

World Heritage Forests

**The World Heritage Convention
as a mechanism for conserving
tropical forest biodiversity**

CIFOR
Government of Indonesia
UNESCO



Existing World Heritage Tropical Forest Sites

World Heritage Tropical Forest Sites	Country	Year inscribed	Size (ha)
Asia/Oceania			
Kakadu (* 58)	Australia	1981	1,980,400
Wet Tropics of Queensland (*64)	Australia	1988	894,420
Ujung Kulon (*65)	Indonesia	1991	76,119
Manas (*61)	India	1985	39,100
The Sundarbans (I-B) (*59 + 88)	India/Bangladesh	1987/1997	728,000
Sinharaja (*57)	Sri Lanka	1988	8,864
Thungyai – Huai Kha Khaeng (*69)	Thailand	1991	577,464
Total			4,304,367
Latin & South America			
Morne Trois Pitons (*2)	Dominica	1997	6,857
Sangay (*20)	Ecuador	1983	271,925
Los Katios/ Darien (*16 +19)	Colombia/Panama	1981/1994	669,000
Talamanca -La Amistad (*15+21)	Costa Rica/Panama	1983	740,142
Tikal (*17)	Guatemala	1979	57,600
Río Platano (*18)	Honduras	1992	500,000
Sian Ka'an (*13)	Mexico	1987	528,000
Machu Picchu (*6)	Peru	1983	32,592
Manu (*7)	Peru	1987	1,532,806
Rio Abiseo (*14)	Peru	1990	274,520
Canaima (*1)	Venezuela	1994	3,000,000
Total			7,613,442
Africa			
Dja (*31)	Cameroon	1987	526,000
Mount Nimba (*29)	Cote D'ivoire/Guinea	1981	18,000
Comoé (*28)	Cote D'ivoire	1983	1,149,250
Tai (*34)	Cote D'ivoire	1982	330,000
Virunga (*41)	Dem. Rep. Congo	1979	790,000
Kahuzi-Biega (*45)	Dem. Rep. Congo	1981	600,000
Salonga (*43)	Dem. Rep. Congo	1984	3,600,000
Okapi (*56)	Dem. Rep. Congo	1996	1,372,625
Mount Kenya (*42)	Kenya	1997	142,071
Tsingy Bemaraha (*39)	Madagascar	1990	152,000
Niokolo-Koba (*35)	Senegal	1981	913,000
Vallée de Mai	Seychelles	1983	20
Selous (*52)	Tanzania	1982	5,000,000
Bwindi Impenetrable (*40)	Uganda	1994	32,092
Rwenzori Mountains (*39)	Uganda	1994	99,600
Total			14,724,658
33 World Heritage Tropical Forest Sites			26,642,477

(*) Number in parenthesis corresponds to Maps No. 1, 2 and 3

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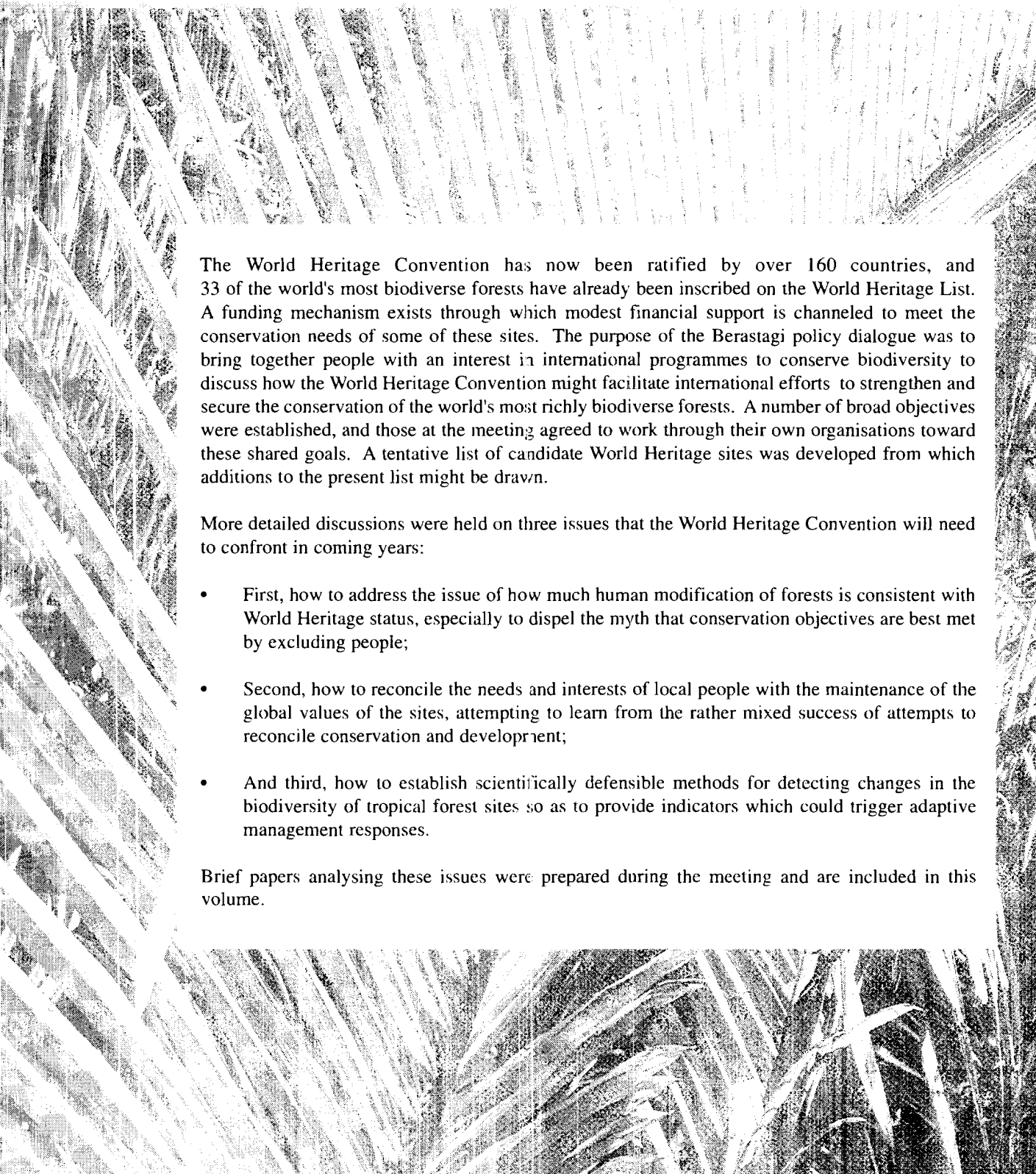
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Preface

The future of the biodiversity of the world's tropical forests is a subject of intense debate that continues to be considered in a number of international processes:

- The Convention on Biological Diversity has identified forests as amongst its highest priorities.
- The Inter-Governmental Forum on Forests is addressing forest biological diversity issues through special studies and inter-sessional meetings.
- The International Tropical Timber Organisation has a longstanding commitment to improving the status of biodiversity in forests managed for timber.
- The World Bank and the World Wide Fund for Nature have set ambitious targets for forest-protected areas and for better management of production forests.
- The maintenance of biodiversity is a major criterion against which the quality of forest management is judged in all certification and eco-labelling programmes, most notably those under the aegis of the Forest Stewardship Council.
- A large number of governments have adopted national biodiversity action plans for conservation and improved forest management.

A broad consensus is emerging from all of these processes that the threat to forest biodiversity is one of the major environmental challenges that the world faces and that action is required immediately to ensure the conservation of vital forest areas, especially in the tropics. Meanwhile, biologists are concluding that biodiversity is much less evenly distributed in the tropics than had previously been thought; some areas of forest have a much higher value for biodiversity than others. At the same time, it is being surmised that the richest biodiversity sites are not necessarily those that have been least influenced by humankind. Much of the world's forest biodiversity is the product of millennia of forest manipulation by people. Sites of major significance for biodiversity may be located in the remotest forests of the Amazon or New Guinea, while others may be in areas with high population densities for instance in Western India, Southern China and Central America. Some of the world's most biodiverse forests are outstanding examples of a harmonious and sustainable relationship between forests and people.



The World Heritage Convention has now been ratified by over 160 countries, and 33 of the world's most biodiverse forests have already been inscribed on the World Heritage List. A funding mechanism exists through which modest financial support is channeled to meet the conservation needs of some of these sites. The purpose of the Berastagi policy dialogue was to bring together people with an interest in international programmes to conserve biodiversity to discuss how the World Heritage Convention might facilitate international efforts to strengthen and secure the conservation of the world's most richly biodiverse forests. A number of broad objectives were established, and those at the meeting agreed to work through their own organisations toward these shared goals. A tentative list of candidate World Heritage sites was developed from which additions to the present list might be drawn.

More detailed discussions were held on three issues that the World Heritage Convention will need to confront in coming years:

- First, how to address the issue of how much human modification of forests is consistent with World Heritage status, especially to dispel the myth that conservation objectives are best met by excluding people;
- Second, how to reconcile the needs and interests of local people with the maintenance of the global values of the sites, attempting to learn from the rather mixed success of attempts to reconcile conservation and development;
- And third, how to establish scientifically defensible methods for detecting changes in the biodiversity of tropical forest sites so as to provide indicators which could trigger adaptive management responses.

Brief papers analysing these issues were prepared during the meeting and are included in this volume.

Much of the discussion could have applied equally to forests of the temperate and boreal zones. We chose not to adopt that more inclusive approach because it would have required expanding the scope of the dialogue. We hope that this part of the global agenda will be tackled by someone else.

We enjoyed the privilege of conducting our discussions close to the border of one of the world's most magnificent tropical forests, the Gunung Leuser National Park. Participants were able to visit this park and to discuss with its managers problems related to its management. The park is the object of one of the world's largest international initiatives to support the conservation of forest biodiversity, a major project of the European Commission to conserve the entire 2.5 million-hectare Leuser ecosystem. The park itself, along with its unique management, offered a highly appropriate setting for our discussions.

The meeting produced a consensus that the World Heritage Convention is, indeed, a potentially very valuable mechanism for achieving significant medium-term targets for the conservation of forest biodiversity. The participants committed themselves to working together to achieve this goal.

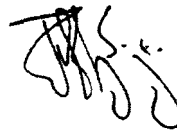
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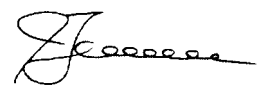
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Participants of the World Heritage Forests Meeting in Berastagi, December 1998



Concluding Statement



A Concluding Statement

From 7 to 11 December 1998, 72 forest and biodiversity experts from 20 countries met in Berastagi, North Sumatra, Indonesia, to discuss the World Heritage Convention as an instrument for conserving the biodiversity of tropical forests. The meeting arrived at the following conclusions:

The World Heritage Convention, with its unique position within the framework of international conservation agreements, has a key role to play in conserving our planet's natural heritage, including the large proportion of global biodiversity (perhaps 70% of terrestrial biodiversity) that exists in the world's tropical forests. Already, 33 tropical forest sites, covering more than 26 million hectares, are included on the World Heritage List.

