Protected Areas Programme

World Heritage Twenty Years Later

IVth World Congress on National Parks and Protected Areas
Caracas, Venezuela

IUCN
The World Conservation Union

World Heritage
Twenty Years Later

IUCN – The World Conservation Union

Founded in 1948, IUCN – The World Conservation Union brings together States, government agencies and a diverse range of non-governmental organizations in a unique world partnership: some 680 members in all spread across 111 countries.

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IUCN – The World Conservation Union seeks above all to work with its members to achieve development that is sustainable and that provides a lasting improvement in the quality of life for people all over the world.

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Within IUCN, the Commission on National Parks and Protected Areas (CNPPA) is assigned the task of promoting the establishment of a worldwide network of effectively managed terrestrial and marine reserves. With its network of over 600 members in 110 countries, CNPPA has become the leading international scientific and technical body providing a global perspective on protected areas. CNPPA's strategies and documents are used throughout the world by government agencies, field people, United Nations organizations, and private bodies.

World Heritage Twenty Years Later

Based on Papers presented at the World Heritage and other Workshops held during the IVth World Congress on National Parks and Protected Areas, Caracas, Venezuela, February 1992

Compiled by Jim Thorsell
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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

CNPPA	Commission on National Parks and Protected Areas (IUCN)
COPFA	Apthous Fever Cooperative Programme (Panama)
CPS	Canadian Parks Service
DOC	Department of Conservation (New Zealand)
EWCO	Ethiopian Wildlife Conservation Organisation
FIBA	International Foundation of the Banc d'Arguin
GEF	Global Environmental Fund
GBRMPA	Great Barrier Reef Marine Park Authority
GNP	Gross national product
GYC	Greater Yellowstone Coalition
GYT	Greater Yellowstone Tomorrow Project
ICA	Colombian Institute of Farming and Animal Husbandry
ICOMOS	International Council for Monuments and Sites
IOC	Intergovernmental Oceanographic Commission
IFLA	International Federation of Landscape Architects
INDERENA	Institute of Environment and Renewable Natural Resources (Colombia)
INPARQUES	Venezuelan National Park Institute
INRENARE	Institute of Renewable Natural Resources (Panama)
ITK	Indigenous technical knowledge
IUCN	World Conservation Union
KMTNC	King Mahendra Trust for Nature Conservation
MAB	Man and the Biosphere (UNESCO programme)
MoT, HMG	Ministry of Tourism, His Majesty's Government (Nepal)
NCA	Ngorongoro Conservation Authority
NEA	Nepal Electricity Authority
NEMP	Ngorongoro Ecological Monitoring Programme
NGO	non-governmental organization
NORAD	Norwegian Agency for International Development
OECD	Organization for Economic Cooperation and Development
PNBA	National Park of the Banc d'Arguin
Ramsar	Convention on Wetlands of International Importance especially as Waterfowl Habitat
RIM	Islamic Republic of Mauritania
SCAR	Scientific Committee on Antarctic Research
SWECAG	South Westland Environmental and Community Advisory Group (New Zealand)

TPLF	Tigre Peoples Liberation Front
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
USDA	United States Department of Agriculture
USNPS	United States National Parks Service
WCMC	World Conservation Monitoring Centre
WMO	World Meteorological Organization
WWF	World Wide Fund For Nature

ha	hectare
km	kilometre
m	metre
mm	millimetre
sq km	square kilometre
t	ton
yr	year
>	is greater than
<	is less than

FOREWORD

As the pace of environmental change accelerates throughout the world, governments everywhere are establishing protected areas to conserve samples of wild nature. Over 30,000 such areas cover nearly 10 per cent of the earth's land surface, in nearly all countries. But these areas are not of equal value. Some are small remnants of once-extensive areas of habitat, others are too small to contribute much to conservation, many exist only on paper and relatively few are sufficiently well managed to achieve their conservation objectives.

In recognizing both the contributions natural habitats make to human welfare, and the limitations of most protected areas, some 127 countries have become State Parties to the World Heritage Convention and have pledged to give international recognition and support to the world's most outstanding natural habitats. The natural areas included on the World Heritage List are in very exclusive company – less than 100 areas have been inscribed since the Convention came into force in 1975. But these areas are invaluable to human society; Yellowstone, the Great Barrier Reef, Serengeti, Mt Everest (Sagarmatha), Kilimanjaro and Victoria Falls, are known and respected the world over as examples of nature's contribution to human culture.

But even sites of World Heritage quality may be threatened by competing uses, climate change, or natural disaster. All need to be managed if they are to be maintained and presented to the public. This volume is devoted to improving the management of natural World Heritage sites, drawing from the experience of those who have actually had to manage these important areas. These managers came together for a workshop at the IV World Congress on National Parks and Protected Areas held in Caracas, Venezuela, from 10-21 February 1992. The workshop was convened by UNESCO, which provides the Secretariat to the World Heritage Convention, and IUCN, which provides technical advice to UNESCO's World Heritage Committee on natural sites. The resulting publication is an excellent example of the collaboration between the World Heritage Committee and IUCN, and is intended to support the work of the people who are carrying out the challenging task of managing World Heritage sites in all parts of the world.

In addition to overview papers, case studies illustrate the range of management issues that World Heritage sites are facing today. These include the threat of military conflicts and civil disturbances, upstream water management, the need for trans-border cooperation, research, and monitoring,

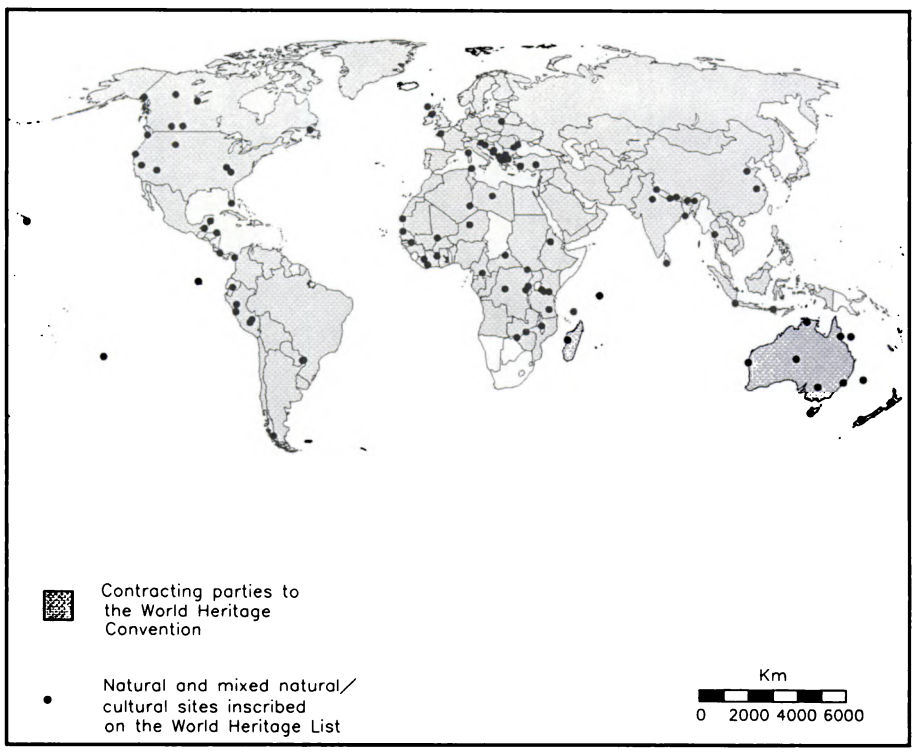
and control of tourism impacts. The compilation also includes a summary of the workshop's recommendations, which are now being incorporated into the new strategic plan for the Convention.

Because World Heritage sites are internationally recognized as being "of outstanding universal value", they should be models of effective management. The case studies in this book demonstrate that the high standards expected of World Heritage sites are not always attainable under current conditions and that significantly increased efforts are needed to protect "nature's hall of fame". We hope that the publication of this book will serve as a stimulus to both more effective management and greater investments to ensure that future generations are able to share the wonder, admiration and veneration that World Heritage sites evoke among those fortunate enough to visit them today.

Bernd von Droste
Director, World Heritage Centre,
UNESCO, Paris

Jeffrey A. McNeely
Secretary General,
IV World Congress on National Parks
and Protected Areas

1. OVERVIEW



World Heritage sites in 1992

SUMMARY AND CONCLUSIONS OF THE WORKSHOP ON THE WORLD HERITAGE CONVENTION HELD DURING THE IV WORLD CONGRESS ON NATIONAL PARKS AND PROTECTED AREAS CARACAS, VENEZUELA, FEBRUARY, 1992

Chair: Hemanta Mishra
King Mahendra Trust for Nature Conservation,
PO Box 3712, Jawalakhel,
Kathmandu, Nepal

Rapporteur: N. Ishwaran
World Heritage Centre, 1 rue Miollis,
75015, Paris, France

Introduction

Around 100 individuals participated in this workshop which met for two half-day sessions. The first half-day was spent on progress reviews and selected case studies. The second half-day took the form of an open discussion on five major theme areas: World Heritage natural criteria, monitoring, management, international assistance and cultural landscapes.

