Local priorities and biodiversity

Much of the global concern about tropical rainforests centres on the loss of biodiversity and the poverty and marginalisation of indigenous communities. Attracting less attention is the degree to which these concerns are linked

by Douglas Sheil[1], Nining Liswanti[1], Miriam van Heist[1], Imam Basuki[1], Syaefuddin[1], Ismayadi Samsoedin[2], Rukmiyati[3] and Mustofa Agung Sardjono[4]

[1]Center for International Forestry Research

PO Box 6596 JKPWB
Jakarta 10065, Indonesia
t *62–251–622622*
f *62–251–622100*
D.Sheil@cgiar.org

[2]Forestry Research and Development Agency (FORDA)

Bogor, Indonesia

[3]Yayasan Biofer Manusia (BIOMA)

Samarinda, Kalimantan Timur, Indonesia

[4]Fakultas Kehutanan

Universitas Mulawarman
PO Box 1013, Samarinda 75123
Kalimantan Timur, Indonesia



Folk lore: Pak Aran Ngou from Langap village and CIFOR researcher Imam Basuki discuss soil properties in relation to natural vegetation and local land-use choices. *Photo: Douglas Sheil*

WHILE biodiversity assessment has become a widespread preoccupation, the information generated often has little impact. Decision-makers—local politicians, concession managers and international policymakers—faced with the demands of various commercial stakeholders and development programs still find it difficult to react to species' lists and other biological survey data.

The interests of many stakeholders, especially commercial enterprises, are relatively clear and easily communicated, but the needs and perceptions of indigenous rural communities remain hidden to outsiders unless a specific effort is made to uncover them (Scott 1998). Where external decisions have local impacts, the concerns of local communities are often overlooked and undesirable impacts, though common, are inadequately anticipated. What is needed is an understanding of local needs and a means to make these more influential in the decision-making process.

In 1996, the Indonesian government provided a forest area in East Kalimantan in which the Center for International Forestry Research (CIFOR) could conduct long-term research. In May 1997 the International Tropical Timber Council decided to fund ITTO PROJECT PD 12/97 REV. 1 (F): *Forest, science and sustainability: the Bulungan Model Forest* to assist this research.

Until recently, the rugged forested landscape of Bulungan (next to the Kayan Mentarang National Park, itself the focus of an ITTO-funded project) was little known, although it was suspected that it would contain numerous rare plants and animals of global conservation significance. CIFOR's ITTO-supported biodiversity research in the area has had three main components: 1) finding out what occurs where; 2) assessing to whom it matters and in what ways; and 3) identifying how to maintain this biota in the future. Here we focus on the second of these.

The main indigenous populations in the Bulungan Model Forest comprise the Merap, Punan and Kenyah ethnic groups. The entire area is divided up by traditional claims. Population densities are low (less than 1 person per km^2), and previous governments have allocated most of the area to timber concessions with little regard for local rights. Some steeper land is designated as protection forest, but much of the more accessible area has been logged or will be logged in the near future.

Large-scale coal mining began in the area in the early 1990s, with considerable local impact. The economic crisis that started in 1997, the depreciation of the Indonesian currency and an increase in the export value of coal have led to a rapid expansion in geological prospecting by private investors. The recent devolution of power from the central government to the district level is also having major effects. Local authorities have been allocating logging and land-clearing permits, while local people are increasingly empowered in the decisions that affect them and show an increasing willingness to call on local authorities to intervene in disputes.

Our approach

Our study of marginalised communities in Kalimantan asked the following question: how can we find out what we need to know to make better decisions about tropical forest landscapes? Our multidisciplinary approach, developed during a study in seven communities in the forest-rich upper portion of the Malinau watershed within the Bulungan Model Forest, is detailed in a new book (Sheil et al. 2002). A village-based survey collected a wide range of information about the needs, culture, institutions and aspirations of the communities and examined general perceptions of the local landscape; the *table* (next page) gives some idea of the breadth of information gathered and the methods used. A parallel field survey assessed sample sites and recorded soil, vegetation and other site characteristics. These field methods emphasised landscape-scale characterisation through a large number of small, data-rich samples and assessments of community territories based on these samples. We reassured communities that disclosure of information was voluntary and for intellectual-property reasons we did not request

detailed accounts of some kinds of information, such as how medicines are prepared and administered.

Two hundred sample plots were established, and we recorded 2126 distinct plant species in 15 430 records. Local informants attached 3642 specific species-by-use combinations to 1449 of these species, including notes on their relative importance.

