



Conservation and Biodiversity Monitoring in the Tropics: Realities, Priorities, and Distractions

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Introduction

Monitoring and research activities may hinder rather than improve conservation in tropical countries. Those concerned with conservation—particularly academics and aid agencies—too often overlook the practical realities of achieving conservation in the tropics. As a result, many initiatives divert scarce resources away from fundamental management priorities.

I identify some critical threats to biodiversity and emphasize the limited resources for defending against them. I then define practical conservation priorities and explain how external agencies can deflect management from addressing these. After outlining some examples, I suggest various contributory factors, and a few common-sense options for improved practice. My views derive principally from protected forests in Africa over the last decade, but the concerns have wider relevance to conservation (cf. Sayer 1995; Balmford et al. 1998; Wells et al. 1999).

Major Threats and Minimal Resources

The main threat to tropical forest biodiversity is habitat loss, particularly the loss of natural forest cover (Hamilton 1984; Whitmore & Sayer 1992; Balmford et al. 1998; Bowles et al. 1998). Even in protected areas, encroachment is widespread (Hamilton 1984; Hamilton & Bentsed-Smith 1989; Howard 1991). Unregulated exploitation (Howard 1991; Redford 1992; Robinson et al. 1999) and various agents of environmental degradation such as fire (e.g., Leighton & Wirawan 1986; Kartawinata 1993; Hawthorne 1994) and invasive species (Bingelli 1989; Cronk & Fuller 1994; Sheil 1994) are also significant con-

cerns (Mace et al. 1998; Whitmore 1998). There generally is little difficulty in identifying these threats in the field. By addressing these problems, improved conservation management can be promoted immediately without researching the questions that preoccupy so much of the international research community. The most immediate challenge is less one of science than of common sense and the effective allocation of resources.

The national institutions responsible for conservation in developing countries often have inadequate resources (e.g., Howard 1991; Inamdar et al. 1999). Many are effectively bankrupt (Inamdar et al. 1999) and too busy seeking funds to pay attention to the extensive tracts for which they are responsible. Management in these institutions, whatever the commitment of their staff, is easily sidetracked by initiatives that promise some support.

Priorities and the Role of Monitoring

Realistic priorities are important for effective management. Many national conservation plans define clear priorities, such as maintaining natural vegetation cover, preventing conversion of protected areas to other land uses, and protecting high-profile taxa. When resources are limited, the relative value of all potential activities must be assessed in terms of their relevance to achieving these basic conservation goals. How does monitoring fit into this?

Monitoring and evaluation—meaning the identification and assessment of threats and problems in a manner that allows managers to respond effectively—is a central component of good conservation management. Even when resources are extremely limited these activities remain essential to ensure that threats are identified and addressed with minimal cost. An example of such monitoring in the context of protected areas is the general patrolling (site tours) needed to identify encroachment, fire risk, illegal camps, signs of exploitation, snares, and

other problems. Managers can then respond to such information as appropriate. This may, for example, require collaborating with local communities, taking legal action when necessary, building fire breaks, and collecting snares.

Managers must focus on maintaining the special values of the areas for which they are responsible. They must identify priorities and consider the tradeoffs in different courses of action in terms of how these priorities are fulfilled. Activities must be planned based on a realistic appraisal of what is required and what is possible. Communication between the centralized offices who allocate tasks and resources and workers in the field is often inadequate (Sayer 1995).

Externally Generated Priorities

International aid and development activities increasingly address conservation directly or include some "biodiversity" component. Conservation experts of many kinds act as advisors, coordinators, and assessors. These individuals have considerable influence in determining how funds are used and what activities are endorsed. Most donor-led projects require a commitment of staff and resources by local agencies. Donors appear blind to the opportunity costs that can be incurred by diverting scarce staff from activities that may have a higher immediate priority. When these donor projects fail to address genuine conservation priorities, they not only risk irrelevance but also divert local efforts.

A few illustrations may help those unfamiliar with conservation in less-wealthy countries. I am familiar with several well-funded conservation projects that have included detailed assessments of all kinds of biological parameters by both foreign and post-graduate local staff and that have produced some impressive publications and databases on local flora and fauna. Yet after several years, local ranger staff had never visited many parts of the "protected area" and remained untrained in how to use a map or compass. Staff nominally responsible for patrolling often lacked appropriate footwear for field activities.

It is commonplace even in well-funded projects for field staff to go without payment for months at a time. Under such conditions local staff must improvise food and income to survive. Examples of such improvisation include using their transport (if they have any) as a taxi, taking wildlife from the protected areas for meat, "licensing" illegal pit sawyers, or cutting timber themselves. Despite such destructive activities these projects still have been successful in their monitoring efforts. Project goals do not reflect local conservation requirements, and success is not defined in a relevant manner (Sayer 1995; Wells et al. 1999). Project staff generally react evasively to suggestions that priorities be reviewed—why would they or the donors relinquish a claim of suc-

cess? Unfortunately, regular funding reviews, in which future financial backing is contingent on perceived success rather than on learning from failures, discourages open discussion.