Our vision is for a truly representative 'network' of tropical forests under World Heritage protection. We believe there is much potential to strengthen this network in line with the fundamental principles and objectives of the Convention by supporting and assisting the work of the States Parties and the UNESCO World Heritage Centre.

This network of tropical forests should be expanded to include more sites of outstanding universal value from various regions. Of equal importance, the management of these sites should be improved and supported so that they might serve as models for 'best practice' in management of protected areas.

World Heritage sites help counter problems associated with overexploitation of tropical forests by serving as critical refuges for plants, animals — and as a source of inspiration for people, which may be vital in helping humanity adapt to an uncertain future. Safeguarding the rich variety of species and ecosystems in World Heritage tropical forests — ranging from that of Indonesia's Ujung Kulon National Park, home to one of the last remaining populations of the Javan rhino, to that of Manu National Park, which is thought to have the highest concentration of species anywhere on Earth — is a top priority for international conservation efforts.

World Heritage sites should demonstrate how modern societies can manage areas to preserve universal biological values, thereby helping us to live in balance with the rest of nature.



These sites can serve as examples of how protected areas with high biodiversity can be conserved while still meeting the livelihood needs of indigenous people in the region. World Heritage tropical forest sites also provide critical ecological services, including water catchment protection, nutrient recycling, and carbon sequestration.

To fully achieve its objectives and potential, the World Heritage Convention requires much greater support from civil society at all levels. Therefore, we, the participants at the Berastagi meeting, pledge to promote such support from our respective institutions. Further, there is an urgent need to expand the capacity of the World Heritage Centre and IUCN (in its role as Technical Advisor on natural sites to the Convention) as well as State Parties. Such improvement will help to strengthen the management of existing tropical forest sites and to broaden the nomination of new sites in under-represented regions that have some of the world's most biologically rich tropical forests. This commitment requires both significantly increased funding from a range of sources and the development of mechanisms for long-term support of this proposed network of sites. We urge Governments, funding agencies and others to strengthen their support for existing and potential World Heritage tropical forest sites and to adopt additional funding mechanisms.

Policies on trade, forestry, agriculture, water resources, transport, tourism, and development, among others, define the framework within which the World Heritage Convention must work. Therefore, we call on Governments, the private sector, and all levels of civil society to ensure that the above policies do not adversely affect tropical forests that are on the World Heritage list or that have the characteristics needed to be considered for future listing.

Participants at the meeting noted with concern that some existing World Heritage sites are highly threatened by large-scale developments. We urge Governments to ensure the integrity of existing World Heritage sites by working cooperatively to reduce negative impacts and to maintain the sites' World Heritage values.

The cultural and natural components of the Convention can potentially work more effectively together, especially in relation to tropical forests that have both outstanding concentrations of biodiversity and rich



traditional human cultures, many of which are similarly threatened. We urge Governments, civil society, and the private sector to recognize the value of conserving outstanding examples of harmonious and sustainable human-forest relationships.

A set of more detailed recommendations directed to the World Heritage Committee was adopted at the meeting and is attached.

The Berastagi meeting was jointly sponsored by the UNESCO World Heritage Centre, the Centre for International Forestry Research, the Indonesian Department of Forestry and Estate Crops, and the Leuser Development Programme.

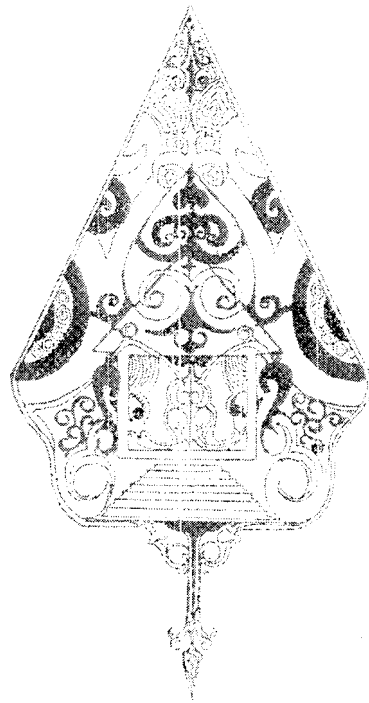
Participants from the following organizations were present, and agreed to commend this statement and its recommendations both externally and to their own organizations for their consideration and support:

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Department of the Environment, Australia
Alexander von Humboldt Biological Resources Research Institute, Colombia
BirdLife International, UK
Centre for International Forestry Research, Indonesia
Consultative Group for International Agricultural Research, USA
Conservation International, USA
Cooperative Research Centre for Tropical Rainforest Ecology and Management, Australia
Ecole de Faune de Garoua, Cameroun
Global Legislators Organized for a Balanced Environment, The Netherlands
Greenpeace International, The Netherlands
Hindu Kush Himalayan Forum for Forest Conservation and Management, Nepal
Directorate General of Nature Protection and Conservation, Indonesia
Regional Office of Ministry of Forestry and Estate Crops, Aceh, Indonesia
Regional Office of Ministry of Forestry, North Sumatra, Indonesia
International Fund for Animal Welfare, The Netherlands
IUCN, Switzerland
Kirstenbosch Botanic Garden, Republic of South Africa
Komodo National Park, Indonesia
Ministry of Industry and Handicrafts, Lao PDR

Department of Forestry, Lao PDR
Leuser Development Programme, Indonesia
Leuser National Park Bureau, Indonesia
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The Nature Conservancy, USA
Ujong Kulon National Park, Indonesia
UNDP, USA
UNESCO Regional Ecological Sciences Programme, Thailand
UNESCO World Heritage Centre, France
UN Foundation, USA
Wet Tropics Management Authority, Australia
Wildlife Conservation Society, USA
World Bank, USA
World Commission on Forests and Sustainable Development, Switzerland
World Resources Institute, USA
WWF (International, USA, Philippines, Indonesia, Vietnam)





Recommendations to the World Heritage Committee



Participants at the Berastagi meeting reviewed the forest biodiversity priorities that emerged from these various studies and compiled a draft list of sites judged to be of potential World Heritage quality. It is proposed that this list be given further expert review in the regions and countries where the sites exist.

Comparing the existing tropical forest sites on the World Heritage List with a list of potential sites identified at Berastagi, the experts at the meeting concluded that there was a compelling case for expanding the number and range of tropical forest sites on the World Heritage List.

However, participants also noted that the value of the World Heritage listing process is based largely on globally accepted standards of quality of sites. Therefore, extreme care must be taken in both assessing new nominations and monitoring existing sites, to ensure that the criteria of the World Heritage Convention continue to be rigorously adhered to.

It was further noted that rapidly expanding scientific capacity for biodiversity assessment could help produce more objective assessment of the biodiversity of sites, and thus aid the selection of sites for World Heritage listing.

The distribution, dimensions, design, and number of tropical forest sites and their relationship with other categories of protected areas vary from one region to another. To most effectively conserve natural heritage values, the best answer might be sites of differing sizes, clusters of sites, or sites linked by 'corridors' of natural habitat, depending on the situation. We call on the World Heritage Committee, in strong alliance with research institutions, forest and land-use experts, government agencies, and others, to prioritize the development of plans to effectively manage existing World Heritage tropical forest sites as well as sites with the potential to be added to the list.

Recommendations

Accordingly, the Berastagi policy dialogue recommends that the World Heritage Committee:

1. *Notes the new tentative list of tropical forest sites offered by the group.*
2. *Recognizes the urgent need for a specific program for World Heritage tropical forest sites that ensures their conservation, especially their outstanding universal value for biodiversity.*
3. *Promotes the systematic identification, protection, and nomination of new World Heritage tropical forest sites, using the list developed at Berastagi as a guide to particular protected areas or bio-regions to be considered for nomination.*

4. *Utilizes the expertise and experience of the scientific community to facilitate the identification, assessment, and evaluation of sites for nomination to the World Heritage list.*
5. *Encourages State Parties to the Convention to consider nominating clusters of sites, where appropriate, to capture the full range of biodiversity in areas where forests are already fragmented. It was noted that such forest clusters often include sites on different sides of national boundaries; therefore, State Parties are encouraged to collaborate and nominate trans-border sites.*

2. Research, Assessment, and Monitoring

A sound assessment process is important in the identification and protection of the biodiversity and other recognized values of a World Heritage site. It provides a basis for determination of World Heritage values prior to nomination, for improved management decisions, and for monitoring and reporting.

Monitoring is an indispensable component of site management to ensure that management is effective in the conservation of the World Heritage values for which a site has been listed.

A research agenda for each World Heritage site should reflect the World Heritage values that merited the site's being inscribed. It should also be directed at guiding management responses needed to counter threats to World Heritage values. Relevant, problem-solving scientific research is one element necessary to ensure a high chance of success in long-term conservation of World Heritage values.

Recommendations

Accordingly, the Berastagi policy dialogue recommends that the World Heritage Committee:

1. *Acknowledges the importance of biological assessment for both the selection of tentative sites that may merit consideration for World Heritage nomination and for management planning and decisions to conserve the 'outstanding universal values' that merited the listing.*
2. *Acknowledges the importance of having management objectives for each tropical forest site that are focused on the specific values that merited the site's inclusion on the World Heritage list, and of conducting ongoing monitoring to ensure that management is effective in conserving those values.*

Recommendations to the World Heritage Committee



Over the past 25 years, the World Heritage Convention has played a key role in the conservation of tropical forest biodiversity. The World Heritage List currently includes 33 tropical forest sites totaling 26 million hectares of the world's most outstanding forests. These sites are examples of how the World Heritage Convention supports protected areas and complements sustainable forest management programs while maintaining forests values.

The World Heritage Convention can make a major contribution to meeting State Parties'

international obligations for forest biodiversity conservation, including those under the Convention on Biological Diversity and others emerging through the UNCSD Intergovernmental Forum on Forests.

On 7-11 December 1998, 72 experts from 20 different countries convened in Berastagi, North Sumatra, Indonesia, for a policy dialogue on World Heritage tropical forests. The group developed the following six sets of recommendations to be considered by the World Heritage Committee:

1. Identification and Nomination of Sites

Notwithstanding the progress already made in inscribing the existing 33 tropical forest sites on the World Heritage List, the Berastagi participants concluded that a number of tropical forest areas with outstanding global biodiversity values are not yet inscribed on the World Heritage List.

International experts have made several attempts to identify the world's biodiversity-rich tropical forest sites of highest priority. Such attempts have come from World Resources Institute (WRI), World Wildlife Fund (WWF), Conservation International (CI), World Conservation Union (IUCN), World Conservation Monitoring Centre (WCMC), and Birdlife International. The Berastagi discussions found a high degree of convergence between these lists, indicating an emerging consensus about what sites have outstanding universal value in relation to the conservation of biological diversity. Many of these sites may merit consideration for nomination to the World Heritage List under criteria ii and iv of the Operational Guidelines.

