, those that are promoted by non-governmental organisations (NGOs), and those that are state-sponsored (e.g., Joint Forest Management-JFM). Do communities follow rules stringently if they evolve the rules themselves? How do NGOs approach the question of dealing with infractions of rules? Does the

State encourage conformity with rules in communities that join JFM? We conducted a detailed comparison of rule compliance among forests in similar bioclimatic conditions and social environments but under different institutional regimes through a comparison of 3 case studies in the Gadchiroli district of Maharashtra in central India. We used detailed interviews with communities to assess monitoring, and a combination of forest plot data and evidence of illicit cutting, grazing, and fire, to evaluate forest condition.

Local enforcement was most effective where the community initiated forest management. The forest showed better regeneration and there was negligible evidence of grazing and fire, even though this community started its protection work in a degraded forest that had been under heavy pressure from surrounding communities. In the State-initiated JFM village it was evident that there was uncontrolled grazing and fire leading to heavy damage to the forest, despite their having had the initial advantage of a good forest subject to lower population pressure. There was insufficient monitoring of rule infractions due to the apathy of



Photo: Rucha Ghate

forest officials entrusted with the task of protecting the forest. In the third case, with NGO-promoted forest management, greater importance was given to protecting the resource from outsiders. Infractions by community members, however, went unpunished by the NGO, since it had other activities in the community and did not want to antagonise some community members.

Our findings indicate the crucial impact of monitoring on the cohesiveness of institutions as well as on the success of forest-management initiatives. Clearly, it is necessary to ensure rule compliance by community members as well as by outsiders. When sanctions are strictly enforced, they prevent the spread of free-riding behaviour,

thereby instilling a sense of trust in the community. It is essential, however, to provide conditions that facilitate a sense of justice and fair play by ensuring that all individuals who break rules are penalised, irrespective of their position in the community. When the users themselves are genuinely engaged in making decisions about rules affecting forest use, the likelihood of their following the rules and monitoring others is much greater than when an external authority (whether the government or an NGO) imposes rules on the community.

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Culture as Concept and Influence in Environmental Research and Management

Lesley Head, David Trigger and Jane Mulcock

Human activities have been implicated in the vast majority of contemporary environmental problems. Thus, it might be expected that research into those activities, and the attitudes from which those activities stem, would be of central interest to environmental scientists and land managers, and would be strongly supported by funding agencies. Nonetheless, the Australian experience, as reflected, for example, in the federal government's national research priorities, is that environmental research is conceptualised predominantly in scientific terms. Our reading suggests that this is the case in many other countries as well.

There has been significant engagement between the natural and social sciences in two areas of environmental research, however.

First, archaeology, palaeoecology and environmental history have converged to study long term human-landscape interactions. Second, the quantitative social sciences tradition of large-scale survey sampling aims to understand environmental attitudes by correlation with quantifiable variables such as age and social class, often with a view to changing behaviour via education.

While recognising the value of these collaborative trends, we focus here on the other major paradigm that has informed the humanities and social sciences. This is the qualitative method of interpretive understanding that produces historical and ethnographic studies of culture and society. Specifically, we are interested in cultural analysis of the beliefs, practices, and often un-articulated assumptions that underlie human-environmental relations. Our aims are

(1) To show how socio-cultural processes are central to environmental attitudes and behaviours

Australia provides a fascinating diversity of examples and questions. What are the implications of Aboriginal knowledge of place, nature and landscape, developed over millennia of intimate subsistence occupation of the continent? How have British settler cultural traditions changed through interaction with diverse Australian environments? Are there identifiable influences brought from Asia through the historical arrival of migrants and visitors from such countries as China, Vietnam and Indonesia? We are not presenting a fixed view of culture transmitted as a total package through generations.

Rather we approach it as a dynamic mix of practices, beliefs, and symbols that is actively made and remade in time and space.

(2) To illustrate the sorts of contributions research on culture can make to the practical challenges of environmental sustainability

Examples include the clarification of land use conflicts among different cultural groups, such as between rural landholders and National Parks Services over fire regimes, or between large immigrant groups of picnickers and managers over appropriate behaviour in national parks. Comparative approaches between Aboriginal and other people's (scientists, bushwalkers, fishers, parks managers) relations to land are an important component of successful joint management arrangements. Influential cultures requiring analysis include those of environmental management organisations themselves, and a number of Australian scholars are making contributions in this area.