Workshop Objectives

Focusing on natural sites, the workshop's objectives were to:

- Review the overall implementation of the World Heritage Convention during 1972-91.
- Discuss strengths and weaknesses of selected aspects of the implementation of the Convention.
- Provide inputs to the evaluation of the implementation of the Convention and the elaboration of a future strategy.

Conclusions and Recommendations

Conclusions and recommendations arising from the workshop were as follows:

On natural heritage criteria:

- Natural heritage criteria are not sufficiently precise to enable a rigorous evaluation of nominated sites.
- References to man's interaction with nature (criterion ii) and exceptional combinations of natural and cultural elements (criterion iii) are inconsistent with the legal definition of natural heritage in Article 2 of the Convention.
- Geological and geomorphological features (landforms) and processes (structural, erosional and depositional) could have scientific (for example, paleontological, fossil record) and conservation (scenic values of sites) importance, and hence could be relevant to criteria i, ii, and iii.
- The notion of biological diversity is not explicitly reflected in the definitions of existing criteria and is particularly overshadowed by emphasis on threatened species in criterion iv.
- The Operational Guidelines do not adequately explain the meaning of criteria and how they are used to evaluate sites nominated by State Parties.

In order to retain continuity with past practice no attempt should be made to elaborate new criteria but existing criteria should be revised as follows:

- Reference to man's interaction with nature in criterion ii, and exceptional combinations of cultural and natural elements in criterion iii, should be removed.
- A single criterion for geological phenomenon incorporating relevant geological and geomorphological features, should be established.
- The criterion on aesthetic dimensions should be made as precise as possible by linking it to geomorphological features such as landforms and processes associated with their formation.
- In criteria referring to biological/ecological processes (criterion ii) and threatened species (criterion iv), explicit reference should be made to the notion of biological diversity.

The conditions of integrity for evaluating nominations should be modified to conform with revised criteria and additional text should be included in the Operational Guidelines to explain the meaning of criteria, citing examples of sites that have already been found to meet them, and how the criteria are applied when nominated sites are evaluated.

On monitoring:

- Monitoring the conservation status of sites inscribed on the World Heritage List includes gathering information on a systematic basis to update files on sites, and identifying and responding to specific threats to sites by taking emergency measures.
- Current procedures used by IUCN and WCMC, in cooperation with the World Heritage Secretariat, have been effective in building systematic databases and for making interventions to avert specific threats.
- Voluntary monitoring reports from State Parties are welcome but may not always reflect fully the threats facing World Heritage sites.
- Questionnaires are not effective tools for obtaining information from State Parties on the conservation status of World Heritage sites.
- Information obtained through secondary sources, for example, communications from State Parties regarding conservation measures taken, or from NGOs or other interest groups on ascertained or potential dangers to sites, requires verification at field level.
- Monitoring the conservation status of sites is operationally linked to other aspects of implementation of the Convention, such as identification and nomination of sites, provision of international assistance, and so on.

In respect of maintaining an up-to-date database which could contribute to effective monitoring:

- The Secretariat, WCMC and IUCN, together with other secretariats for international conventions such as Ramsar, should work together to develop a reporting format to be used by State Parties.
- State Parties should inform the Secretariat of any changes in the legal status or boundaries of World Heritage sites.
- State Parties should provide copies of new information and publications on World Heritage sites to the Secretariat.
- WCMC should continue to review information on World Heritage sites and initiate, in cooperation with the Secretariat, IUCN and State Parties, a three-year cycle for updating site descriptions.
- WCMC and the Secretariat should review availability of information on World Heritage sites and make recommendations for future management of information.
- IUCN, in cooperation with the Secretariat, should continue to imple-

ment its monitoring procedure and report threats to World Heritage sites to the Secretariat.

- The cooperation of national/local organizations (for example, NGOs, research or academic institutions) should be sought in monitoring the conservation status of World Heritage sites.
- Field visits should be undertaken to verify information on the conservation status of sites which has been obtained through letters, written reports and other secondary sources of information.
- The Committee should consider revising the guidelines for introducing a 'sunset' clause which would require that a site's World Heritage values be re-evaluated after a certain number of years. (The time period suggested by workshop participants ranged from 10 to 20 years.)
- The Committee should use its authority to include sites on the Danger List, even in the absence of a request from the State Party(ies) concerned, and request support from international and national communities to remove the threats facing a given site.

On management:

- The long-term maintenance of outstanding universal values which distinguishes World Heritage sites from other protected areas requires special consideration when management plans are being elaborated. All World Heritage sites should have management plans that indicate how World Heritage site values will be preserved over the long term. Availability of a management plan at the time of inscription is desirable, but where it is not available, listing is a tool for generating the necessary resources for developing a management plan.
- In developing a management plan, State Parties should consider bringing together all stakeholders to develop a vision which demonstrates that each understands its responsibilities to maintain World Heritage site values and how these are to be fulfilled over the short and long term.
- State Parties should consider developing annual operational plans to complement long-term visions defined in management plans. Operational plans should specify administrative and staff requirements and describe ways and means of meeting those requirements. Development and implementation of operational plans should be monitored as indicators of effective conservation of World Heritage site values.
- Development pressures beyond the borders of any World Heritage site should be included among the concerns of managers of that site.

- In nominating a site for inscription on the World Heritage List, State Parties should demonstrate a commitment to elaborating a management plan and to a process of bringing together affected and interested parties to develop a long-term vision for the conservation of World Heritage site values.
- In developing management plans, State Parties should define a World Heritage Site management area that transcends the site's boundaries, and use the Biosphere Reserve approach for management of the overall area.

On international assistance:

The World Heritage Fund is extremely small considering the immense variety of tasks with which it is expected to assist State Parties. The Fund has mainly a pre-investment and/or catalytic function and is best used in a manner emphasizing long-term benefits. International assistance projects supported by the Fund have in several cases had multiplier effects and brought about noticeable improvements in the conservation status of World Heritage sites. To increase international assistance the following are suggested:

- The World Heritage Committee and UNESCO should appeal to all countries, particularly the developed countries, to increase their contributions to the Fund.
- The Fund's management and administrative procedures should be designed so as to fully exploit their pre-investment and/or catalytic function.
- International assistance, wherever possible, should be used to support actions which will have long-term benefits, such as institution building and the linking of conservation of World Heritage site values to provision of benefits for local people.
- Provision of international assistance should take into account the absorptive capacity of recipient countries and establish mechanisms for measuring quality of output.
- International assistance projects already successfully implemented should be used to launch campaigns to raise funds.
- International intergovernmental (for example, GEF, UNDP) and non-governmental (for example, WWF) conservation funding agencies should coordinate their operations with those of the World Heritage Fund to substantially increase the financial resources available for the conservation of World Heritage sites.

On cultural landscapes:

Several areas described as cultural and/or rural landscapes may have the potential to meet World Heritage criteria. The conservation of such landscapes is important and would probably benefit from being implemented through the World Heritage Convention. Some participants felt that a separate criteria for landscapes was not needed, whereas others were of the opinion that criteria and evaluation guidelines for landscapes should be developed.

The workshop recommended that landscapes be included within the cultural heritage section of the World Heritage Convention. The criterion and conditions of authenticity for cultural landscapes proposed by the World Heritage Secretariat at the 15th session of the World Heritage Committee, held in Carthage, Tunisia, in December 1991, could be used as a working model for further refinement and adoption by the World Heritage Committee. ICOMOS should be primarily responsible for evaluating cultural landscapes but a working group involving ICOMOS, IUCN and other relevant technical agencies, such as IFLA, should be established to develop a procedure for evaluation.

On outputs and follow-up activities:

UNESCO's World Heritage Secretariat will incorporate the conclusions and recommendations highlighted in this report into the process of evaluating the Convention and the elaboration of a future strategy. The World Heritage Committee at its 16th session scheduled to be held in Santa Fe, New Mexico, USA, in December 1992, will review final drafts on the evaluation of the Convention and the future strategy, prior to adoption and implementation.

FROM STRENGTH TO STRENGTH: WORLD HERITAGE IN ITS 20TH YEAR

Jim Thorsell
Senior Adviser, Natural Heritage, IUCN,
CH-1196 Gland, Switzerland

Abstract

Defining which of the world's natural sites are the most outstanding is a noble and demanding task. Undertaken through UNESCO's World Heritage Convention, the work began in 1978 when the first four sites were placed on the World Heritage List. Today the natural list numbers 96 areas, including 14 that have also been inscribed for their cultural values. Twenty-one specific conservation achievements are listed, and three emerging trends and five key issues facing World Heritage as it enters the 20th anniversary of its signing identified. The paper concludes with six suggestions for priority action.

Introduction

Defining which of the world's natural sites are the most outstanding is a noble and demanding task. Undertaken through UNESCO's World Heritage Convention, the work began in 1978 when the first four sites were placed on the World Heritage List. Today the natural list numbers 96 areas, including 14 that have also been inscribed for their cultural values.