3. *Promotes the development of practical biodiversity monitoring tools, including the development of an Assessment and Monitoring Manual based on the best scientific principles, for use by site managers of World Heritage tropical forest sites.*
4. *Notes that effective monitoring need not be expensive, must be adapted to the local circumstances, and must be relevant to the needs of local site managers.*

3. Tolerance of Human Use of World Heritage Tropical Forest Sites

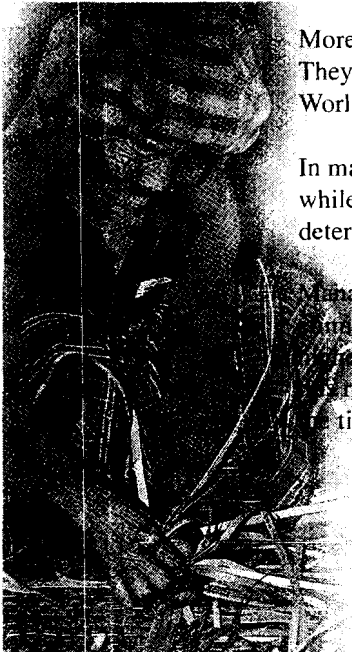
World Heritage tropical forest sites, no matter how large and remote, are often under some form of threat for alternative use. The most serious threats to World Heritage tropical forest sites generally come from large-scale resource development and exploitation driven by corporations or government agencies. Ongoing major threats such as this requires a concerted effort to strengthen government commitment and capacity to resist and regulate such threats, and particularly to improve spatial land-use planning of areas around World Heritage sites.

Many other human uses are often occurring at the time of World Heritage listing. The scale of use is not necessarily an indicator of the impact on conservation values. All uses, therefore, need to be assessed for impact on World Heritage values. Ongoing monitoring is necessary to determine when uses are inconsistent with the protection of values for which a site was listed, so as to trigger regulation or remedial management when values are threatened.

More than 90,000 people reside within more than half of the World Heritage tropical forest sites. They frequently have rights — legal and traditional — that predate the inscription of the site on the World Heritage list or its prior establishment as a protected area.

In many cases, human interaction with the forest ecosystem has occurred for centuries or millennia while biodiversity value has been maintained. This should be recognized and be reflected in determining management practices.

Management of such World Heritage sites should not necessarily have as an objective the prohibition of all human activities, but rather should be aimed at managing activities that pose the greatest threat in ways that will ensure preservation of the values for which the site was listed. For this reason, great care must be taken in defining the values relevant to the World Heritage listing at the time of nomination.



Similar care is needed in understanding traditional indigenous uses and their impacts, past and present, on the status of the biodiversity of sites. As part of this process, new uses need to be distinguished from traditional uses. A precautionary approach would be to generally discourage or prohibit new uses unless compatibility with management objectives is readily demonstrable.

Recommendations

Accordingly, the Berastagi policy dialogue recommends that the World Heritage Committee:

1. *Encourages State Parties, where people are included in a World Heritage tropical forest site, to recognize the need to carefully define the World Heritage values and management objectives prior to assessing the compatibility of uses; recognize the need to acknowledge and understand the traditional and other uses of the site before taking any action to eliminate such uses; and consider adoption of the principle of collaborative management between the site manager and the people living in or using the site as a proven model to resolve issues relating to traditional or pre-existing use rights.*
2. *Invites State Parties to identify successful examples of integrating use with management for biological diversity objectives as a "best practice" model for consideration by other site managers.*

4. Financial and Other Support

A main threat to several World Heritage tropical forest sites is the lack of capacity and lack of funding for even basic conservation programs. Further, it is apparent that management agencies of globally important tropical forest sites that may merit consideration for World Heritage nomination lack the funding necessary to prepare nominations, meet the criteria for listing, and institute basic management programs.

International assistance to World Heritage sites has often taken the form of development projects aimed at fostering the livelihood of local communities that are consistent with the maintenance of conservation values. The rate of real success in such projects has been low, but much has been learned over the past decade of what will work in specific circumstances. A review of such development project experiences relevant to World Heritage would be a useful study.

Recommendations

Accordingly, the Berastagi policy dialogue recommends that the World Heritage Committee:

1. *Notes the concern of the Berastagi meeting about the inadequacy of current funding and other assistance to adequately identify, plan, monitor, research, and manage tropical forests of 'outstanding universal value', regardless of whether or not they are already listed.*
2. *Recognizes the urgent need to actively promote increased funding and other assistance to facilitate the protection and conservation of tropical forests.*
3. *Recognizes the need to ensure that all funding and assistance should, as far as possible, strengthen or enhance existing management capacity and avoid creating new, inappropriate, or irrelevant demands on the time and resources of managers. In particular, there is an ongoing need to direct funding and other assistance to skills enhancement of local site managers through training and professional development.*
4. *Promotes better funding of World Heritage tropical forest sites through intergovernmental cooperation, trust funds, foundations, support groups, and the business sector.*

5. Information

Information on World Heritage sites is an essential resource for managers. It is also vital in enabling the global community of concerned citizens to be aware of the values of these sites and the threats they face. Availability of information about these sites will strengthen the hand of governments and civil society in maintaining the values for which the site was inscribed on the World Heritage list.

Recommendations

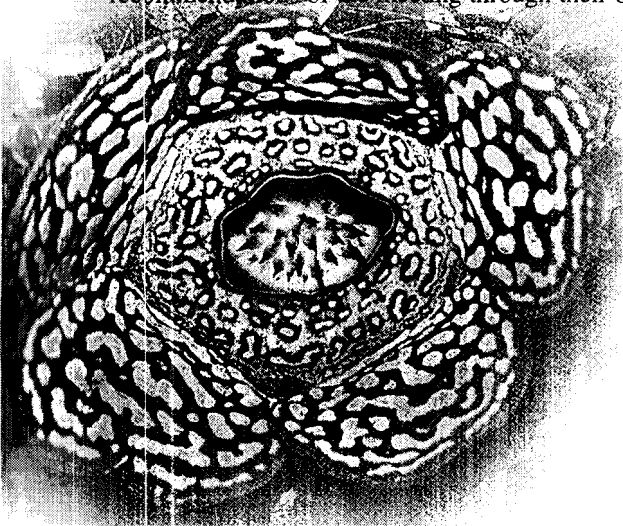
Accordingly, the Berastagi policy dialogue recommends that the World Heritage Committee:

1. *Acknowledges the importance of ready access to information to facilitate the identification, delineation, and management of tropical forest sites.*
2. *Strengthens existing information systems and promotes the development of appropriate new systems to serve the needs of the World Heritage forest sites and, in particular, considers: a greatly enhanced World Heritage Center web site to facilitate rapid dissemination of information relevant to World Heritage; the establishment of networks of World Heritage experts, managers, scientists, and others to facilitate the flow of information and technology transfer and to aid problem solving; and supporting regional networks (many of which have*

been agreed upon in principle at World Heritage workshops) to gather, share, and disseminate information on World Heritage tropical forest sites.

These recommendations are hereby submitted to the World Heritage Committee to assist in the important and pressing task of protection of the outstanding universal heritage of biodiversity contained in the world's the tropical forests.

The participants in the Berastagi policy dialogue hereby commit themselves individually to promoting the recommendations of the meeting through their own actions.



People and World Heritage Forests



People and World Heritage Forests

Introduction

Our starting point here is that the existence of people is a reality of virtually all World Heritage natural sites, and relations with local people are one of the most critical aspects of protected area management. Sixteen of the 33 World Heritage tropical forest sites have an estimated combined resident population of more than 90,000 people, with many more people living adjacent to or in the buffer zones of these sites.

There is widespread recognition that traditional conservation management has not always worked effectively, and often has alienated local people. This has led to calls for the management of protected areas to be expanded to emphasize to local people the benefits of conservation. The first biosphere reserves based on this idea were established in the 1970s, and the principle of broadening protected area management to include adequate consideration of local interests was clearly articulated at the 1982 World Parks Congress in Bali, Indonesia.

This view has led to increasing numbers of initiatives to link protected area management with local social and economic development, usually by trying to provide incentives for park residents and neighbors to support conservation and sustainable use. Most supporters have emphasized local participation in protected area management, in conjunction with some rural development benefits. Indonesia and many other countries refer to these as Integrated Conservation and Development Projects (ICDPs), based on the 1992 'People and Parks' study of the World Bank, WWF, and USAID. Such initiatives include buffer zones outside park boundaries, multiple-use areas, regional economic development programs with protected area components, biosphere reserves, community-based conservation, and others.

The number of ICDPs and related initiatives grew rapidly during the late 1980s and the 1990s, and this has become the predominant approach to most large-scale internationally financed conservation efforts in developing countries.

The ICDP approach, and similar initiatives, were originally promoted and tested by international conservation NGOs. Their success in promoting the concept led many international development agencies to invest large amounts of money in biodiversity conservation, often through ICDPs. The Global Environmental Facility (GEF), the largest single source of international financing for biodiversity conservation in developing countries, includes many ICDPs in its biodiversity project portfolio. It is now unusual to find plans or proposals for management of protected areas that do

not devote substantial consideration to relations with local people. This is increasingly true of international attempts to promote the conservation of World Heritage tropical forest sites.

However, establishing ICDPs that actually work has proven more difficult than popularizing the concept or raising the funds. More than a decade after the ICDP approach was first promoted, there are still very few clearly successful cases where local people's development needs and aspirations have been reconciled with protected area management. There is growing realization that ICDPs have run the risk of contributing effectively neither to conservation nor to development. The result is a big gap between rhetoric and reality. Any expansion of international efforts to protect World Heritage tropical forest properties must avoid falling into this same trap. We need to base our strategies for World Heritage site conservation on the expensive lessons we have learned over the past decade.

Key Considerations for World Heritage Tropical Forest Site Relations with Local People

Participatory Approaches

It is clear that more effort must be invested in participatory approaches for them to make substantive headway, but the problem is often that protected area managers and staff have little understanding, appreciation, or trust in the capacity of local people. There has been great caution about how much and what kind of local participation in protected area management is desirable or optimal, and the emphasis has tended to be on education, on the assumption that this would develop more positive local attitudes toward conservation, rather than on a deeper analysis of underlying resource management problems.



The rationale for establishing a World Heritage site will often not be clear to local people. Investment in a commitment to real participation in planning and decision-making is probably needed at least as much on the managers' side as it is on that of the local people.