(3) To stimulate dialogue between researchers in the humanities/social sciences and the natural sciences

A range of approaches has been suggested, from better communication across traditional disciplinary boundaries to their total collapse. It is not our intention to advocate any one approach, nor are we unaware of the difficulties involved. Rather, we aim to stimulate discussions between culturally-oriented researchers in the environmental humanities and related areas of the natural sciences. As these are international issues, we hope our Australian examples will be supplemented by comparisons from other parts of the world.

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British Tree Management in Lesotho

Kate Showers

Why have colonial and independent governments sponsored tree planting campaigns in a southern African grassland for more than a hundred years, despite high mortality rates? And how have local residents responded to this tree planting? Pollen analysis shows that the Kingdom of Lesotho has been grassland for the last 23,000 years. Freezing winters that alternate with drought-prone summers have limited indigenous tree growth either to places sheltered from wind, or to the proximity of water sources, for instance, near streams. Early missionaries harvested most of the indigenous trees for construction and fuel, then planted non-native fruit and fuel wood trees in their domestic spaces. Even after environmental constraints were recognised, and after first thousands, and then

millions, of introduced trees died, a series of British administrators and international aid donors continued to advocate planting exotic tree species to solve a variety of perceived problems. The persistence of this activity in the face of obvious failure can only be understood by examining the beliefs held about the virtues of trees – beliefs so strong that they blinded observers to a contrary reality and alternative strategies.

Lesotho became the British Protectorate of Basutoland in 1868, shortly before the first representatives of scientific forestry reached the British Cape Colony to the south. Because of widespread regional concern about drought, the belief in the ability of all trees to induce rainfall, and the preference for any tree over grass vegetation, tree planting was considered to be both morally and environmentally

beneficial. These European-derived attitudes influenced officials in England and Basutoland (as well as regional settler societies and their governments), and persisted in various forms for generations. Arguments justifying Basutoland tree projects changed over time, and ranged from the need to afforest “denuded” hillsides, through the need for trees because of their inherent soil stabilisation capabilities, to the need for trees as sources of fruit, fuel and construction materials.

Those without mythic (or romantic) views of trees were less certain about the efficacy of generalised tree planting. They were more selective in their advocacy of species to be planted, the purpose of the planting, and the location of such planting. A 1908 Cape Forester’s report commented on the rationality of Basotho (residents of Lesotho) choices of tree species and village planting locations, while criticising government plans for mass-afforestation and the establishment of woodlots



Photo: Kate Showers

in scarce agricultural or grazing land. This divergence of opinion between most Basotho, on the one hand, and most government and aid agency representatives, on the other, persisted throughout the 20th century, resulting in official characterisation of Basotho as disliking trees. However, while campaigns for tree planting were frequently resisted – if not sabotaged – individuals bought, propagated, protected, and planted trees for domestic use. As official justification for tree planting changed (afforestation, soil protection, soil restoration, source of food, fuel and timber), so did the definition of a forest. The 19th century ideal of a forested mountain slope became, in the late 20th century, a woodlot that could be certified as a forest. Basotho were sent to study forestry so they could tend these new reserves. At the beginning of the 21st century, the ideal of a forested slope was resurrected. A government ministry added “Forestry” to its name and announced an official goal of augmenting tree cover by 5% per decade. Yet Lesotho remains a grassland, 20 year old woodlot/forest reserves have had to be replanted because of drought and cold, and Basotho cherish their fruit and fuelwood trees.

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Common Property Resources in Different Agro-Climatic Landscapes in India

Ajit Menon and G. Ananda Vadivelu

It is well established that Common Property Resources (CPRs) are important sources of livelihood to rural households. Pioneering work by Jodha in the mid-1980s resulted in a spate of literature that has since highlighted the significance of CPRs not only as regular sources of income and employment, but also as safety nets in periods of scarcity, such as drought. Nonetheless, it is necessary to examine (a) the disaggregated use of CPRs across different agro-climatic zones, (b) the differential dependence on CPRs, by farmers with differential land holding, and (c) the legal access to CPRs.

We analyse the National Sample Survey Organisation's (NSSO) 54th round data on CPRs based on a survey of 78,900 households from 5242 villages across the country. The insights that have emerged from the analysis are that CPR dependence is linked to the type of agro-climatic zone (whether hilly forested tracts, semi-arid/arid pastoral economies, or intensive agriculture areas). The type of agro-climatic zone determines the nature of the dependence on CPRs: in very broad terms, while the hilly forested tracts show the greatest dependence on CPRs for products collected, the semi-arid and arid pastoral communities show the greatest dependence on CPRs as a source of fodder for grazing

livestock. Moreover, while in the arid and hilly forested tracts people depend on de jure CPRs, in the case of the intensive agricultural areas (e.g., Punjab and Haryana), people depend on de facto CPRs such as private lands.