The importance of unlogged forest

All sections of the communities considered unlogged forest as the "most important" land cover, both in general and for all classes of use that we assessed. Logged-over forest was given a much lower preference for a number of reasons: diminished key resources, reduced physical accessibility, and reduced access rights. Logging is considered in the communities to be a major cause of the perceived depletion of numerous wild resources. For example, concession-holders are required to repeatedly slash all undergrowth and climbers after felling with the intention of reducing aggressive 'weeds' and encouraging regeneration; in practice, though, this has a deleterious effect on many useful species, including rattan and timber seedlings. Even if applied properly, the silvicultural benefits of the technique are limited while the impacts on biodiversity and communities are considerable; it may be more damaging to the forest than the harvesting itself and we suggest that the policy that stipulates it be reviewed.

Another valued resource is the wild forest boar *Sus barbatus*. This is a highly preferred food and provides the bulk of vital animal fats and proteins to many communities. According to these communities, though, boar numbers are lower in logged areas. When there are fewer pigs the communities are forced to find other ways to supplement their diets. The consumption of less-preferred and often protected species, such as monkeys, appears more common in active concession areas.

A shortage of preferred construction materials (eg 'ulin'—*Eusideroxylon zwagerii*) is already being felt in many communities. The people of one community have reacted by agreeing among themselves to keep an area of local forest cover as a community resource, thereby establishing a *de facto* protected area. However, such sites have no official recognition and in some instances are threatened by concessions.

Sago

Crop failures due to droughts and floods loom large in community histories. Many remoter Punan cultivate little and are regularly dependent on wild food resources such as palm starch (sago). In the primary forest the palms are common enough and protected by community management practices. They are less secure in logged forest. The main local sago (*Eugeissonia utilis*) tends to grow on ridgetops, where heavy machinery is used to extract logs on the steeply undulating local terrain. This currently approved practice is endorsed in reduced impact logging guidelines, such as those prescribed in Sist et al. (1998). Such concerns might be addressed by modifying skid-trail design or by programs of food security.

It may appear that important information such as this is so clearly common-sense that it should be trivial to obtain, but this is not always so. Reliance on sago has been strongly stigmatised as a symbol of 'backwardness' to the point where communities are ashamed to discuss it. When talking to outsiders, community representatives, who are often wealthier members, will agree that sago was "only eaten in the old days", even though this may be untrue. It is only by employing a range of approaches with a range of people that these discrepancies can be identified and understood.

Gravesites

Other instances of hidden values pose even greater difficulties. For example, many Punan groups have traditionally buried their dead in large ceramic jars. These jars are now very valuable and are often stolen. It appears taboo to discuss such sites with outsiders; secrecy offers some protection. Many outsiders believe the Punan merely leave their dead in the forest, a myth the Punan themselves have been happy to perpetuate, but the destruction of such gravesites during timber concession development is rapidly becoming a major local concern. Traditionally, an area of about a hectare or more around gravesites was kept free of forest product collection; these often survive as remnant forest groves even in more intensively cultivated areas.

Face to face

Type of data collected and method used in the village-based activities (additional information was gathered in the surrounding landscape through a field-based survey)

Emphasis of data collection	Method
Village description/perspective of land-use	Interview with village head only
Cultural background of land-use	Interview with traditional leader only
Demography	Household survey (census) and documentation from village head
Price of traded goods	Interview of shopkeepers
Household survey (includes questionnaire of problems and aspirations, with comments on needs and solutions)	Head of household of at least 30 households
Traditional knowledge on land-use	3–5 key informants
Forest product collection and sale	3–5 key informants
Settlement history and land-use	Interview with village head and traditional leader
Disasters and important events	Interview with village head and traditional leader
Identification of land and forest types	Community meeting (with mapping exercise)
Identification of forest products	Community meeting
Scoring the importance of landscape units	Focus-group discussion. Women/men, old/young separate
Scoring changes in importance of landscape units and natural resources over time	Focus-group discussion. Women/men, old/young separate
Scoring how distance of landscape units influences importance	Focus-group discussion. Women/men, old/young separate
Scoring the importance of different sources of products	Focus-group discussion. Women/men, old/young separate
Scoring the most important species per use category	Focus-group discussion. Women/men, old/young separate

However, logging can destroy such sites, often unintentionally, causing local resentment.

The protection of culturally important sites seems uncontroversial: it would be easy to implement and would offer additional conservation benefits while also helping to avoid local conflict and discontent. However, although relatively uncontentious once elicited, local priorities are rarely clear in advance to outsiders. The examples described above represent only a fraction of the information we have documented about how local communities relate to their environment. All was obtained through a process of identifying what was important locally through various interactive exercises. Solutions that better reflect local needs can now be sought.

Advantages for ecological research

Local knowledge can contribute greatly to our understanding of the natural environment. Much has been written about community empowerment, but, in many ways, our methods have empowered *us* to understand and utilise the extensive knowledge that local communities often possess about their environment.