Local people's differing circumstances, and the implications for their interactions with protected areas, are recognized as varying greatly, and need to be understood on a site-by-site basis and considered before management interventions are begun. It may be important, for instance, to distinguish

between indigenous populations and more recent immigrants. There are as yet few successful examples of how to tackle these issues effectively; however, experience with common property resource management systems may provide an important starting point at certain locations where it may be possible to build on existing innovative local management regimes. Efforts to broadly include civil society and a variety of stakeholders are often key, although eliciting effective local participation is often easier in a democratically organized society.



Local Incentives

Local people with modest incomes are often the losers in the establishment and management of protected areas — usually in terms of lost or restricted access. By contrast, the benefits often accrue to the global community. Appreciation of such cost/benefit imbalances, if they exist, is often an important starting point for planning management interventions.

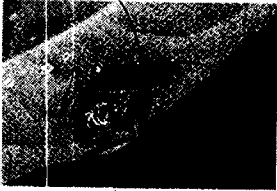
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Since it is increasingly accepted that forest composition is often the result of long-standing human intervention and enrichment, the extent of human labor invested in forest areas needs more recognition, and the valuing of cultural landscapes more prominence.

Development agencies have increasingly supported protected area management with relatively large amounts of financial resources. But, so far at least, there is little evidence that higher levels of funding correlate with successful conservation. This is partly a result of the inability of the agencies that disburse large sums of money to disburse these funds in ways which are consistent with either local absorptive capacities or long-term sustainability.

Effective incentives may often result from recognizing rather than denying local tenure or land-rights (whether these are based on customary or nationally recognized rights). Achieving a recognizable legal basis for prior land claims and negotiating around these is a major step. This involves achieving mutual agreement on the location of protected area boundaries and buffer zones and becoming aware of pre-existing local boundaries through participatory mapping and land use planning.

The possibility of reaching contractual agreements between protected areas and local people should be carefully explored through an appropriate process. Both sides to the contract should be able to withdraw their support if the other side does not satisfy its side of the contract. Further, the contracts themselves need to be flexible enough to be modified by mutual agreement if circumstances change.



Key elements for an effective approach to management inside protected areas:

1. The ideal approach derives from site-specific, tailored approaches that reflect the reality of local people's presence, skills, rights, and recent land-use history, and finds ways of meshing these with protected area management.
2. Continual monitoring and evaluation, plus adaptive management, could help protected area management identify and respond to changing circumstances.
3. Three other elements can be identified:
 - (a) Establishment of a strong local management and protection capacity staffed by people able to deploy resources in a flexible manner to both enforce regulations and generate benefits for local communities;
 - (b) Management of projects based more on the management of outputs than on attempts to manage inputs, with pragmatic use of key indicators;
 - (c) The people who manage parks need to have much better skills in mainstream management and the skills needed to build collaborative alliances with local communities and the other actors who influence land use within and around protected areas.

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The National Level

Poverty, acute indebtedness, and limited government capacity mean that effective protected area management is often entirely dependent on long-term donor funding.

It is important that, at the national level (and, still more important, at the regional and local level), different kinds of land-use are balanced through proper participatory land-use planning. If too many logging concessions and/or plantation areas are granted near to a national park/World Heritage site, then the pressure on the park from adjacent people may be unfairly increased.

Often, conservation organizations managing protected areas have not attempted to address national level legislation that fails to recognize customary land-rights at the local level, and have thereby run into conflict with local people. The State may be reluctant for these rights to be recognized, because such rights have implications for national government sovereignty, military control, and the right to grant concessions, and other concerns.

While the process of recognizing land tenure and use rights is a slow one, forest policy and law is currently being redrafted in many countries to devolve more ownership and management rights to local people. The deliberations of the Intergovernmental Forum on Forests are moving strongly in this direction. The shift in international thinking has important implications for the management of

protected areas and for the role of local people within and around them. Examples have so far been relatively rare (the East Usambara Forest catchment project in Tanzania and the Queensland Wet Tropics World Heritage forest site are just two examples), but it should become more common in the future that managers of protected areas negotiate for better land rights for local people as part of the package of trade-offs and incentives. It will often be necessary to address the competing interests of different government agencies in this process.

If ordinary protected areas cannot get it right, World Heritage sites will not be able to, either. Failure derives only partly from the people-parks relationship — this is not the fundamental problem. More focus is needed on the national level policy and institutional context.

Implications for World Heritage Sites

1. The above points focus on operational aspects of the relationship between local people and World Heritage sites. But these serve to highlight a missing part of the overall equation involving the World Heritage Convention: the link between World Heritage sites and the global community that has made a commitment to their protection. World Heritage sites have 'outstanding universal values'; however, if universal means global, then the global commitment to World Heritage sites — as evidenced by 150 countries that have signed the World Heritage Convention — has yet to be identified in tangible terms, let alone delivered. All of the signatory governments have rights and responsibilities, not only the nations in which World Heritage sites are located, or the local people who must forgo a part of their livelihoods. Defining the obligations of governments toward World Heritage sites has barely begun. With a treaty, organization, and commitment of 150 nations already in place, the World Heritage Center may be able to play a key role in initiating discussions and eventually negotiations over these rights and responsibilities.
2. Internationally, more varied strategies are probably needed for different kinds of countries. Countries in the OECD's LDC list (the poorest countries) cannot respond to the presence of World Heritage sites in the same way as middle-income and newly industrializing countries.

Other key factors include:

- (a) The strength or weakness of legislation and government institutions, including forest and wildlife departments;
- (b) Whether populations are predominantly rural or predominantly urban (with important implications for the function of protected areas as mainly recreation sites or mainly inhabited areas);



- (c) The possibility of corruption when the granting of concessions and other turnkey activities is involved; and
- (d) The degree of political stability or instability.

A tailored protocol, with more financial assistance to poorer countries, would seem to be essential.

3. The World Heritage Convention has inscribed a set of outstanding tropical forest sites. Much could be learned from the dissemination of information on successful examples of World Heritage management practices and outcomes. A World Heritage Best Practices Working Group could support this by helping to analyze, document, and exchange information about such experiences.

Acknowledgments

This section is based on work from the discussion group in Berastagi led by Michael Wells and Gill Shepherd and subsequent input and edits by several other participants.

Human Use of World Heritage Tropical Forests



Human Use of World Heritage Tropical Forests

Introduction

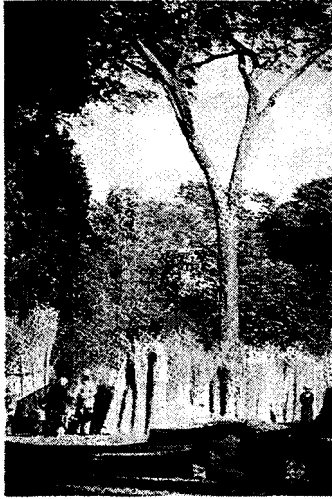
Conservation faces a paradox. For decades, a primary criterion for selecting and evaluating candidate sites for protected area designation has been their perceived pristine status. In the context of tropical forests, this criterion usually required a preponderance of species-rich, old-growth forest. Yet, in virtually every tropical forest studied to date, there is scientific evidence of extensive anthropogenic disturbances on time-scales of hundreds to thousands of years before present. Many well-known tropical forests presumed to be pristine have in reality been altered by prior human uses.

Of more immediate concern to conservation are the pervasive and often increasing 'contemporary' uses of tropical forests. These range from the obvious conversion of forest to non-forest uses and the building of roads through forests to the sometimes less obvious impacts of local extraction of timber, water, bush meat, and non-timber forest products. These are but a few examples of the broad spectrum of human uses and impacts on tropical forests that are widespread today, affecting biodiversity conservation and ecosystem functions regardless of the protection status of the forest. The most insidious threat to tropical forests is improved access, usually through the building or improvement of roads. In regions with a scarcity of agricultural land (e.g., Central America, East Africa, and South Asia), there are enormous local pressures to convert tropical forests to agricultural use. Other serious threats to tropical forests often come from large-scale development projects such as commercial agriculture (e.g., oil palm, rice, and pasture), oil exploration and production, and timber or mining concessions.

Human Uses

Many forest protected areas have human populations living within them or using their natural resources. Thorsell and Sigaty's (1998) review of human uses in the 75 natural or mixed World Heritage Sites in non-OECD countries indicates the following major categories of use: commercial hunting and poaching (57%), agriculture (57%), livestock grazing (45%), logging (37%), and mining (29%). Only five of the 75 sites were documented with no extractive activities within the borders of the protected area.

Because the subsistence practices (such as shifting cultivation and bush meat hunting) of indigenous peoples have often been believed or assumed to be ecologically benign, human



populations have frequently been accepted within protected areas. There is now growing evidence that these populations have depleted the wildlife through subsistence hunting. In fact, depressed wildlife populations in tropical forests appears to be the norm rather than the exception. Hunting can also affect predator populations; for example, local hunting of ungulates in Indian tiger reserves diminishes prey for this highly endangered species. Hunting of larger vertebrates also affects the wildlife populations attractive for nature-based tourism.

Extractive activities may be authorized and even promoted by national governments. Even where the primary activity is purportedly regulated (e.g., timber harvesting and mining), the associated infrastructure development usually facilitates or promotes secondary extractions, such as commercial hunting of bush meat or local marketing of construction materials. More often, harvesting of non-timber products (such as bush meat, fruit, and rattans) is illegal but seldom controlled. Many extractive activities involve people living in or near the protected areas, but little is known regarding economic returns from their harvests. Bush meat and plants are typically considered to be open-access resources, the use of which is difficult to control or regulate. The dilemma is that we know too little about the conditions under which extractive activities pose immediate threats to biodiversity. The critical issue is to adequately define the values for which areas are designated and to put into place monitoring and assessment programs that will alert managers to deleterious changes that are taking place. The management authority must then have the mandate and resources to take remedial action to mitigate the threat.

Nature-based tourism is one human activity frequently touted as a benign human use of protected areas. Though most developing countries are strongly promoting tourism as a source of foreign exchange, it is not a panacea. Visitation levels in World Heritage tropical forests are much lower than in World Heritage sites representing other ecosystems, such as the game-rich savannas in East Africa. This is probably the result of the former's inaccessibility and its lack or lower visibility of charismatic large vertebrates.

The best examples of nature-based tourism integrate education into their management plans, involve local people (especially as naturalist guides), and devolve significant revenues to local communities. These benefits are often limited and fall far short of their goals. The integration of local people in the control and regulation of uses in conservation and sustainable development projects is a process that may take years, and requires considerable training and finances. Nevertheless, integration of local people is a worthwhile investment with long-term returns.

Threats

Determining when human presence and use of the natural resources in tropical forests threaten conservation values is critical. The response to perceived threats must be proportionate to the degree to which the conservation values of the site are likely to be diminished or lost. The key is a clear definition of what the conservation values are and the capability to monitor changes in them over time. A monitoring program is necessary to provide indicators and data that contribute to adaptive management.