Having had the enviable job of coordinating IUCN's annual technical presentations to the World Heritage Committee for the past eight years, I was asked to identify for this workshop the trends and issues facing World Heritage as it enters the 20th anniversary of its signing. I would acknowledge previous overviews presented at the Bali Congress in 1982 by David Hales, at the 1988 General Assembly in Costa Rica by Michel Batisse, and by Harold Eidsvik at the 1990 General Assembly in Perth.

Trends

Three particular trends in the operation of the Convention have become apparent in recent years:

1. Increasingly rigorous evaluation procedures: In 1983, at the 7th Session of the Committee, outgoing chairman Ralph Slatyer of Australia, noted the progressively important roles played by the two advisory bodies, IUCN and ICOMOS. At the same time, he called for them to "raise their standards even higher in evaluations". IUCN has attempted to do this by:

- increasing the contribution of outside reviewers to the evaluation of nominations (over 100 experts helped evaluate the 12 nominations received in 1991);
- expanding efforts to undertake the comparative 'rating' of nominated sites;
- conducting field inspection of most new nominations (undertaken for 46 of the most recent 59 nominations);
- making greater use of WCMC's information services;
- routing recommendations on new nominations through an IUCN headquarters panel, and
- on most occasions, suggesting areas where management requires attention, information which the Committee then relays back to the State Party.

These procedures have tightened up the screening process considerably and documentation available to the Committee is now much more complete. The 'success rate' of new nominations accepted by the Committee over the past five years has been 29 inscriptions out of 54 nominations (54%). Many of those which have not been accepted are actually deferrals and could eventually succeed. IUCN, of course, is always seeking to refine procedures further.

2. Greater attention to monitoring the status of existing sites: Also in 1983, the Committee received its first alarming report on the conservation status of an existing site. This stimulated interest in increasing awareness of the conservation status of existing sites (see Article 27 of the Convention). I would like to summarize here a few of the achievements that have resulted from Committee interventions to various State Parties:

Site	Country	Threat Averted or Improvement Reported
Iguaçu/ Iguazu	Argentina/ Brazil	Helicopter impact study underway
Wet Tropics Queensland	Australia	Forestry activities halted
Pirin	Bulgaria	Ski development modified, size expansion proposed
Dinosaur	Canada	Assigned funding priority for visitor centre, management plan
Mt Nimba	Côte d'Ivoire/ Guinea	Mining finance discouraged
Galapagos	Ecuador	Tourism control policies introduced
Sangay	Ecuador	Road construction halted
St Michel	France	Tourism impact reduced, regional development reviewed
Royal Chitwan	Nepal	Water diversion project halted
Tongariro	New Zealand	Ski development restricted, cultural input expanded
L'Amistad	Panama	Oil exploration plans withdrawn
Huascarán	Peru	Road and mining proposals modified, training course held
Niokola Koba	Senegal	Road construction modified
Doudj	Senegal	Water regime improved
Ngorongoro	Tanzania	Management resources (equipment) augmented
Selous	Tanzania	Major new antipoaching programme, stock route cancelled
Ichkeul	Tunisia	Water diversion project modified
Pamukkale	Turkey	Tourism impact reduced
Giant's Causeway	UK	Legal status upgraded
Durmitor	Yugoslavia	Hydro proposal halted
Garamba	Zaïre	Rehabilitation, cessation of poaching

Unhappily, monitoring reports have also identified sites that have lost much of their integrity and which consequently may no longer meet World Heritage criteria. Delisting is now being discussed for several of these.

I should note here that IUCN's contract with the World Heritage Convention to provide technical services has increased substantially and now covers WCMC's costs and three-quarters of the operation of a full-time World Heritage coordinator at IUCN headquarters.

3. Growing public awareness: Inherently, World Heritage is a saleable popular commodity. Certainly, in countries where controversy has surrounded World Heritage issues (Australia being the most evident example), almost every man on the street has become aware of the Convention. Additionally, brisk sales of the National Geographic book, *Our World's Heritage,* and forecasts for a new Harper-McCrae venture, *Masterworks of Man and Nature,* reflect popular interest in World Heritage sites. Efforts have failed, however, to encourage NGOs, particularly WWF, to promote the Convention as extensively as they do CITES and Ramsar.

Current Issues

Five major policy issues which will be focused on during the evaluation of the Convention in 1992 are now outlined.

1. Representativeness: One of the objectives of the Operational Guidelines is to ensure that the World Heritage List is "universally representative". The List has a long way to go, though, before this is achieved. For example:

- Only 23% of the 358 sites on the List comprise natural sites. Should we be seeking greater balance or is this not a real issue?
- Fully 35% of all World Heritage sites are located in Europe. How can a wider geographic range be attained?
- Many countries are not yet party to the Convention, for example, Botswana, Iceland, Myanmar (Burma), Namibia, Papua New Guinea and South Africa. How can we encourage them to accept?
- Many countries that have joined have not yet nominated natural sites – for example, Bolivia, Chile, Colombia and Venezuela; even Brazil has only one. How can nominations from these countries be encouraged?

- Owing to the sovereignty question, legal mechanisms hinder the identification of World Heritage sites in Antarctica. Is there a way forward on this?

2. World Heritage in Danger List: The Committee's recent experience has demonstrated that the current Operational Guidelines are very restrictive and, indeed, make it very unlikely that the Danger List would be used as the tool for which it is intended. The hurdle is mainly a procedural one: before a site can be put on the Danger List, the relevant State Party must submit a programme outlining the corrective measures that need to be undertaken. For sites that IUCN has recommended for the Danger List (for example, Manas, Mt Nimba, Plitvice, Rio Platano, Srebarna and Tai), no such programmes have been forthcoming (although they are pending for Plitvice and Srebarna). Clearly, State Parties will have to consider whether they view the Danger List as a blacklist or an early warning mechanism and clarify the procedures now outlined in the Operational Guidelines.

It may be possible to adopt an approach based on the European Diploma system which awards diplomas that are renewable every five years. At the IUCN General Assembly in Costa Rica in 1988, Batisse suggested that World Heritage designations be reviewed every 10 years and I would endorse this, but extend the time period to 20 years. This would mean that a rolling review of all sites would begin in 1998 (in other words, 20 years after the initial sites were inscribed) and that sites which no longer satisfied World Heritage criteria would be dropped from the List.

3. The World Heritage Fund: Considering that the Convention purports to provide technical assistance to the world's most precious natural and cultural treasures, it is sobering to realize that its budget was a mere US$2.3 million for 1991, although the extra efforts of State Parties themselves and funds from development assistance agencies, increased this figure. Apart from the effectiveness of its technical assistance efforts, the Fund can be considered as having but minimal capacity. It has been suggested that GEF could play a major funding role and approaches are now being made.

4. Landscapes: Variously referred to as 'mixed sites' and 'cultural landscapes', the middle ground between nature and culture continues to perplex the Committee and its advisory bodies. After an IUCN/ICOMOS working group report attempted, unsuccessfully, to resolve the issue, the Committee concluded that, according to the text of the Convention, such pro-

perties can only be considered under cultural criteria. ICOMOS has therefore taken the lead, with some help from IFLA. IUCN has played a supplementary role as, *sensu strictu*, its advisory role is limited to natural sites.

The Committee is still debating how to widen the scope of the Convention in order to include a third category of sites. The majority seem to be of the opinion that the existing text should be adhered to. Key questions that need to be addressed include:

- How does one determine whether or not the balance between natural and cultural values of a site is 'harmonious'? Should, as in the case of Biosphere Reserves, a predominant portion of the site consist of a protected core with minimal human disturbance?

- What would be the most appropriate legal vehicle for recognition of exceptional cultural landscapes? Is the World Heritage Convention to remain selective or should it be broadened to include such areas and thus play a wider role in sustainable development? Would the new Biodiversity Convention be relevant to cultural landscapes?

- The greatest number of sites that might qualify as World Heritage cultural landscapes are located in Europe; if nominated, how would the current imbalance between natural and cultural sites, and the concentration of existing sites on the European continent, be affected? How 'global' is the concern for cultural landscapes?

5. Criteria for natural sites: It is generally accepted that the criteria, as spelled out in the Operational Guidelines, need some revision. Not only are they inconsistent with the text of the Convention, but they are open to very broad interpretation (for example, how do you assess natural beauty?) and could be applied to almost any site in the world! The associated conditions of integrity should be reviewed as well since some (for example, concerning migratory species) cannot be assured.

In 1991, a Geological Site task force suggested two new geological criteria and proposed an initial list of 107 geological sites that it considered merit inscription. As my colleague, Jeff McNeely has noted, how many more could be considered if other scientific disciplines also had occasion to propose areas of importance to them?

I would suggest amending the criteria by:

- placing more emphasis on sites of exceptional biodiversity and reducing that given to threatened species under criterion (iv);

- removing references to man and culture in (ii) and (iii) as being inconsistent with the legal text;
- focusing criterion (i) on geological features (Paul Dingwall's suggested wording is: "Outstanding examples of geomorphological features (landforms) and the processes that created them (structural, erosional, depositional)");
- criterion (ii) would then focus on biological evolution and criterion (iii) on the more subjective scenic/aesthetic/inspirational qualities of a particular site.