The disaggregated analysis across land holding categories (in terms of operational holdings) shows that the landless are by and large more dependant on CPRs than the landed, across all agro-climatic zones, and that this dependence is primarily for fuelwood. While non-timber forest products (NTFPs) are important to all households, in the Upper Gangetic belt, the landless are more dependent on CPRs for NTFP than are others. In terms of the monetary value of CPR collections, while the average value of CPR collections at the all-India level is Rs.693 annually, there are significant variations across agro-climatic zones. The annual gains from CPR collection are highest in the Western Himalayas (Rs.1939), followed by the Eastern Himalayas (Rs.1219). It is surprising that the value of CPR collection is also high in the intensively cultivated Upper Gangetic plains (Rs.1070), but with the important distinction that here only 30% of households collect CPR products. The data from the 54th round reinforces our understanding that CPRs are important and the study highlights certain concerns in

each of the landscapes. For example, in the forested tracts, the key issue is access to forest produce and the evidence suggests that even in co-management schemes, the benefits to rural communities vis-à-vis the State are relatively insignificant. In the semi-arid areas, issues related to legal access to forest and pasture for fuelwood and grazing, and privatisation, remain central concerns even two decades after Jodha first discussed them.

There are certain limitations of the NSSO dataset on CPRs and we outline measures through which these limitations could be overcome in future rounds of data collection. The use of CPRs is often a struggle and contestation over access to resources that cannot be easily captured by numbers. There is need for more case study-based research to explore certain tentative hypotheses that emerge from the analysis of the NSSO data. A more nuanced understanding should lead to more informed policy that could explicitly address CPR-based livelihood strategies and could implicitly address conservation as well.

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The Use and Knowledge of Herpetofauna on Little Nicobar Island, India

Manish Chandi

The Andaman and Nicobar group of islands is situated in the Bay of Bengal. The Ten Degree Channel separates the Andaman Islands from the Nicobar archipelago 160 km further to the south. The term 'Payuh' meaning 'native person' refers to inhabitants of the southern Nicobars, mainly Little Nicobar Island, Kondul and Pulomilo. The Payuh live along the coast by tending plantations and fishing from the sea. Forays into the forest are occasional, and only by men, to hunt or collect timber and other building materials when necessary. Large reptiles that the Payuh frequently come into contact with are the saltwater crocodile, the four species of marine turtles, the water monitor lizard, and the reticulated python. Other herpetofauna found on the island are known only to those who make infrequent visits into the forest.

The indigenous islanders of the Andaman and Nicobar Islands are exempt from the schedules of the Indian Wild Life (Protection) Act, 1972, and are allowed to use wildlife for sustenance but not as articles for sale. Amongst the Nicobar herpetofauna, apart from the Malaysian box turtle, frogs, agamids, skinks and snakes, the other large reptiles are all sources of protein and part of the Payuh diet.

The Malaysian box turtle or 'Etaing' in the Payuh dialect, is commonly kept as a pet since they are harmless and easy to look after. This species occurs only on the two large islands, Great Nicobar and Little Nicobar.

The reticulated python, the largest snake found in the archipelago, is known as 'Yammai' or 'Yammai kamai' (literally, 'eater of our chicken'). Apart from the python, other snakes that are seen are the 'Biyohé' the 'Kaonl' and the 'Hiya paloah' all of which are common but rarely seen. The Biyohé is often seen atop coconut trees searching for geckoes or small skinks. The sea snake, the 'Gok layuh' comes ashore at a few places on the main island but is seen more commonly on the smaller islands such as at Kabra.

Sea turtles, 'Ka owis' are a common source of meat. They are hunted while nesting, and are also harpooned from canoes. Four species are known to nest in and around the archipelago: green sea turtle 'Kao ka', the hawksbill turtle 'Kao kayil' the leatherback turtle 'Hikunth' and the olive ridley turtle 'Kao reyeh'. Eggs of all but the leatherback are collected and eaten during the nesting season. Only a few elderly people consume the eggs of the leatherback turtle,