Monitoring helps to define the limits to acceptable change. It is especially important in developing countries that monitoring activities should be relatively small in number, simple, cost-effective, and implemented over the long term.

Some high-priority attributes to monitor for protected tropical forests might include: 1) conversion to non-forest uses (e.g., slash-and-burn agriculture, roads, and mining); 2) invasive species; and 3) seasonal patterns in the supply of bush meat (including fish where appropriate) to local markets. Detailed trend data by species and size/weight classes (preferably quantitative) can be collected easily by local staff with periodic professional guidance and analyses. Population monitoring of keystone or flagship species is an attractive scientific endeavor; however, it is costly and difficult to sustain over many years. In contrast, simple trend data on threat-based indicators may be useful surrogates for interpreting the health and status of wildlife populations in protected areas. It is particularly important that site-specific monitoring plans be developed to address the key attributes and principal threats to the biodiversity of each site.

Tropical forests house a hugely disproportionate amount of Earth's biological diversity, despite past and present human influences. Where there is a paradigm shift from pristine state to acceptable human uses, it is important to apply the precautionary principle that conservation values are not compromised. The major challenge for conservation at the turn of the millennium is the development of conservation models that integrate compatible human uses with the protection of ecosystem functions and biodiversity. The presence of human communities in protected areas may be a double-edged sword: that is, they may have appreciable impacts on local resources while providing front-line defense against external threats (for example, local clans resisting timber concessionaires in Papua New Guinea).



The reality of most tropical forests is that they will continue to be used to meet human needs and aspirations. Yet, there is hope that creative and adaptive management of tropical forests can deliver net benefits to conservation.

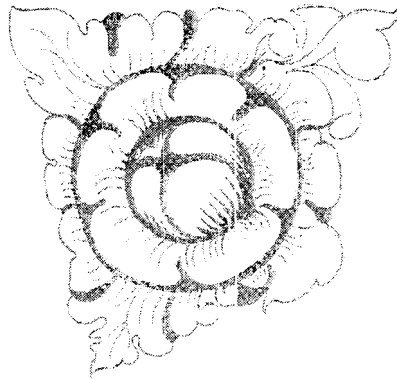
Conclusions

Management of World Heritage sites must recognize the many uses of nature and the presence of human communities in the majority of tropical forest protected areas. Present-day ecosystem structure and composition may have been strongly affected by anthropogenic activities in what is now considered old-growth forest. These past activities must not be used to justify inappropriate uses in protected areas. The classic model of inviolate core areas is still a legitimate conservation goal. Numerous threats to biodiversity are the norm, and these will no doubt increase in the future. Empirical evidence is abundant that elimination of all local uses is rarely a viable political option. Social pressures to continue or intensify existing uses of tropical forests are so great that legislative and regulatory measures will often meet overwhelming local resistance. In these circumstances, adaptive management that legitimizes and controls appropriate uses consistent with the area's conservation values provide the best option.

Acknowledgements

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The Role of Assessment

The Role of Assessment and Monitoring in enhancing the Contribution of Natural World Heritage Sites to Tropical Forest Biodiversity Conservation

Introduction

A number of international agreements aim to conserve tropical forest biodiversity. The World Heritage Convention has played a very significant, and so far largely under-appreciated, role. In September 1996, the Tropical Rainforest World Heritage Conference in Cairns, Australia, drew attention to the important role this Convention plays in tropical forest conservation. The meeting recognized that there was considerable potential for the World Heritage Convention to play a greater role in protecting areas important for tropical forest biodiversity.

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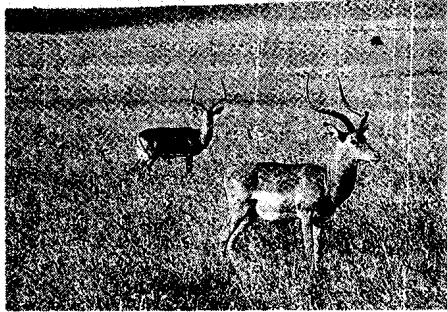
This note discusses the importance of existing World Heritage Areas for biodiversity. It also discusses the necessity and methods for assessing and monitoring biodiversity in World Heritage areas to aid the process of site nomination, day-to-day management, and long-term conservation.

How much biodiversity is found in the existing tropical forest World Heritage Areas?

Many authors believe that more than 50% of Earth's biodiversity is unevenly distributed among tropical forests. For many groups of animals and plants, it is likely that more than 80% of global species are found in tropical forests. It is surprising that we do not have a more accurate estimate of how important tropical forests are in housing biological diversity. At least for a few World



Heritage sites, we have an indication of just how important they are in conserving biodiversity. Manu World Heritage site covers some 1.5 million hectares of rainforest at the eastern foothills of Peru. This single area is home to 900 species of birds (about 10% of the world's bird species). It is also home to about 1,500 species of butterflies (approximately 25% of all butterfly species in South America and about 10% of the world's butterfly species). For many groups of Australian organisms, a high proportion of the species are found in the Wet Tropics World Heritage Area in



north Queensland, and many species are endemic to this rainforest region. This rainforest is of particular evolutionary significance as it contains 12 of the 19 families of primitive flowering plants, two of these being found nowhere else in the world. Many of the tropical forest World Heritage Areas were nominated for their endemic biodiversity and are important reserves for species listed by IUCN as threatened or endangered. Some 400 endemic species are found in the Wet Tropics World Heritage Area and as such have legal protection from the State and Federal

Government. What is unclear, but would be interesting to examine further, is to what extent World Heritage listing has led to improvements in the status of listed species and whether their conservation status is any greater than in non-world heritage listed sites. These examples indicate that the existing tropical forest World Heritage Areas already provide protection for a surprisingly high proportion of the world's biodiversity.

Assessment, reporting, and monitoring

There are three related, but distinct, activities undertaken in the adaptive management of natural areas. These are:

- (a) Assessment, which seeks to gain an understanding of the status of a particular characteristic, such as biodiversity, social or economic conditions, threats, and so on. An initial assessment is usually required when the status of an area changes, such as when it is listed as a World Heritage site. Assessment may often be resource intensive, although techniques such as 'Rapid Biodiversity Assessment' offer less-intensive approaches.
- (b) Monitoring, which is more narrowly focused on actions, or trends in a particular characteristic, to identify options for appropriate management responses. Monitoring is most effective when it is internalized into the management of a site, allowing managers both to conduct the monitoring themselves and to determine appropriate responses. Ideally, it should be possible to undertake monitoring on an ongoing basis, which means that the techniques used must be appropriate to the capacity and ability of the managers.



- (c) Reporting, which results in a description of current status and/or trends in a particular characteristic. Typically, the information used in reporting may be a subset of, or a compilation of the data collected during an assessment. Reporting is often an external requirement, such as the periodic reports required under the World Heritage Convention.

For maximum effectiveness, an assessment should address three major areas:

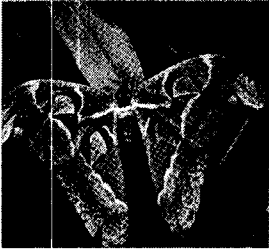
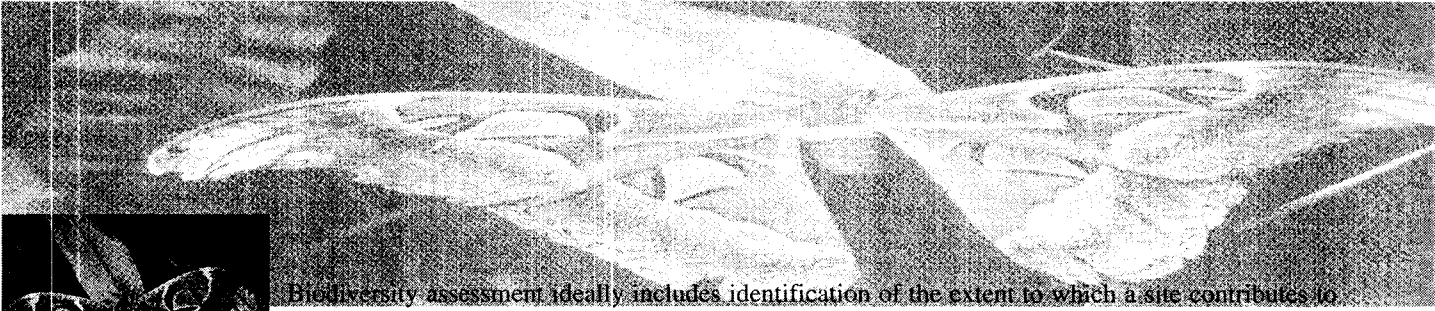
- (a) An historical perspective that describes past human management, natural disturbance patterns, species mixes and levels, and so on. This will help to describe the range of variation in which the system and its natural components naturally operates, as well as some conditions/components that may not be possible to maintain, it is needed to be determined the tolerance of change in the ecosystem;
- (b) A current snapshot describing the characteristics that make the site of World Heritage quality; and
- (c) The desired future condition of the area and the management strategy to reach that condition.

Designing biodiversity assessment tools: What are World Heritage sites managed for?

What kind of biodiversity assessment and monitoring is necessary and how extensive should this be for any particular site? We need to examine the basis for nomination of a site, and to look at the kinds of impacts that are affecting the area or are likely to affect the area in the future. Clearly, the outstanding features of a particular World Heritage site will help guide monitoring. For example, if a site is nominated for the significance and rarity of populations of threatened mammal species, priority must be given to monitoring the mammals and their habitat.

Tools for assessing and monitoring biodiversity, must be practical and usable at the local level, preferably by local personnel. This reduces the costs of operations, expands the skill base in the region and reduces the necessity for outside participation. The result is a greater involvement from the local community and hence greater support for the World Heritage site in question.

Threats to World Heritage sites vary in terms of the spatial and temporal scale of impact on the integrity of the area. For example, large numbers of tourists might be thought to have a major impact, whereas in practice the effects of large numbers of tourists can be very local. On the other hand, the long-term and insidious impacts of climate change are likely to be more broad scale, albeit on a longer time frame. It is particularly important that levels of acceptable change are established early on to provide warning signals so that management actions can be taken.



Biodiversity assessment ideally includes identification of the extent to which a site contributes to protection of adequate representation of the range of variation of the ecoregion in which it occurs. The occurrence of species endemic to the biome(s) is particularly important in this respect. Note should also be made of the occurrence (and, if possible, abundance) of globally threatened species (IUCN Red Listed), and of species of economic, popular, or cultural value.

Both for site characteristics, such as extent of forest cover, and for particular elements, such as species, assessment should identify thresholds for change that would cause concern. Monitoring that detects movements toward these thresholds should trigger adaptive management responses. In serious cases, adverse trends might lead to sites being placed on the World Heritage in-danger list.