Future Considerations

For workship discussion purposes, I would like to conclude with six main actions relating to World Heritage for consideration over the next few years:

- **encourage** the 'missing' countries to sign the Convention;
- **promote** nomination of key sites for inscription, with a goal of 200 natural World Heritage properties by the year 2000;
- **strengthen** monitoring activities and support for existing World Heritage sites;
- **encourage** increased contributions to the World Heritage Fund;
- **revise** the legal text and the Operational Guidelines to incorporate a 'sunset clause' and clarify the criteria, and
- **accelerate** the World Heritage activities of State Parties at the national level to reinforce efforts at the international level and activate relevant NGOs regarding all the above tasks.

WORLD HERITAGE AT RISK

James R. Paine
Protected Areas Data Unit,
World Conservation Monitoring Centre,
219c Huntingdon Road, Cambridge CB3 0DL, UK

Abstract

At the 7th Meeting of the World Heritage Committee, IUCN was requested to provide regular monitoring reports on all natural World Heritage sites. Accordingly, the Protected Areas Data Unit of the World Conservation Monitoring Centre has been developing and maintaining information sheets on each site. This information, which is the most up to date available on these sites, has made possible a more detailed examination of the nature and severity of threats facing World Heritage sites.

Introduction

At the 7th Meeting of the World Heritage Committee, IUCN was requested to provide regular monitoring reports on all natural World Heritage sites. Accordingly, the Protected Areas Data Unit (PADU) of the World Conservation Monitoring Centre has been developing and maintaining information sheets on each site. During 1989-1990, PADU updated its information on all World Heritage sites inscribed before 1986.

Method

The information held by the Protected Areas Data Unit was updated by providing the relevant authorities with standard-format information sheets describing the World Heritage site for which they are responsible, and requesting them to critically review the text. A further request for additional material, such as reports or management plans, was also made. This part of the exercise covered the 61 sites inscribed prior to 1986. Information on sites inscribed after 1986 was considered to be sufficiently recent not to warrant extensive revision. However, new information on these more recent inscriptions, and already in PADU's files, was also incorporated into the datasheets (13 sites).

Responses were received from 18 of the 28 countries with sites inscribed prior to 1986, and covered 37 sites (61%). The nature of the responses varied from a few details through to a full revision of the data, accompanied by comprehensive documentation. Additional information, received from other sources, was available for a further 16 sites (26%). At the close of the exercise, a directory – presented to the World Heritage Bureau at a meeting in June 1990 – had been compiled that included the best available information on natural World Heritage sites. This information has made possible a more detailed examination of the nature and severity of threats facing World Heritage sites.

A subsequent revision of the data was undertaken in January 1992, drawing upon additional information describing the six sites nominated during 1990 (although one of these, in southwest New Zealand, was an amalgamation and extension of two previously inscribed sites), and six sites inscribed during 1991. Sites inscribed on the basis of mixed natural and cultural values were included. Joint nominations or inscriptions were included once only (namely: Mt Nimba in Côte d'Ivoire/Guinea; Kluane/Wrangell-St Elias in Canada/USA, and Victoria Falls/Mosi-oa-Tunya in Zambia/Zimbabwe).

A table was generated in which broad categories of management issues were cross-referenced with each World Heritage site. Threats were considered both in terms of protected area values and World Heritage values. The latter were derived from the justification for inscription provided in the nominations submitted to the World Heritage Committee. So, for example, a national park inscribed on the World Heritage List for geological values could be recorded as threatened by poaching, with poaching a threat to its protected area values but not necessarily to its World Heritage values.

Management issues and threats were taken principally from Machlis and Tichnell (1985) who carried out a questionnaire study on the world's national parks. Their classes were, however, augmented on the basis of an initial review of the information on World Heritage sites. Machlis and Tichnell found that the stage of economic development is the most important single factor determining the incidence of management problems in national parks. The data presented here have therefore been divided into two sets: one pertaining to countries which are members of OECD (Organization for Economic Cooperation and Development), and one pertaining to countries which are non-OECD members. The OECD countries with inscribed natural World Heritage sites are: Australia, Canada, France, New Zealand, Spain, Turkey, United Kingdom, USA and Yugoslavia. Non-OECD countries with inscribed natural World Heritage sites are: Algeria, Argentina,

Brazil, Bulgaria, Cameroon, Central African Republic, China, Côte d'Ivoire, Ecuador, Ethiopia, Guatemala, Guinea, Honduras, India, Madagascar, Malawi, Mali, Mexico, Nepal, Niger, Panama, Peru, Poland, Romania, Senegal, Seychelles, Sri Lanka, Tanzania, Thailand, Tunisia, Zaïre, Zambia and Zimbabwe.

Threats to sites are frequently 'nested', with a problem in one area giving rise to a series of subsequent threats elsewhere. For example, high tourist pressure may lead to soil erosion which in turn can lead to siltation of rivers and destruction of natural habitat. In this exercise, specific threats have been noted individually as far as possible. However, since the necessary information is frequently unavailable, it has not been possible to categorize threats (as moderate or severe, for example). Moreover, only current threats are included – impacts from activities which took place at some point in the past have been omitted.

Results

The results are given in Table 1, which is divided into two halves, on the basis of OECD membership or non-membership. Within each section, the first column, under the heading "PA" (meaning protected area values), gives the number of times that a particular issue has been reported as a threat to protected area values, followed by the percentage of sites where that threat occurs. The next two columns provide the same information, but for World Heritage ("WH") values. The terms "in" and "out" (see left-hand column) designate whether the threat originates from an activity occurring inside or outside the protected area.

As shown in Table 2 and Figure 1, sites in countries which are not members of OECD are in greater danger than those in countries which are OECD members, with more threats reported per site for both protected area values and World Heritage values. There is also a marked difference between OECD and non-OECD member countries in the nature of threats experienced (Tables 3 and 4 and Figures 2 and 3).

Discussion

Clearly, World Heritage sites face a wide range of threats, some of which are highly prevalent. Exotic (that is, alien) species are reported as the most common threat to both protected area and World Heritage values in OECD countries (but are much less of an issue in non-OECD nations). This is largely accounted for by introduced flora and fauna in the Hawaiian, Australian and New Zealand World Heritage sites. Of more or less equal importance

in the more developed countries, are the threats posed by tourism and development, perhaps an expression of the stage of economic development the countries have attained.

Similarly, the major threats to sites in the less developed countries may also be symptomatic of a particular stage of economic development. These threats, in the form of poaching, grazing and agriculture, probably reflect the fact that a far greater percentage of that country's population is at subsistence level than is the case in most OECD member nations. Lack of resources accounts for the high level of staffing problems for non-OECD member countries.

If considered jointly, the most common threat reported for OECD and non-OECD member countries, both in terms of protected area and World Heritage values, is tourism. Tourism is recorded as affecting the protected areas values of one-third of all sites (37% OECD and 29% non-OECD sites) and the World Heritage values of about one-sixth of all sites (20% OECD and 17% non-OECD sites). This finding in itself warrants further study as it contradicts the widely held assumption that tourism is generally beneficial to protected areas.

The only other issue that occurs significantly in all four data subsets is the threat posed by development, affecting the protected area values of one-quarter of the sites (27% OECD and 19% non-OECD sites) and the World Heritage values of a little over one-tenth of the sites (15% OECD and 12% non-OECD sites).

These results both concur with and contradict the findings of Machlis and Tichnell (1985) concerning national parks. For example, they found that staffing problems were reported by both developed and developing countries, whereas the present study finds this to be an issue only in non-OECD countries. This perhaps reflects the importance attached to World Heritage sites by protected area management authorities. However, their finding that anthropogenic fires and poaching are amongst the most severe threats to protected areas in developing countries is reflected in the findings concerning World Heritage sites in non-OECD countries.

Unlike the methods applied by Machlis and Tichnell (1985), this exercise relied on a subjective assessment of threats on the basis of information that was gathered without specific reference to management problems. In this respect the results should be regarded as provisional and subject to modification in the light of more detailed local knowledge. Furthermore, the analysis was restricted to the information contained within the directory, and its subsequent 1990/1991 revision. In other words, no reference was made to additional sources or correspondence. Inevitably, some information was

'lost', but a degree of consistency across all sites was ensured. Further revisions can be made on the basis of the IUCN reports – presented annually to the World Heritage Committee – on the conservation status of natural World Heritage properties (see, for example, IUCN, 1991).

Critique

A number of weaknesses in the current study need to be addressed. Firstly, there are conflicting opinions over the nature and degree of threats facing sites. For example, in Shark Bay, Western Australia, environmental organizations have stated that trawling conflicts with conservation aims, an allegation which has been refuted by the fishing industry. This exemplifies the difficulty of assessing threats on the basis of desk studies alone. In cases such as this, only detailed field studies can establish consensus.