During our studies we were faced with the task of surveying a rugged area of about 2000 km^2. Available maps were poor and of limited value. We developed simple maps showing major rivers, roads, village locations and mountain ridges. With our guidance, communities provided names for geographical features and locations for resources such as sago and rattans and special sites such as abandoned villages, good hunting locations and caves. Some of these maps provide detail for even distant and inaccessible areas. Ecologically they reveal the localised nature of many natural resources and their site associations, many of which we were able to check during our field sampling using local guidance. Given the size and limited accessibility of the region, our team would have found this type of information nearly impossible to discover by first-hand field exploration.

In our sampling we sought to understand the range of sites and habitats, and local advice proved invaluable. But we wanted to go further. We suspected some sites often had special significance for local people and might contain restricted habitats and species. For example, the limited areas of limestone outcropping not only provide habitat for cave swiftlets, the nests of which are highly valued for Chinese soups, but also for many other restricted species. We thus specifically sought out such sites using local guidance. These samples (especially those in natural habitats) did, on average, add more (unique) species per sample to the overall survey than did more typical sites. If our aim was to accumulate as many new species as possible in the fewest additional samples, the most effective course of action would be to locate more such sites using local knowledge.

Follow-up and impacts

Our work underlines that local communities have complex relationships with their environment that need to be respected, understood and taken into account in all relevant decision- and policy-making and implementation. For Indonesia, this message requires a paradigm shift for all the institutions and processes related to forest management.

Decentralisation has opened many issues for more localised scrutiny than was previously possible. Numerous local institutions, both governmental and non-governmental, are seeking ways to integrate the needs and aspirations of local communities into national development strategies and conservation plans. CIFOR is a research institution that seeks impact through credible and useful information. However, we cannot rush: our methods are largely new, especially to our intended decision-maker audience, and our credibility needs to be earned. One crucial step before we present our results more widely will be to work with community members to review conclusions and to supply any necessary caveats.

Ultimately though, it will be difficult to integrate local perspectives in the process of change unless we see that process as an iterative one. The key point is to develop a dialogue by learning to understand each other. Our methods provide a step in that direction.

What is the value of such surveys to the communities? Despite our own fears about community impatience, the people have stayed positive about our survey and appear genuinely pleased that outsiders seek them out to hear their views. They recognise the benefits of openly discussing topics to which they have not previously given much explicit attention and of learning how to make their views apparent to outsiders.

Conclusions

Decision-makers require knowledge on how to address the needs and interests of local communities and biodiversity. Some relevant information is easy to elicit by merely talking to the communities, but some aspects are harder. Under the project we have brought together a suite of effective methods that can be used to survey tropical forest landscapes and to find out 'what matters'. The techniques provide conventional biophysical descriptions of the landscape and explicitly relate this information to local needs, knowledge and value systems. These methods can be used to inform decisions about land-use and to guide future research. The improved understanding provides a foundation for deeper dialogue between scientists, policy-makers and the forest communities. It is our hope that operational surveys in the future will similarly integrate biodiversity information with local needs, and use this to improve forest conservation, protect the needs of local people and advance the management of tropical forest landscapes.

Acknowledgements

We are grateful to Dr Efransjah and the rest of the ITTO project steering committee and to Inhutani II for their support. We are especially grateful to the villagers of Malinau, particularly the people of Paya Seturan, Punan Rian, Langap, Laban Nyarit, Long Jalan, Lio Mutai and Gong Solok. We also thank the Herbarium Bogoriense (Afriastini, I. Rahman and Irawati), Wanariset Samboja staff (K. Sidiyasa and Z. Arifin), BIOMA (Rukmiyati, D. Kristiani, Sunaryo, E. Angi, H. Sumantri, Kamaruddin, and A. Wijaya), E. Permana (IPB), and Rajindra K. Puri, Chrisandini and F. Gatzweiler for their inputs to the project. At CIFOR we especially thank R. Go, M. Wan, K. Kartawinata, H. Soedjito and Made. B. Johnson, Y. Yasmi, R. Nasi, I. Susilanasari, P. Stapleton and M. Spilsbury provided help in developing this paper.

References

Scott, J. 1998. *Seeing like a state*. The Yale ISPS series. Yale University Press, New Haven, USA.

Sheil, D., Puri, R., Basuki, I., van Heist, M., Syaefuddin, Rukmiyati, Sardjono, M., Samsoedin, I., Sidiyasa, K., Chrisandini, Permana, E., Angi, E., Gatzweiler, F., Johnson, B. and Wijaya, A., with help from the people of Paya Seturan, Long Lake, Rian, Langap, Laban Nyarit, Long Jalan, Lio Mutai & Gong Solok 2002. *Exploring biological diversity, environment and local people's perspectives in forest landscapes*. Center for International for Forestry Research, Ministry of Forestry, and International Tropical Timber Organization, Bogor, Indonesia.

Sist, P., Dykstra, D. & Fimbel, R. 1998. *Reduced-impact logging guidelines for lowland and hill dipterocarp forests in Indonesia*. CIFOR Occasional Paper No 1.

The main reports on this work can be downloaded at www.cifor.cgiar.org/publications/index.htm