The risks

However, not all monitoring initiatives are a good thing. Monitoring is a two-edged sword. When done well, it is a vital and integrated component of good protected area management. Yet, too many initiatives promoting monitoring ultimately detract from, rather than contribute to, the attainment of good management. Scientists and donors have to be much more aware of the limited resources and capacities that exist in many protected areas, and ensure that priority activities (such as patrolling) are not sacrificed for more esoteric studies. It is common for 'pet ideas' and the agendas of outside agencies to be foisted onto protected area managers with little local benefit, and sometimes even with deleterious impacts. Research questions must address clear management priorities. We must not advocate 'butterfly counting' while the remoter regions of the forest are being cut down. We can clearly guide, inform, and promote 'good conservation management' without solving any of the current questions of academic biodiversity research. This is not to say that research is not useful.

Many useful and relevant monitoring approaches are employed by conservationists and scientists and some expert guidance will often be very valuable to managers. The process of defining the 'most appropriate measures' and procedures in the local management context may generate important research questions, which should be addressed when the opportunities arise. In contrast, many of the 'biodiversity' questions currently being posed 'how many species are there' have little value to managers and must not be allowed to hinder overstretched conservation efforts.



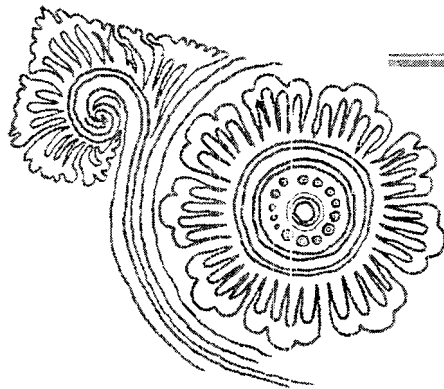
Summary

- The existing 33 World Heritage tropical forest sites make a significant contribution to the conservation of tropical forest biodiversity. This contribution has been estimated for birds and could be better documented for other groups.
- Assessment and monitoring are distinct activities; each contributes to better biodiversity conservation outcomes at listed natural World Heritage sites.
- Assessment identifies an area's natural World Heritage values and their past, present, and desired future conditions. It occurs principally prior to site nomination when it must evaluate the natural World Heritage values of a proposed site in the context of other existing or proposed sites. After listing, assessment continues when required in support of unanticipated management and threat-abatement needs.
- Once an area is nominally 'protected,' monitoring focuses on the prompt and direct observation of activities that threaten the area's natural World Heritage values — to ensure that site managers know whether the values are, in fact, being protected. Consequently, monitoring is an indispensable component of site management and should be easy and cheap to apply.
- Monitoring and assessment, when done well, is a vital and integrated component of good protected area management. Yet, some biodiversity studies detract from, rather than contribute to, the attainment of good management. Scientists and donors have to be much more aware of the limited resources and capacities that exist in many protected areas, and ensure that priority activities (such as patrolling) are given adequate resources.
- Scientific studies should support and be integrated with management and should not be seen as an alternative to the core site maintenance activities of protected area personnel.

Acknowledgments

This section is based on work from the discussion group in Berastagi led by Nigel Stork, Earl Saxon, Tim Boyle, John Poulsen and Doug Shiel and subsequent input and edits by several other participants.

**A List of Potential Forest Sites for
Consideration for World
Heritage Nomination**



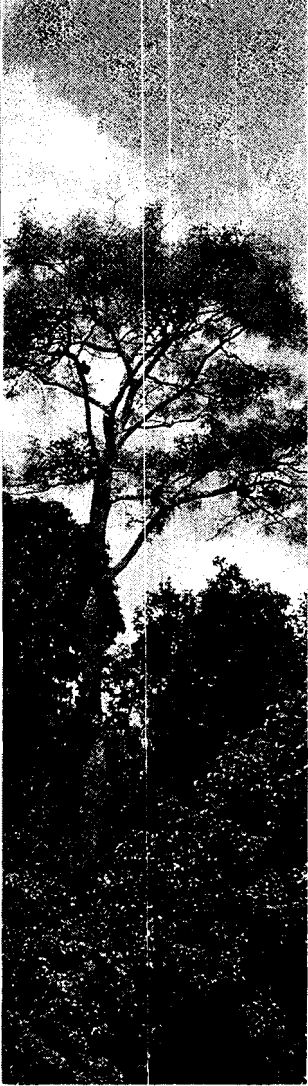
A List of Potential Forest Sites for Consideration for World Heritage Nomination

Introduction

1. Recognizing that a high proportion of the world's biological and cultural diversity is found in tropical forests and yet that tropical forests are inadequately represented on the World Heritage List, the Berastagi policy dialogue prepared 'a list of tropical forest areas which may merit consideration for future nomination as World Heritage Natural Sites'.
2. The working group recognized the specific criteria for the inclusion of sites within the World Heritage List, as defined in Article 2 of the Convention and detailed in paragraphs 43-45 of the Operational Guidelines for the implementation of the World Heritage Convention (UNESCO 1998).

Method

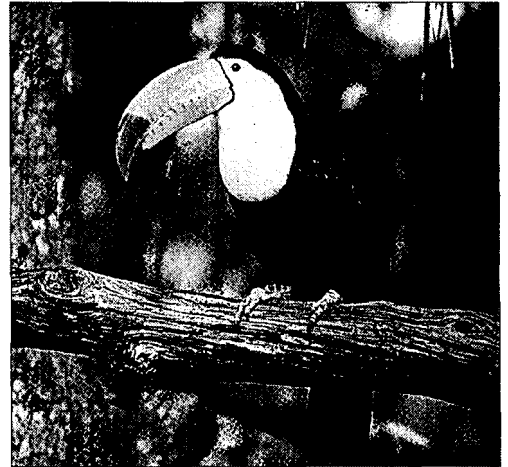
3. The working group took note of the considerable amount of data already available on regional and global syntheses (see references in Thorsell and Sigaty 1997) and of the powerful information systems currently being developed by Conservation International, World Wildlife Fund, BirdLife International, and others.
4. Although World Heritage Sites can be found in any part of the world, the Global 200 classification of 'ecoregions' was used as a framework for the list. The Global 200 classification is in itself a preliminary system, and two ecoregions (Chaco and Caatinga) were added for use in the present analysis. Further refinements will undoubtedly be needed in the future.
5. An existing list of protected areas that may merit consideration for World Heritage nomination was tested against a preliminary synthesis of recent geographic information systems, and 9 of 13 proposed sites in the eastern hemisphere coincided with overlapping priority areas defined by the three global databases available. Discussion about combining objective data analyses with individual or institutional experience to create an 'indicative list' led to the conclusion that the process would provide a useful 'first approximation' of a list of existing and potential sites.



6. The distribution, design, dimension, and number of tropical forest sites, and their relationship with other categories of protected areas, will differ from one area to another. In many instances, clusters, chains, or corridors of protected areas will provide the only feasible system of achieving forest biodiversity conservation goals in areas where human population or other factors preclude the establishment of vast protected areas.
7. Despite the limitations of size, it was agreed that the goals and criteria for World Heritage sites — for long-term maintenance of biodiversity, ecosystem services, and evolutionary processes — could be attained in all sites listed, which would provide a global network of 'holocene refugia' for the future generations.

The tentative list

8. The attached list is derived from the participants' proposals for specific eco-regions, protected areas, or clusters of sites. As such, it presents the 'best approximation' of sites that might be considered at subsequent national, regional, and global workshops. For some regions (the Andes, Amazon basin and Indonesia, for example), rather long lists were submitted. These have not been abbreviated and they must be further evaluated to determine eligibility.
9. The accompanying list of candidate areas for World Heritage listing comprise not only existing protected areas but also proposed protected areas and areas that have no protection. To ensure that the World Heritage List eventually includes the global best of the tropical forests will require promotion of protection and nomination of the candidate areas to the countries in which they are located. For some candidate areas, it may require providing assistance to the country to facilitate the necessary pre-nomination protection and management planning. Globally important areas deserve global attention, encouragement, and assistance.



The way ahead

10. The Berastagi workshop provided unanimous agreement that the World Heritage Convention provides a unique opportunity to support the establishment of a global network of 'holocene refugia'. It also recognized the powerful and objective information systems that contribute to the refinement of the tentative list.
11. It is proposed that the list be considered at national, regional, and global levels, leading toward its further improvement. The process could be conducted via the Internet under the direction of one of the NGOs currently taking a leading role in the synthesis of available data.

Acknowledgments

This section is based on work from the discussion group in Berastagi led by Brian Huntley, Russ Mittermeier and Jim Thorsell and subsequent input and edits by several other participants.

**A LIST OF TROPICAL FOREST SITES OF HIGH BIODIVERSITY VALUES
WHICH MAY MERIT CONSIDERATION FOR WORLD HERITAGE NOMINATION**

(Further study and review is required to determine which sites might have WH potential)

Global 200 Ecoregion		Ecoregion Location	WH Site	Potential Sites
1.	Brazilian Atlantic Forests	Brazil, Paraguay, Argentina	Iguazu/Iguacu	<p>Cluster 1: nominated 1998 Ilha do Mel Superagui Guaraquecaba Guaraquecaba Ilha do Cardoso Cananea – Iguape-Peruibe Pariquera Abaixo Chauas Jureia Jacupiranga</p> <p>Cluster 2: nominated 1998 Alto do Ribeira Intervalas Xitue Carlos Botelho</p> <p>Cluster 3: nominated 1998 Descobrimto Monte Pascoal Pau-Brasil</p> <p>Additional potential sites</p> <p>Cluster 4: Serra Geral Aparados da Serra Sao Joaquim Serra do Tabuleiro</p>

Global 200 Ecoregion	Ecoregion Location	WH Site	Potential Sites
			<p>Cluster 5: Morro Grande Morro do Diabo Serra do Mar Ilhabela Serra da Bocaina Itatiaia Papagaio Tingua Poco das Antas Desengano</p> <p>Cluster 6: Caparaó Sooretama Linhares Rio Doce Conduru Mangrove Complex of Camamu Chapada Diamantina Muricy Serra da Estrela Yabuti (Argentina)</p>
2.	Northern Andean Montane Forests	Ecuador, Colombia, Venezuela, Peru	Sangay Cordillera de Merida (Venezuela) Sierra Nevada de Santa Marta (Colombia) Serrania de la Macarena (Tingua and Picachos) (Colombia) Yasuni National Park (Ecuador)
3.	Andean Yungas	Ecuador, Colombia, Venezuela, Peru, Bolivia	Manu Rio Abiseo Manu-expanded to SW. Direction (Peru) Tambopata and Candamo (Peru) Vilcabamba (Peru) Madidi (Bolivia) Noel Kempff Mercado (Bolivia) Iguazu-Mbaracayu (Paraguay) Zona Reservada del Aporimac Cordillera da Sira (Peru)