Are the conservation experts really to blame? Clearly, an underlying limitation to any conservation activity is the scarcity of basic resources. One should recognize what this implies, however, and avoid making the situation worse. A few years ago, I reviewed a consultancy report proposing a supposedly comprehensive monitoring program to be funded by a major development agency in support of a forested national park. Encroachment, hunting, illegal timber cutting, and fire threatened the area, and it was easy to find evidence of all these locally. Park rangers admitted that they patrolled very little and that huge tracts of land went unvisited. But the consultant never mentioned such concerns and, apart from a note on climate records, concentrated wholly on the benefits of establishing a small number of data-intensive permanent plots. These plots were to follow protocols derived by an organization with which the author was presumably involved and purported to provide data vital to the park.

The Need for Open Discussion

Many projects continue to emphasize variables irrelevant to daily management and, even worse, to institute activities that draw precious staff and financial resources away from more critical actions. We must begin a more open and honest debate about how to meet immediate conservation needs and recognize that problems exist, identify what has led to this present situation, and seek remedies. The situation involves more than ignorance and poor communication. Relevant problems may include the following.

There is confusion surrounding what biodiversity is and why it should be monitored (Redford & Richter 1999). For example, signatories to the Convention for Biological Diversity (CBD) agreed to assess and monitor biological diversity, but the CBD text provides no guidance as to what this means. Nonspecialists such as aid agencies sense controversy and seek out experts for guidance. These experts can promote what they choose. Standards do not exist.

Popular biodiversity data-collection activities are not relevant to local conservation requirements (for a similar U.S.-based argument see Swain et al. 1996). Why should local resources be used to collect information irrelevant to management? What is the value of, for example, counting species, a common focus of modern biodiversity monitoring? How does species counting translate into a management response (Sheil et al. 1999)? It is too easy to assume that more data allow more understanding and thus better management. Management must be pre-

pared for uncertainty (Ludwig et al. 1993), but technical data collection will seldom be a cost-effective replacement for local experience and presence when resources are low.

Measuring is not protecting. "Good science" is often seen as detached and value-free. In contrast, "good conservation management" is driven by clear aims and priorities derived from conservation values. Much of the current scientific emphasis is on watching problems proceed rather than trying to halt them. Examples of such "watching" include estimating deforestation rates with increasing levels of precision rather than defining means of slowing forest loss, and counting elephants rather than dissuading poachers. The data may be useful for scientists, but good resource managers know that taking stock is not the priority. It is far more valuable to identify problems, threats, and prevention strategies early and ensure that adequate management interventions can be taken. Good managers plan and develop fire-control programs or plan and regulate where domestic cattle can be watered, whereas scientists may be content with assessments of areas burned and riverbanks eroded. Managers are concerned with control factors and scientists with response variables.

Some management activities are politically unpalatable. Conservation organizations in many countries remain militaristic in style and action. Stories of apparent abuses have been publicized by nongovernmental organizations and linked to certain projects (e.g., J. Ahrens 2001). Donors do not wish to be associated with enforcement activities. Instead they support the collection of technical data because it is low in risk, politically correct, and scientifically condoned.

Conclusions and Recommendations

There is limited capacity for conservation in many countries, and resources must be allocated effectively if conservation is going to be successful. Research and monitoring activities must also be allocated with sensitivity to local priorities and limitations, especially when local resources are involved. Researchers should ensure that they are familiar with local management issues before they become general advisors on local conservation needs. Protected areas must be managed to protect the values they contain, not to provide statistics.

The debate over protected areas has many parallels with the current emphasis on criteria and indicators (simple monitoring procedures) for biodiversity and sustainable forest management (e.g., Kremen 1992; Noss 1999). Cases vary, but care must be exercised whenever research or monitoring activities are promoted at the possible expense of important conservation actions. Managers should only be required to collect data that are useful to them in ways that they understand.

It is true that research of many kinds may ultimately be valuable, but it ought not to be conducted at the cost of failing to halt the overwhelming threats now facing many conservation areas. Academic research and high-level monitoring are vital: we do need to know the state of the planet (e.g., Phillips & Sheil 1997). Threats must be identified and priorities revisited. But the costs and responsibilities for generating such information must be allocated with care. Interventions should bolster, not undermine, the attainment of conservation goals; case-by-case assessment is needed. Conservation in many parts of the world needs more resources, but in the short term more can be achieved by careful allocation of the resources already available.

Acknowledgments

I am grateful to M. Spilsbury, G. Meffe, J. Sayer, J. Ginsberg, T. O'Brien, R. Nasi, P. Shanley, Y. Byron, M. van Heist, K. McDicken, A. Klassen, T. Boyle, U. Chokkalingam, S. Wunder, and reviewers for comments on earlier versions of the manuscript.

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