Secondly, for earlier inscriptions it is frequently not possible to determine the precise reason why, other than broad compliance with the criteria laid down in the World Heritage Convention, an area was nominated. More recent nominations have tended to be more rigorous and usually have explicit statements of World Heritage values.

Thirdly, the data may be weakened by reporting bias. For instance, a higher rate of management problems and issues may have been recorded for a site subject to close scientific examination and rigorous management, than a less well-known site that may in actual fact be more threatened. The data are compiled on the basis of published literature and updated only by national authorities. It is possible that in some instances management inadequacies are understated.

Conclusions and Recommendations

The present exercise demonstrates that not only do World Heritage sites face a wide range of threats, but that there are notable differences in their severity. These differences can sometimes be linked to location of the site in question (within an OECD or non-OECD country). The same data could also be used to examine other possible correlations. For example, do the degree and severity of threats to World Heritage properties bear any relation to other factors such as legal provisions, protected area budgets or levels of staffing? Per capita GNP, population densities, percentage of population engaged in agriculture, and so on, could provide alternative classifications for subdividing the data.

A similar exercise could also be performed on a selection of protected areas that match the World Heritage properties, at least in terms of size, IUCN

management category and geopolitical distribution. By directly comparing the two data sets it would be possible to examine the contention that inscription on the World Heritage List promotes the conservation of a site. Such an analysis would need to be approached cautiously since the data on the alternative sites would probably not have been so recently or systematically revised. Furthermore, management problems may be more prominently documented for the generally well-known and researched World Heritage sites and this may distort the results of such a comparison.

In order to ensure the reliability and accuracy of the data it is suggested that the reporting of threats becomes a systematic process, involving cooperation between IUCN, UNESCO and WCMC and the signatory nations themselves. This would mean that instances of threats being averted, as well as details of new or existing threats, would be recorded. If a reliable picture of threats to World Heritage sites is built up, effective programmes for rendering assistance can be planned.

References

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IUCN. 1991. Monitoring of the state of conservation of natural World Heritage properties. Report to the World Heritage Committee, Carthage, Tunisia, 9-13 December. Unpublished report.

Definition of Terms Used in Tables Below

Development: construction projects such as dams, mining, industrial facilities, and the disturbance associated with their establishment and operation.

Forestry: all activities that materially affect or degrade forest cover, ranging from harvesting of forest products to complete destruction.

Vegetation destruction: similar to the above definition of forestry but referring to vegetation types other than forest.

Natural threats: undesirable ecological succession, periodic climatic effects, disease, etc.

Table 1 Reported threats to protected area and World Heritage values for natural sites inscribed on the World Heritage List

	OECD 38 sites				non-OECD 59 sites			
	PA		WH		PA		WH	
Development Issues								
development (in)	11	29%	6	16%	11	19%	7	12%
development (out)	7	18%	3	8%	13	22%	10	17%
pollution	5	13%	2	5%	10	17%	8	14%
roads within PA	6	16%	2	5%	5	8%	6	10%
Encroachment								
agriculture (in)	2	5%	1	3%	16	27%	14	24%
agriculture (out)	3	8%	1	3%	11	19%	9	15%
forestry (in)	7	18%	3	8%	11	19%	10	17%
forestry (out)	4	11%	0	0%	3	5%	1	2%
grazing (legal)	4	11%	0	0%	2	3%	1	2%
grazing (illegal)	2	5%	0	0%	18	31%	15	25%
poaching	3	8%	2	5%	33	56%	23	39%
vegetation destruction	4	11%	1	3%	7	12%	3	5%
(over) fishing	2	5%	0	0%	2	3%	0	0%
undefined	0	0%	0	0%	11	19%	9	15%
Management of Natural Resources								
natural threats	8	21%	6	16%	11	19%	8	14%
exotic flora	14	37%	8	21%	5	8%	4	7%
exotic fauna	15	39%	10	26%	4	7%	2	3%
fire: natural	3	8%	1	3%	3	5%	0	0%
fire: anthropogenic	3	8%	0	0%	16	27%	15	25%
soil erosion	4	11%	1	3%	10	17%	8	14%
Management of Human Resources								
tourism	15	39%	8	21%	17	29%	10	17%
inappropriate use	5	13%	1	3%	7	12%	6	10%
negative local attitudes	0	0%	0	0%	6	10%	6	10%
administration	1	3%	1	3%	4	7%	3	5%
staffing	1	3%	1	3%	14	24%	12	20%
equipment/budget	0	0%	0	0%	4	7%	2	3%

Potentially ambiguous terms are defined above.

Table 2 Overall totals

	OECD		NON-OECD	
	PA values	WH values	PA values	WH values
totals	129	58	254	192
threats/site	3.39	1.53	6.68	5.05

Table 3 Protected area values – nature of threats experienced (%)

	OECD	NON-OECD
exotic fauna	39	7
tourism	39	29
exotic flora	37	8
development (in)	29	19
natural threats	21	19
poaching	8	56
grazing: illegal	5	31
fire: anthropogenic	8	27
agriculture (in)	5	27

Table 4 World Heritage values – nature of threats experienced (%)

	OECD	NON-OECD
exotic fauna	26	3
exotic flora	21	7
tourism	21	17
natural threats	16	14
development (in)	16	12
poaching	5	39
grazing: illegal	0	25
fire: anthropogenic	0	25
agriculture (in)	3	24
staffing	3	20

Figure 1 Number of reported threats to protected area World Heritage values, classified by membership and non-membership of OECD