Global 200 Ecoregion		Ecoregion Location	WH Site	Potential Sites
4.	Coastal Venezuela Montane Forests	Venezuela	None	Cordillera de la costa (Venezuela)
5.	Greater Antillean Moist Forests	Cuba, Haiti, Puerto Rico, Jamaica, Dominican Rep.	Morne Trois Pitons	Sierra Madre (Cuba)
6.	Choco Darien Moist Forests	Colombia, Panama, Ecuador	Los Katios/ Darien	Choco/Darien region. Expand Mesoamerican corridor to include: Utria (Colombia) Sanquianga (Colombia) Gorgona Island (Colombia) Coto-Cayapas (Ecuador) Tumbes region (Peru)
7.	Varzea Flooded Forests	Peru, Brazil, Venezuela	None	Nukak (Colombia) Cahuinari (Colombia) Puinawai (Colombia) Anavilhanas (Brazil)
8.	Talamanca and Isthmian Pacific Forests	Costa Rica, Panama	Talamanca Range La Amistad	Chimalapas and Ocote (Mexico) Expanding Tikal to Mayan reserves including Calakmul, Montes Azules (Mexico) Transition zone in Oaxaca including the Chinantla (Mexico) Guanacaste (Costa Rica)
9.	Napo Moist Forests	Ecuador, Colombia, Peru	Rio Abiseo	
10.	Rio Negro Juruea Moist Forests	Colombia, Brazil, Peru, Venezuela	None	Jau (Brazil) Mamiraua (Brazil) Lago Piratuba (Brazil) Zona Reservada do Gueppi Pastaza Moronz (Peru)
11.	S.W. Amazonian Moist Forests S.E. Amazonian Moist Forest	Peru, Brazil, Bolivia	None	Xingu (Brazil) Serra do Divisor (Brazil) Pacaas-Novos (Brazil)

Global 200 Ecoregion	Ecoregion Location	WH Site	Potential Sites
12. Guayanan Forests Tepui formatus	Guyana, French Guinea, Venezuela, Suriname, Brazil,	Canaima	Tepui Neblina (Brazil) Guyanne Francoise Kayateur Falls Central Suriname Kanuku Mountains Caura River Watershed Chiribiquele (Colombia)
13. Madagascar Moist Forests	Madagascar	None	
14. Guinean Moist Forests	Guinea, Liberia, Togo, Côte d'Ivoire Ghana, Sierra Leone	Tai Mount Nimba	
15. Eastern Arc Montane Forests	Kenya, Tanzania	None	Cluster of areas to be determined including: Usumbaras, Pare Uzungwa, Ulugurus (Tanzania)
16. East African Coastal Forests	Tanzania, Somalia, Mozambique, Kenya	None	Tana River (Kenya) Pangani, Kilwa (Tanzania)
17. Albertine Rift Highland Forests	Rwanda, Uganda, Tanzania, Burundi, D.R. Congo	Virunga Rwenzori Mts. Bwindi Forest Katuzi-Biega Okapi	
18. East African Highland Forests	Kenya, Uganda, Tanzania	Mt. Kenya Kilimanjaro	Usumbaras Mt. Elgon
19. Seychelles and Mascarene Islands Forests	Seychelles, Comoros, Reunion, Rodrigues, Mauritius	Valee de Mai Aldabra Atoll	Gran Comoro
20. Gulf of Guinea Islands Forests	Sao Tome, Principe, Equatorial Guinea	None	

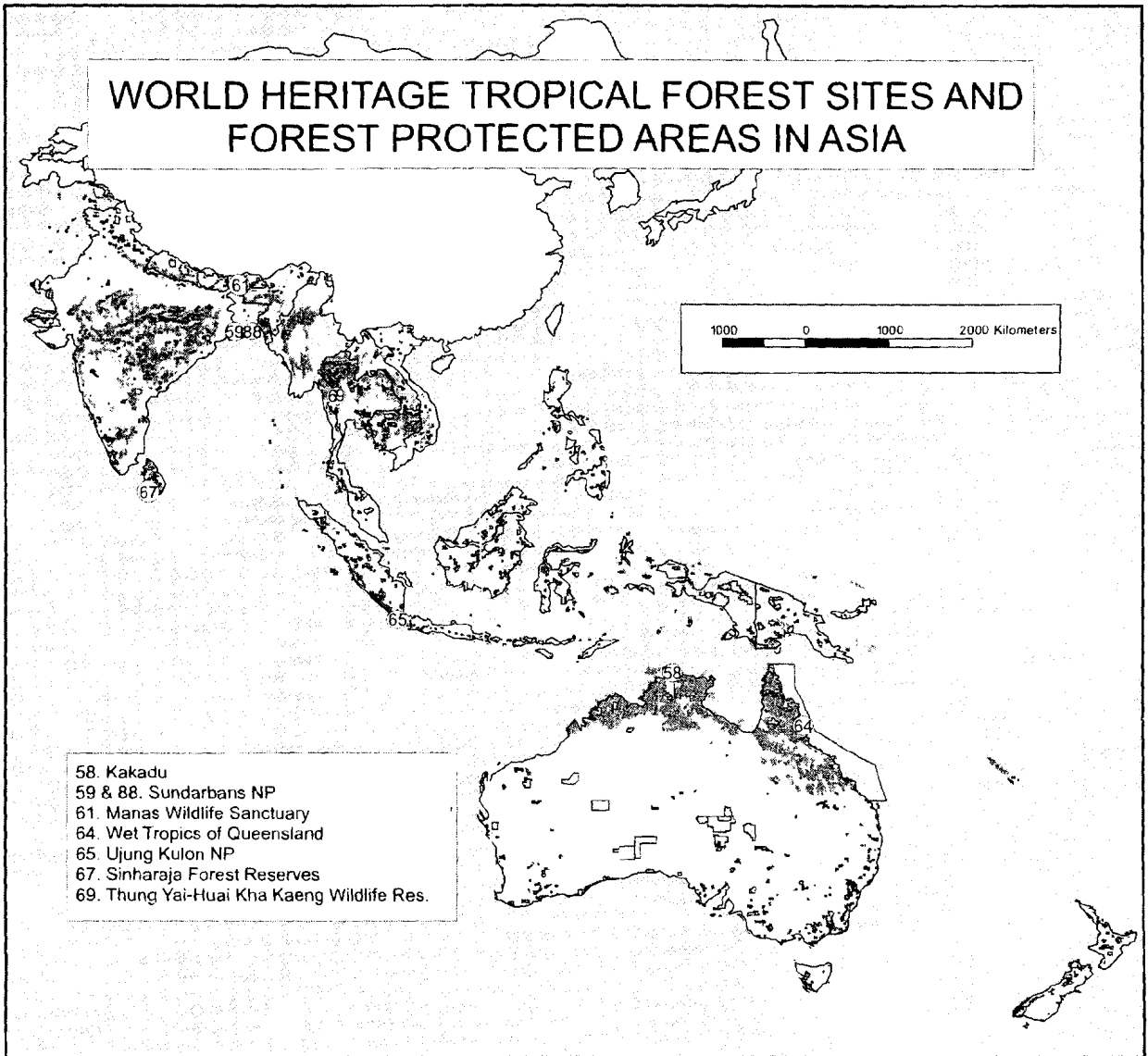
Global 200 Ecoregion		Ecoregion Location	WH Site	Potential Sites
21.	Macaronesian Forests	Azores, Madeira, Canary, Cape Verde	None	
22.	Congolian Coastal Forests	Cameroon, Gabon, Congo, Nigeria, Eq. Guinea, Benin	None	
23.	Western Congo Basin Forests	D.R. Congo, Gabon, Cameroon, C.A.F., R. Congo, Guinea	Okapi	Cluster including: Lac Lobeke – Nki Boumba –Bek, Minhebe Ndoke
24.	Northeastern Congo Basin Forests	D.R. Congo, Sudan, C.A.F., Uganda	Manovo-Gounda-St. Floris	
25.	Southern Congo Basin Forests	D.R. Congo, Angola, D.R. Congo	Salonga Okapi	
26.	Annamite Range Moist Forests	Laos, Thailand Vietnam	None	North Annamite Range Including: Phong Nha (VN) Vu Quang (VN) Pu Mat (VN) Hin Namnu possibly some sites in Lao PDR
27.	Western Ghats Moist Forests	India	None	Cluster including: Silent Valley, Karimpuzha, Nilgiri Thar, Agasthyamalai, Periyar, Wynad, Mudhumalai Nagarahole, Biligiri, Rangaswamy hills, Mundanthurai Bandipur
28.	Sri Lankan Moist Forests	Sri Lanka	Sinharaja	Adam's Peak Horton Plains Hakgala S.N.R
29.	Kaya-Karen Tenasserim Moist Forests	Thailand, Myanmar, Malaysia	Huai Kha Khaeng/ Thung Yai, Naresuan	Myinmo Melatkat (Myanmar) Andaman Coast (Thai) cluster
30.	Peninsular Malaysian Lowland Forests	Malaysia, Thailand	None	Malaysia-Thailand trans-border park including: Halebala and Belum Taman Negara cluster including Krau (Malaysia) Khao Sok/Khong Lan (Thailand)

Global 200 Ecoregion		Ecoregion Location	WH Site	Potential Sites
31.	Sumatra-Nicobar Islands Lowland Forests	India, Indonesia	Ujung Kulon (Indonesia)	Berbak (Indonesia) cluster including: Leuser Ecosystem (Indonesia) Kerinci Seblat (Indonesia) Bukit Barisan Selatan (Indonesia)
32.	Sumatran Montane Forests	Indonesia	None	Bukit Barisan Mountains, a cluster including: Leuser Ecosystem (Indonesia) Kerinci Seblat (Indonesia) Bukit Barisan Selatan (Indonesia)
33.	Central Borneo Montane Forests	Indonesia, Brunei, Malaysia	None	Central Borneo Mountains, a cluster including: Sebuku Sembakung (Indonesia) Kayan Mentarang (Indonesia) Bentuang Karimun (Indonesia) Lanjak Entimau (Malaysia) Batang Ai (Malaysia) Pulong Tau (Malaysia)
34.	Northern Borneo Palawan Moist Forests	Malaysia, Brunei, Indonesia, Philippines	None	Gn. Kinabalu (Malaysia) Gn. Mulu (Malaysia) plus part of Lobi (Brunei) St. Paul (Philippines) Serawak-Kalimantan trans-border to be defined Palawan (Philippines)
35.	Philippines Moist Forest	Philippines	None	A cluster including Cordillera Range (Philippines) cluster Palanan (Philippines) a cluster including: Mt. Giting-giting (Philippines) Mt. Kitanglad (Philippines)
36.	Sulawesi Moist Forests	Indonesia	None	A cluster including: Dumoga (Indonesia) Lore Lindu (Indonesia)
37.	Moluccas Moist Forest	Indonesia	None	None
38.	North Indochina Sub-tropical Moist Forests	Thailand, China, Vietnam, Myanmar, Laos	None	None
39.	Southeast China Subtropical Forests	China	Mt. Huang/ Shan Wu Ling Yuan	