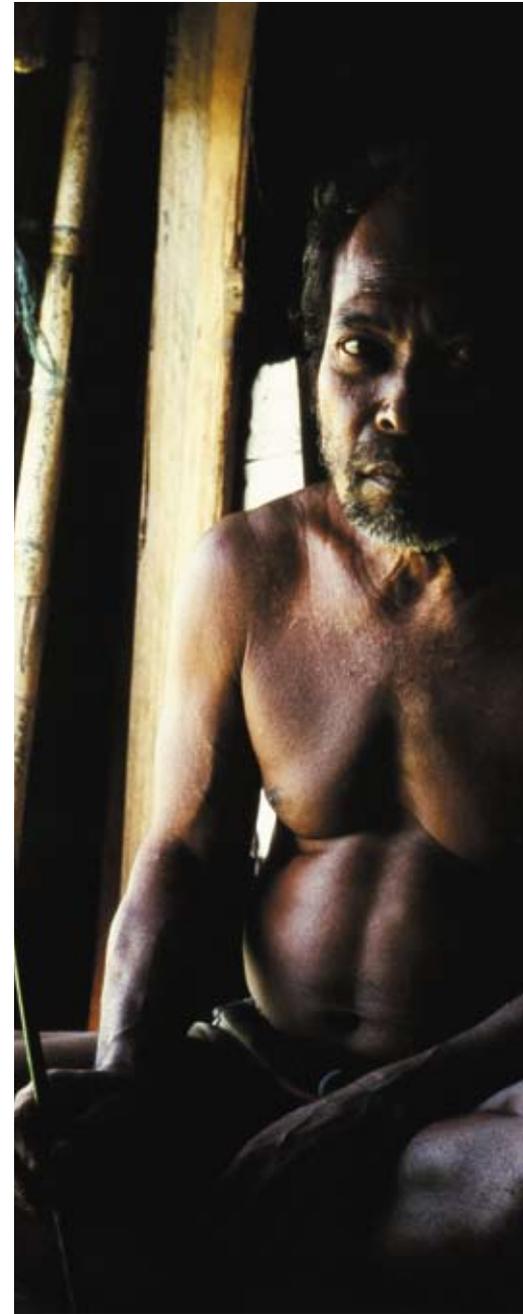


Photo: Manish Chandi

undeterred by its smell and a local belief that it has energy draining properties. The arrival of the sea turtles is associated with the monsoon winds. It is known that the hawksbill and the green sea turtles arrive to nest after the leatherback and olive ridley sea turtles. The leatherback is the only species that is not caught for its meat and all hunted hawksbill turtles are checked for the presence of fat around the neck, which is an indicator that the turtle has been feeding on algae or a species of seagrass that makes the meat poisonous.

The monitor lizard is the only reptile that has different names within Payuh ethno-herpetology. The names distinguish individuals by size and taste: the larger, more commonly seen lizard is called 'harouin', whereas its juvenile counterpart is called 'ukoungah,' and hatchling monitors are called 'tatau heeauwegh'. Monitors are acknowledged to be clever animals, mainly because they get to Abbott's scrub fowl eggs before humans and are also able to steal crocodile eggs with ease. Also, the monitor lays its eggs in mounds of the scrub fowl, or of the sunbeam snake, after consuming the host's eggs. The cleverness and agility of the monitor lizard has earned it the status of the crocodile's elder brother, among the Payuh.

Of all the reptiles that the Payuh come in contact with, the saltwater crocodile, 'Kohngueveh', is most respected for its strength. Only a few Payuh hunters are both brave and knowledgeable enough to hunt this species. The knowledge of the terrain where crocodiles inhabit

pools, and the ability to 'study the water' for crocodile trails requires an experienced hunter. This experience is scarce among the Payuh, thus crocodile hunts are rare and the meat is regarded as a delicacy. The crocodile also features in shamanistic ritual on the island, in the form of effigies that Shamans use to both exorcise illnesses and cast spells. The only other herp to figure in such effigies is a toad, 'pindram,' after the belief of a gargantuan 'pindram', which is said to live deep in the forest and has been seen only by a few ancestral Shamans.

With such close proximity to the native herpetofauna, the Payuh have, until now, been successful in integrating their traditional livelihood patterns with modern conservation. The use of herpetofauna is restricted to knowledgeable hunters, and to certain seasons, and is supplemented with catching fish and growing horticultural crops. Fortunately, there has so far been no commercial trade in these species, and the Payuh exhibit a tendency, often encountered among indigenous people, to take only what is needed, secure in the knowledge of its availability in future.

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Photo: Manish Chandi

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Reference styles in list:

Articles from journals: Pomeroy, M., R. Primack and S.N. Rai. 2003. Changes in four rainforest plots of the Western Ghats, India. *Conservation and Society* 1:113-136.

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