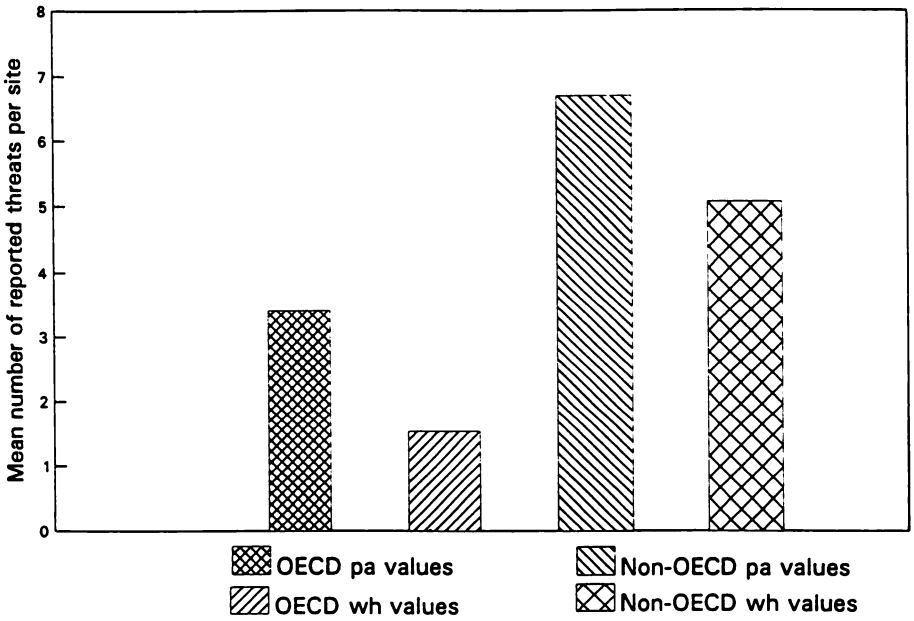


Figure 2 Percentage of sites reporting threats to protected area values

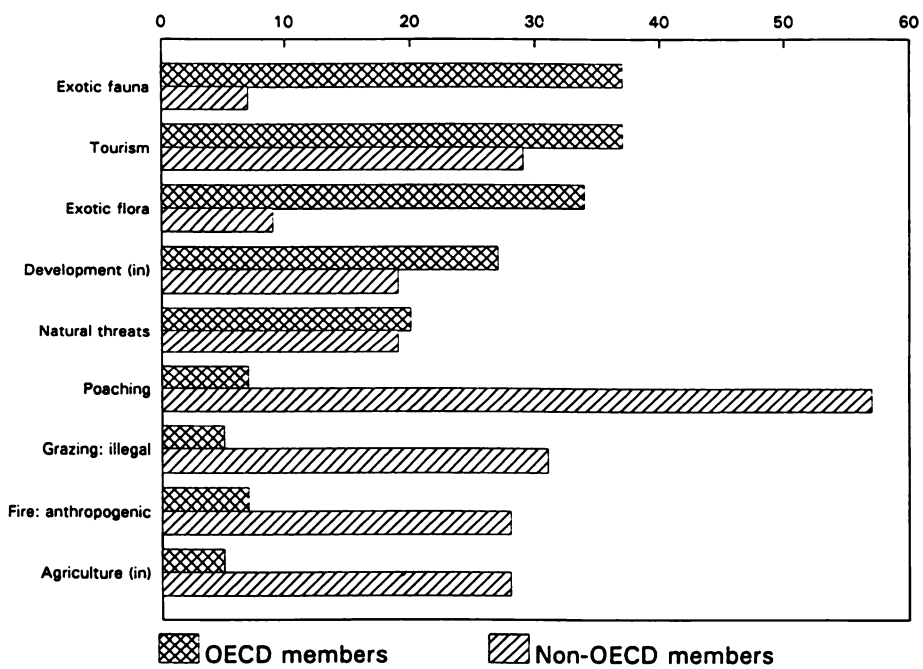
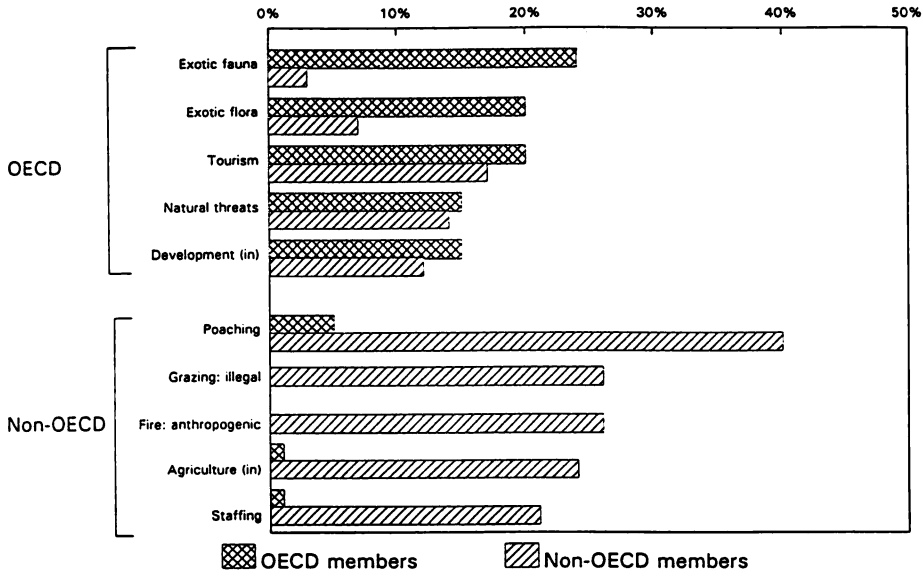


Figure 3 Percentage of sites reporting threats to World Heritage values



THE WORLD HERITAGE CONVENTION AND PROTECTED LANDSCAPES

Michael Beresford
Director, International Centre for Protected Landscapes,
University College of Wales, Science Park,
Aberystwyth, Dyfed SY23 3AH, Wales

and

P.H.C. Lucas
1/268 Main Road, Tawa,
Wellington, New Zealand

Abstract

This paper seeks to clarify how cultural or protected rural landscapes relate to the World Heritage Convention and dicusses ways in which they might be considered for inclusion on the World Heritage List.

Introduction

Category V of IUCN's protected area classification scheme concerns protected landscapes (or seascapes). These aim to maintain nationally significant natural landscapes which demonstrate harmonious interaction of nature and culture, while providing opportunities for public enjoyment through recreation and tourism within the normal life style and economic activity of an area. Such areas also serve scientific and educational purposes.

UNESCO's World Heritage Convention aims to identify and protect cultural and natural properties or sites of outstanding universal value for the benefit of all mankind. In deciding whether or not a site qualifies for designation, the World Heritage Committee is advised by ICOMOS regarding cultural sites and by IUCN regarding natural sites.

For purposes of definition and description, 'cultural heritage' and 'natural heritage' are listed under separate Articles. Over the years this division has assumed a significance which may, or may not, have been in the minds of

those who conceived and drafted the Convention. So although the Convention ostensibly combines cultural and natural heritage, difficulties arise when nominations are received for areas or landscapes which are the product of interaction between human cultures and nature, which is the very heart of IUCN's protected landscape concept.

The interaction of cultural and natural factors in relation to rural landscapes was addressed at the Eighth Session of the World Heritage Committee in 1984, and a task force was assigned to examine how such landscapes might relate to the Convention, particularly in terms of criteria for inscription. The examination was penetrative and comprehensive. Recognizing that the Articles are "not capable of alteration in any respect", the task force concentrated on the Operational Guidelines which it felt could be modified to accommodate natural/cultural landscapes.

The task force recognized that:

- in many countries, there are few natural sites which have not been modified by man, but that nevertheless some are of outstanding universal value;
- provision could be made for landscapes which are outstanding in terms of both natural heritage and cultural heritage;
- the role of the Convention is not to fix landscapes in aspic, but to conserve their harmony and stability within a dynamic, evolving framework;
- assurance of the long-term integrity of a landscape is a necessary precondition of inscription;
- the system for evaluating cultural/natural properties should be improved through closer consultation with and joint evaluation by IUCN and ICOMOS.

But the task force's recommendations were not accepted at the meeting of the Bureau of the World Heritage Committee which followed. Instead, members preferred to leave the matter open and to test the nomination of a rural landscape to enable them "more fully to evaluate the applicability of the guidelines".

Test Case

However, the nomination of a cultural/protected landscape as a test case in 1987 did little to advance discussion. Nominated initially as a mixed site (natural and cultural), the Lake District National Park in the UK – an IUCN Category V protected landscape – was deferred by the World Heri-

tage Committee. Two years later, nominated this time as a cultural site, it was deferred for a second time, and suffered the same fate yet again in 1990 when the Committee felt "that it did not have sufficiently clear criteria to rule on this type of site".

IUCN's position was clearly established by Resolution 17.43 of the 17th Session of the General Assembly in February 1988, when it recognized "the great value of the management category of Protected Landscapes" and urged national and international action to promote the concept. The Resolution recommends that, within the limit set by the resources available, the Director-General of IUCN should "work with UNESCO and ICOMOS to develop criteria for the consideration of sites with mixed cultural and natural values for the World Heritage List". But owing to finite resources and a heavy work programme, IUCN has been unable to communicate the full clarity of this Resolution to the World Heritage Committee.

ICOMOS' position is reflected in its consistent response to the Lake District nomination. In 1987 it favoured inscription, and continued to do so in 1989 when the park was nominated as a cultural site. In addition, in 1990, the Historic Gardens and Landscape Committee of ICOMOS (UK) established a Landscape Working Group to promote discussion on "the interface between cultural and natural values in the landscape". It is interesting to note that in writing to the Bureau of the World Heritage Committee, the group pointed to "the inappropriateness of using concepts and terminology derived from nature conservation in defining cultural landscapes".

UNESCO's position is largely determined by the guidance received from its two principal advisors. On occasion, the World Heritage Committee and the Bureau have been faced with conflicting advice and been unable to reach clear decisions. In June 1991, therefore, the Committee's Secretariat proposed a series of changes to the Operational Guidelines, based on the proposals of the 1985 task force, but contained wholly within the Cultural Heritage List. But at a meeting in December 1991, the World Heritage Committee felt unable to accept the modified criteria.

Clearly, the deferments of the Lake District National Park and the uncertainty of the World Heritage Committee have done nothing to enhance the value of the Convention.

Discussion Points

- The World Heritage Convention is arguably the most successful international conservation treaty, conferring international recognition and

often producing a shift in national perceptions, thereby improving protection of designated sites.

- The protected landscape concept is clearly based on the interaction of human cultures and natural heritage. The Articles of the World Heritage Convention equally clearly divide these same two values. As a basis for comprehensive evaluation and assessment of protected landscapes, the Convention is thus fundamentally flawed.
- It would be possible, however, to modify the Operational Guidelines relating to the cultural criteria of the Convention to allow, to some extent, assessment of protected landscapes for inscription on the World Heritage List. The World Heritage Committee should look to ICOMOS for leading advice.
- In relation to protected landscapes, the credibility of such assessments will be based on the ability of ICOMOS and IUCN to devise a joint evaluation mechanism which will go some way to recognizing the associations of cultural and natural elements, and the balance between humankind and nature that has been achieved in some areas.

It is also worth noting that:

- Sites where nature and culture interact are universal. The current Operational Guidelines for cultural sites are viewed as 'Eurocentric' by some States and therefore as lacking in relevance to the living cultures of many developing countries, particularly those based on living in harmony with nature.

Furthermore:

- The World Heritage Convention is due to be reviewed at the end of 1992. By accepting the proposals outlined below, the World Heritage Committee could advance current understanding and embrace a new conservation/development dynamic, promoting at the highest level the concept of conservation through sustainable development.

Proposals

It is suggested that IUCN should adopt the following five-point action programme.

1. Reaffirm its position in relation to Resolution 17.43 and issue a clear statement of intent to UNESCO and ICOMOS, supporting the development of criteria to accommodate sites of mixed cultural and natural values on the World Heritage List.

2. Support the position that Category V protected areas should be considered under Article 1 of the Convention (relating to cultural heritage) and that accordingly ICOMOS will take the leading advisory role. However, through its CNPPA it should also assert its belief that it has a vital advisory role to perform in assessing the value of landscapes which are the product of interaction between humans and nature.