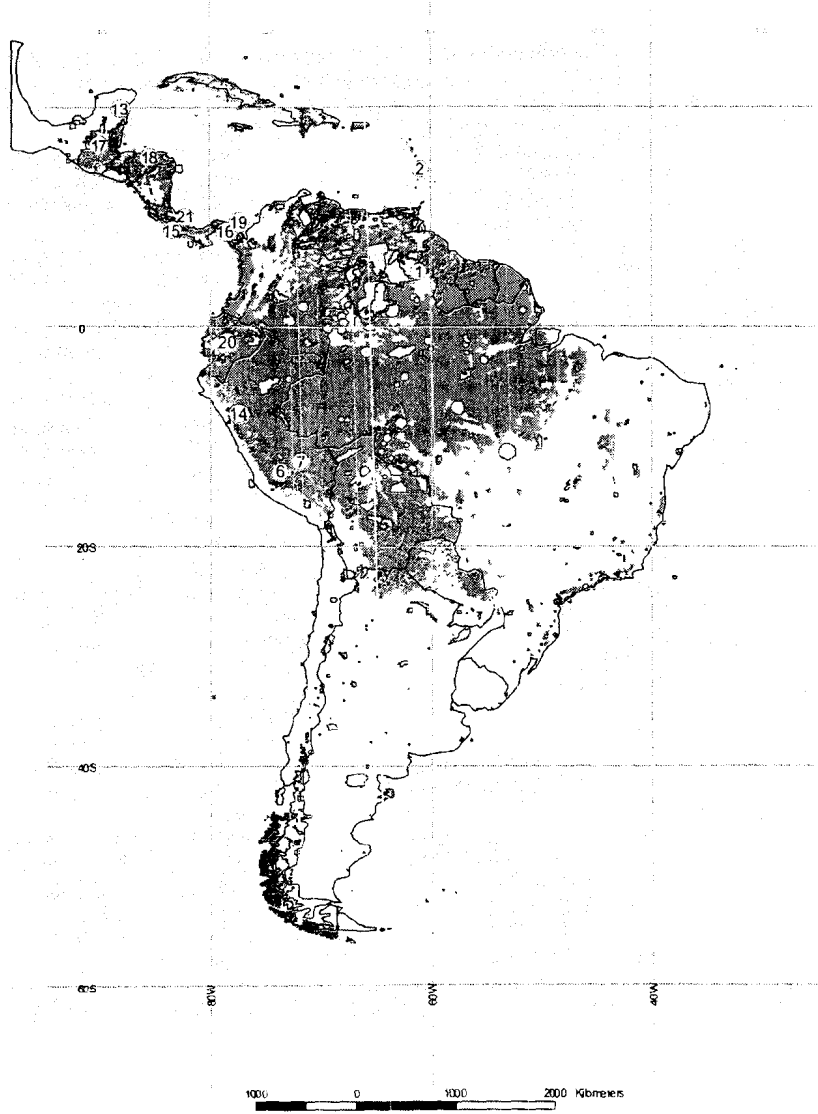
Global 200 Ecoregion		Ecoregion Location	WH Site	Potential Sites
40.	Northeastern India and Myanmar Hill Forests	India, Myanmar, Bangladesh	Manas Kaziranga.	Manas (Bhutan)
41.	Andaman Islands Forests	India	None	
42.	Taiwan Montane Forests	Taiwan	None	
43.	Hainan Island Forests	China	None	
44.	Nansei Shoto Archipelago Forests	Japan	Yakushima Island	
45.	New Caledonia Moist Forests	New Caledonia, France	None	(specific sites to be determined)
46.	New Zealand Tropical Forests	New Zealand	Tongariro	
47.	Queensland Tropical Forests	Australia	Wet Tropics of Queensland	Sites in Cape York Peninsula to be defined
48.	New Guinea Montane Forests	Papua New Guinea, Indonesia	None	Hunstein Range alpha New Guinea Lorentz (Indonesia)
49.	New Guinea Lowland Forests	Papua New Guinea, Indonesia	None	Lorentz (Indonesia)
50.	New Guinea Outer Island Solomon Moist Forests	Papua New Guinea, Solomon Islands	None	Solomon Islands cluster (specific sites to be determined)
51.	Lord Howe and Norfolk Islands Forests	Australia	Lord Howe	
52.	Hawaii Moist Forests	United States	None	Cluster in Hawaii
53.	South Pacific Islands Forests	Fiji, Samoa, American Samoa	None	Kikori-Lake Kutubu alpha New Guinea

Global 200 Ecoregion	Ecoregion Location	WH Site	Potential Sites
54. Bolivian Lowland Dry Forests	Bolivia, Brazil	None	
55. Tumbes and North Inter Andean Valleys Dry Forests	Ecuador, Peru, Colombia	None	
56. Southern Mexican Dry Forests	Mexico	None	Dry forest in W. Mexico
57. Madagascar Dry Forests	Madagascar	Tsingy de Bemaraha	Cluster to be determined
58. Maputaland Pondoland Dry Forests	Mozambique South Africa, Swaziland	None	Great St. Lucia Wetland Park
59. Eastern Indochina Dry and Monsoon Forests	Vietnam, Laos, Cambodia, Thailand	Huai Kha Kaeng/ Thung Yai, Naresuan	Possibly some sites in Lao PDR
60. Lesser Sundas Dry and Monsoon Forests	Indonesia	Komodo NP	Indonesia
61. Eastern Indian Monsoon Forests	India	None	
62. New Caledonia Dry Forests	New Caledonia, France	None	
63. Hawaii Dry Forests	United States	Hawaii Volcanoes	Hawaii

WORLD HERITAGE TROPICAL FOREST SITES AND FOREST PROTECTED AREAS IN ASIA

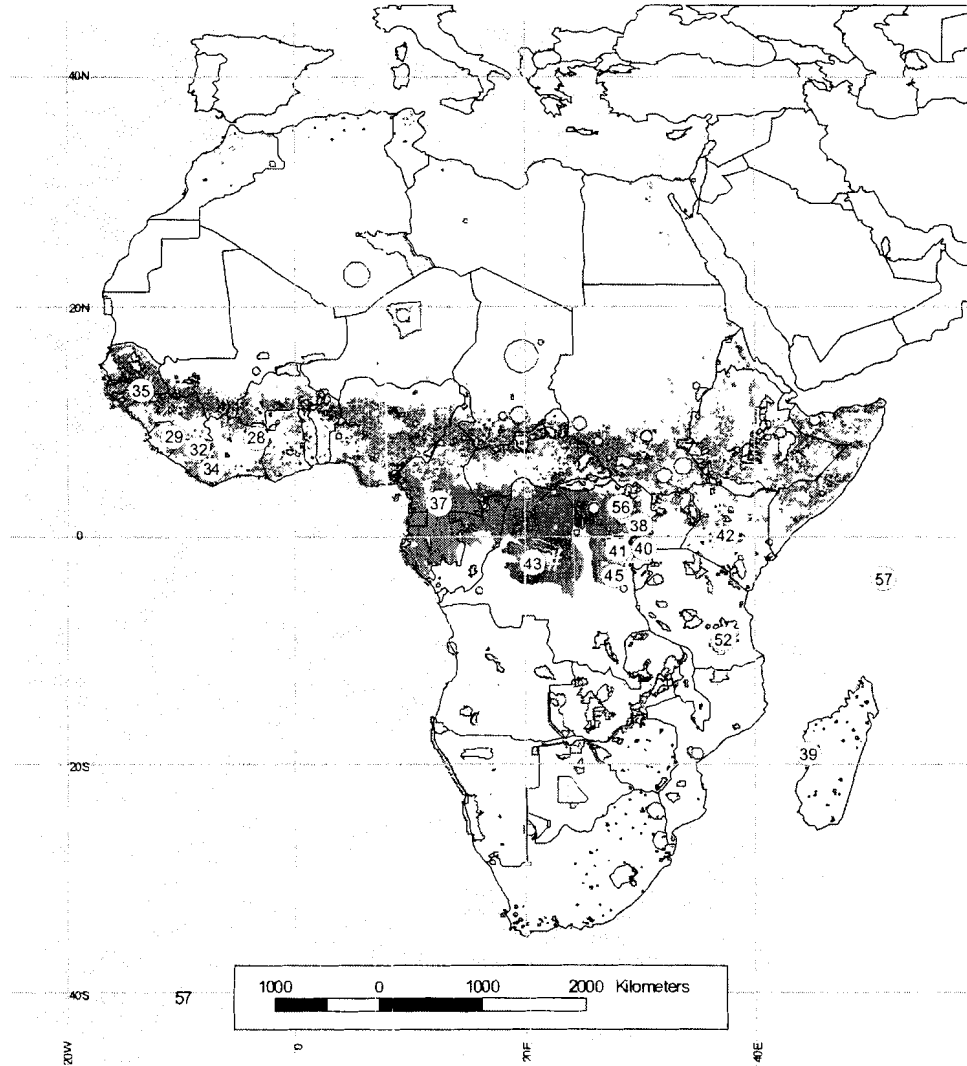


WORLD HERITAGE TROPICAL FOREST SITES AND FOREST PROTECTED AREAS IN SOUTH AMERICA

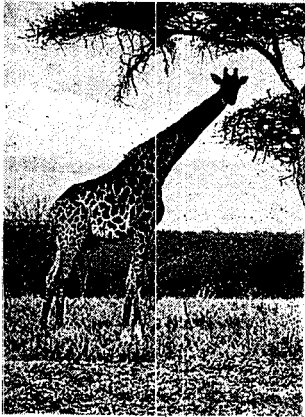


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|--------------------------|--|
| 1. Canaima NP | 15 & 21. Talamanca Range-La Amistad NP |
| 2. Morne Trois Pitons NP | 16. Los Katios NP |
| 6. Maccu Piccu | 17. Tikal NP |
| 7. Manu NP | 18. Rio Planto Biosphere Reserve |
| 13. Sian Ka'an | 19. Darien NP |
| 14. Rio Abiseo NP | 20. Sangay NP |

WORLD HERITAGE TROPICAL FOREST SITES AND FOREST PROTECTED AREAS IN AFRICA



- | | | |
|-------------------------|----------------------------|--------------------------|
| 28. Comoe NP | 38. Rwenzori Mountain NP | 45. Kahuzi Biega NP |
| 29. Mount Nimba Reserve | 39. Tsingy de Bemaraha | 52. Selous Game Reserve |
| 32. Mount Nimba Reserve | 40. Bwindi Impenetrable NP | 56. Okapi Faunal Reserve |
| 34. Tai NP | 41. Virunga NP | 57. Valée de Mai |
| 35. Nikolo-Koba NP | 42. Mount Kenya NP | |
| 37. Dja Faunal Reserve | 43. Salonga NP | |



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