3. Accept IN PRINCIPLE the modification of the Operational Guidelines concerning cultural sites prepared by the UNESCO Secretariat for the World Heritage Committee meeting in December 1991; namely, each property nominated should:

> be an example of exceptional associations of cultural and natural elements such as a cultural landscape which is testimony to an outstandingly harmonious balance between nature and human beings over a long period of time and therefore of outstanding universal value from the historical, aesthetic, ethnological or anthropological points of view and as such rare, and vulnerable to irreversible change;
>
> in the case of a cultural landscape, have the potential to maintain its integrity in the future; or, in other words, to preserve adequate representative examples of the landforms, land uses and patterns of traditional life style which are integral to the maintenance of its significant values in a dynamic, evolving context.

With respect to cultural landscapes, the Committee has adopted the following guidelines concerning their inclusion on the World Heritage List:

- the landscape nominated must include adequate examples of landforms and land uses associated with traditional life styles;
- the existing balance of a landscape may only be modified if continuation of this special relationship can be assured and will exclude industrialization, modern mass transport installations and other major alterations to the appearance and function of the area;
- legislative protection must exist as well as practicable mechanisms for bringing the relevant institutions and individuals together to ensure the preservation of the landscape's outstanding harmonious balance between nature and human beings;
- the landscape nominated should be of sufficient size to ensure that these protective measures will be effective.

4. Arrange, through CNPPA, an early meeting with ICOMOS with a view to establishing a joint working group to agree on a joint statement of support based on the above modification of the Operational Guidelines and

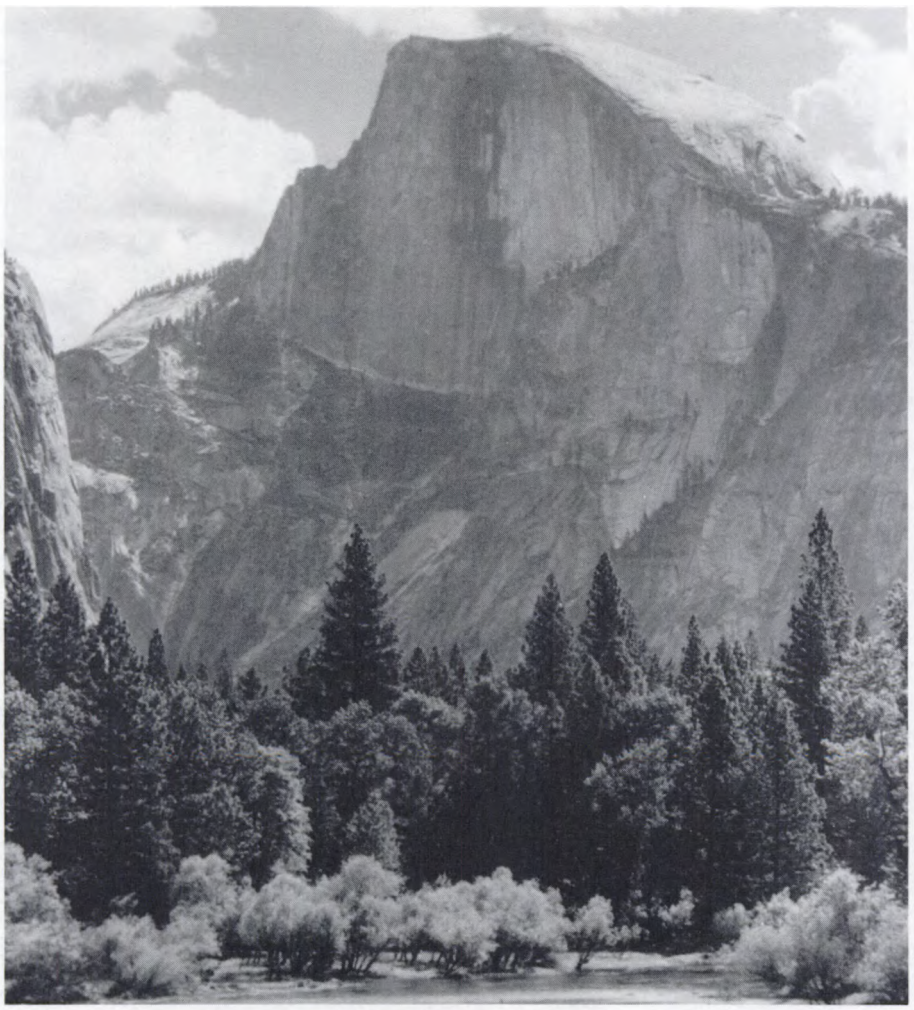
aim to take this agreement to the review meeting in Santa Fe at the end of 1992.

5. Establish an evaluation mechanism through the joint working group and in close consultation with the UNESCO Secretariat and ICOMOS, which will reflect the interrelationship between cultural and natural values and which can be used when assessing protected landscape nominations for inscription on the World Heritage List.

In establishing an evaluation mechanism, IUCN members of the working group will be particularly mindful of:

- the value of managed landscapes in conserving nature and biological diversity;
- the conservation of human history through land use practices;
- the maintenance of traditional lifestyles;
- the durability of systems in terms of maintaining the balance between humans and nature, and
- the degree and type of legislative protection existing already.

2. NORTH AMERICA



Half Dome, Yosemite National Park, USA

WOOD BUFFALO WORLD HERITAGE SITE: THREATS AND POSSIBLE SOLUTIONS

Kevin McNamee
Canadian Nature Federation, 453 Sussex Drive,
Ottawa, Ontario K1N 6Z4, Canada

Abstract

Designated a World Heritage site in 1983, Wood Buffalo National Park is Canada's largest national park. However, logging, pulp mills, hydroelectric dams, plans to eliminate the park's diseased bison, and lack of research, combine to make it one of Canada's most threatened protected areas. Conservation groups have therefore requested that it be placed on the World Heritage Sites in Danger List. The threats to the park underscore the need for regional planning and enhanced science in order to manage it on an ecosystem basis. The creation of the Northern Buffalo Management Board offers an excellent opportunity to respond to this need.

Introduction

Open up a map of Canada and you can spot Wood Buffalo National Park immediately. Straddling the border between the province of Alberta and the Northwest Territories, the park covers 44,670 sq km, an area seven times larger than Banff (Canada's first national park), and also larger than Switzerland (Figure 1). Established in 1922 to protect the region's remaining bison, the park still receives only 6000 visitors a year (compared with Banff's 4 million), a testimony to its remoteness.

The world's second largest national park, Wood Buffalo was declared a World Heritage site in 1983. But despite its status and size, it is also one of Canada's most threatened protected areas. The construction of pulp mills on several rivers flowing into the park, commercial logging both inside and adjacent to it, plans to eliminate the park's bison herd, and several existing and proposed hydroelectric dams located upstream, could contribute to the degradation of this massive wilderness, or in some cases are already doing so. The park is proof that even the largest protected areas must be managed on an ecosystem basis. Future land use planning of adjacent areas must take

into account park values and natural resources and maintenance of vital ecological processes.

This paper examines the threats to Wood Buffalo National Park and some of the methods currently being used to resolve them. It also considers the potential for managing the park on an ecosystem basis through the Northern Buffalo Management Board, a newly created stakeholders group. Finally, it offers suggestions on how Canada can protect the park's World Heritage site values more effectively.

The Wood Buffalo National Park Ecosystem

Wood Buffalo's features include:

- intact tracts of the northern boreal forest ecosystem in a wilderness state;
- 80% of one of the world's largest freshwater deltas due to confluence of the Peace and Athabasca Rivers – a Ramsar site the delta contains 4,800 sq km of shallow lakes, marshes, grasslands and sedge meadows and provides nesting, staging and breeding areas for waterfowl (over 400,000 waterfowl use the delta during spring migration), as well as habitat for species from all four major North American continental flyways;
- approximately 250 sq km of salt plains that support salt-tolerant plant species (more commonly found in maritime environments), as well as grasslands and saline marshes that provide habitat for bison, waterfowl and shorebirds;
- the largest undisturbed grass and sedge meadows remaining in North America, providing prime bison habitat;
- the largest free-roaming and self-regulating herd of bison in the world and the largest density of wolves in North America; the prey-predator relationship that exists between the two species is both ecologically and behaviourally unique;
- the last natural nesting grounds of the endangered whooping crane; and the only breeding population of endangered peregrine falcons in southern Canada.

The park also plays an important role in supporting nine native communities located around the park's boundary. The Dene and Cree peoples use of wildlife resources in the area predates the establishment of the park. However, for many of its early years, the Federal government managed the park in what it considered to be the best interests of native people, but with

no consultation, and arbitrary enforcement of hunting and trapping regulations.

A 1986 land claim agreement guarantees the Cree Band of Fort Chipewyan the right to hunt, fish and trap on around 1.25 million ha of traditional lands in Wood Buffalo National Park. The Dene/Metis people are negotiating for similar rights to use lands in the northern part of the park. The 1986 Cree agreement recognizes the unique relationship of the Cree people to the land, including their dependence on use of it, and their strong commitment to its protection.

The Degradation of a World Heritage Site

For years Canadians believed Wood Buffalo National Park to be secure because of its isolation. However, in the 1980s, several issues focused public and political attention on the park's well-being. In fact, the threats confronting the park had become so severe that in November 1990 the Canadian Nature Federation and the Alberta Wilderness Association requested the World Heritage Committee to put the park on its World Heritage Sites in Danger List (Canadian Nature Federation, 1990).

In November 1991, IUCN concluded that the World Heritage site values of the park had become seriously degraded. It stated that the park's large size is "no longer an adequate basis to ensure its long-term integrity", and that it is "a test case for conservation of large remote reserves" (IUCN, 1991). This degradation is best exemplified by the fact that native elders and pregnant women were advised not to eat fish caught in Lake Athabasca more than once a week.

Responsibility for Management

Responsibility for preservation of the greater Wood Buffalo National Park ecosystem rests with the Federal government, two provincial governments and one territorial government. Within each of these, a myriad of agencies exercises control over parts of the broader park ecosystem. Some of the programmes and projects proposed and/or administered by these agencies conflict with one another. Thus in recent years, the expansion of logging and pulp mill construction, and the implementation of agriculture and wildlife management programmes, has resulted in a clash of environmental, economic and cultural values. Part of the problem is due to the fact that different agencies are trying to manage lands within and outside the park for a variety of objectives. Some examples are presented below.

- In 1967 the British Columbia government constructed the Bennett Dam upstream from the park, on the Peace River (Figure 2). The dam now holds back the regular spring flood waters, thereby preventing and/or reducing the annual flooding of the Peace-Athabasca Delta. This periodic spring flooding formerly ensured that shrubs such as willows did not replace the more nutritious sedge variety of plants. A recent study confirmed that 20% of the delta's most productive wetlands have disappeared, and speculates that the delta could dry up in the next 50 years (Jacques, 1990).

- The Alberta government has approved a number of forest management agreements, including one for lands adjacent to Wood Buffalo National Park. Wood Buffalo is the only national park in Canada in which commercial logging is permitted. Its old growth white spruce forests contain some of Alberta's largest and oldest trees. Yet clearcutting is carried out within the park. Canadian Forest Products Ltd has removed 60% of the timber from a 500 sq km timber lease area and up until 1991 did not leave natural tree regeneration centres, thereby failing to comply with the relevant agreement (and which the Canadian Parks Service (CPS) did not enforce). The lease does not expire until 2002. Meanwhile, Alberta-Pacific Forest Industries, whose lease abuts the southern boundary of the park, has secured the right to harvest timber within a 61,000 sq km area (roughly equivalent to 9% of the entire province). There is concern that logging operations will increase siltation of the Peace and Athabasca Rivers and that clearcutting, use of pesticides, drainage of wetlands and introduction of exotic species, will result in the loss of wildlife habitat.

- The Alberta government is also in the process of approving the construction and expansion of almost a dozen pulp mills on the Peace and Athabasca Rivers, upstream from the park (Figure 2). The Federal government is concerned about the potential negative impacts that these developments could have on the water quality of the delta. Toxic pulp mill effluent could become concentrated in the shallow waters of the delta and work its way into the food chain, affecting aquatic mammals and waterfowl. Given the lack of baseline data, the government concluded that "the short-term, long-term and cumulative impacts of these compounds in the delta ecosystem cannot be adequately evaluated" (Government of Canada, 1989).

- A federal environmental assessment panel recommended that the existing bison population in the park be eliminated because the herd has bovine brucellosis and tuberculosis. The panel concluded that eradication is the only method of eliminating the possibility of transmitting the dis-

ease to domestic cattle south of the park and to a disease-free wood bison herd located to the north, in the Mackenzie Bison Sanctuary. The panel recommended that all bison in and around the park be removed and replaced by disease-free bison. The Alberta government complicated the situation, however, by expanding agricultural development into an area where diseased bison are known to exist. Moreover, CPS contends that the wood bison recovery programme in the Mackenzie Bison Sanctuary was developed without its participation. However, the recovery programme has been a success and the wood bison has been removed from the endangered species list. The success of the programme is now being used to promote removal of the diseased park bison because the fear remains that disease will spread to the sanctuary herd.

Fighting, Negotiating and Assessing

There have been several uncoordinated efforts to deal with the threats to Wood Buffalo National Park. But few, if any, appear to offer the promise of long-term protection for the park's ecosystem.

Several environmental groups have turned to the courts in an attempt to stop the forestry operations. Two groups failed to persuade the courts to cancel the Alberta government's forest management agreement with the Diashowa forest company while the Friends of the Peace are seeking a court ruling that would compel the Federal government to carry out an environmental assessment of a Diashowa pulp mill. The Canadian Parks and Wilderness Society, and the Sierra Legal Defence Fund, have initiated legal action to stop logging in the park on the grounds that it violates the National Parks Act which requires that national parks be maintained "unimpaired" for the benefit of present and future generations. It is contended that the Alberta government acted illegally in approving park logging contracts in 1956 and 1983 (Canadian Parks and Wilderness Society, 1992).

CPS has tried to negotiate an end to logging in the park, but the Alberta government and the logging company cannot agree on a financial compensation package. CPS has also held discussions with BC Hydro concerning regulation of water flow through the Bennett Dam. No agreement has been achieved to date; in fact, there are plans for a second dam on the Peace River. A proposal for a dam on the Slave River on the eastern boundary of the park has not been totally rejected by the Alberta government either.

Several environmental assessment panels have examined various projects that will affect the park. However, the province ignored the recommendations of a joint federal-provincial panel on the Alberta Pacific pulp mill and approved construction without conducting further studies. Similarly, cu-

mulative environmental assessment of the impact of almost a dozen pulp mills and large-scale timber operations (both proposed and already existing) on the Peace-Athabasca Delta has not been undertaken. However, the governments of Canada, Alberta and the Northwest Territories are cooperating on a three-year, C$12 million river basin assessment study.

The 1990 report of a federal environmental assessment panel on the diseased bison issue failed to look at the range of environmental threats to the park and the impact these would have on the present bison herd or a reintroduced herd of disease-free bison (Government of Canada, 1990). Moreover, the panel recommended only a general course of action and could not complete an assessment of the potential impacts of removing bison from the park ecosystem.

Of particular concern is the fact that little or no account has been taken of park values when decisions concerning allocation of land to development within the Wood Buffalo ecosystem have been made. Canada's international commitments under the World Heritage Convention have been equally ignored. Each agency operating in the area defends its own interest, be it agriculture, wildlife management, disease eradication, forest management or park management. This has meant that attempts to resolve issues have tended to be conflict driven. In short, there is no overall commitment to regional land use planning to ensure that the ecological processes that sustain the park, native communities or wildlife, are maintained. Any attempt to resolve issues has been mainly conflict driven.

The future of this World Heritage site now appears to rest with a newly created board representing a diversity of government and non-government parties concerned about the park bison.

Northern Buffalo Management Board

In 1991 the Canadian Government established the Northern Buffalo Management Board. The 17-member board is comprised mainly of native representatives of different communities, but also includes representatives of three different federal agencies, the governments of Alberta and the Northwest Territories, and three non-government representatives from the cattle sector and the Canadian Nature Federation. The Federal government has identified the diseased bison issue as the top management issue for the park and its environs. The board's principal task, therefore, is to develop a management programme to resolve it. The board's terms of reference offer the best opportunity for dealing with threats to the park ecosystem and the future of the bison and its habitat (both within and outside the park).

The management programme will seek to:

- prevent the spread of bovine tuberculosis and brucellosis to the Mackenzie Bison Sanctuary herd and cattle by implementing risk reduction measures, pending final eradication of the diseases;
- maintain healthy herds of free-roaming buffalo of the present genetic diversity as a major component of the regional ecosystem;
- increase the ecological understanding of the impacts and interactions of, for example, human use and prey-predator relationships, and
- identify and make recommendations related to constraints which may affect the management strategy.

In developing a management programme, the board is to ensure "that the ecological integrity of Wood Buffalo National Park is maintained and that national park values are respected."

All board members share the aim of retaining healthy herds of bison within the greater Wood Buffalo National Park ecosystem. But what is less clear, is how this can be done. For environmental groups, the question the board must answer is, "what are the full range of threats to both the bison and its habitat?". It will be difficult to ensure healthy herds of bison when the animal's prime habitat is drying up and toxins bioaccumulating in the delta (Figure 3).

Broadening the focus of the board beyond the issue of disease may prove to be difficult. The federal cabinet created the board, and provided C$30 million for a ten-year programme. Its instruction to federal civil servants working on the board is clear: any management programme must, first and foremost, eliminate the disease within the ten-year time frame.

Ecosystem Management in Wood Buffalo

IUCN concluded that management of Wood Buffalo National Park requires an ecosystem approach; this is essential, particularly since the National Parks Act directs the federal parks minister to make maintenance of ecological integrity via the protection of natural resources a first priority for all national parks.

Agee and Johnson (1988) defined four consecutive steps for carrying out ecosystem management: adopt goals for specific components of the ecosystem; define ecological boundaries for those components; adopt management strategies, and then monitor such strategies and adjust where necessary. Again, implementing such a programme rests on acquisition of sufficient knowledge

of the ecosystem. Unfortunately, CPS has not developed a comprehensive database that can be continually updated and used to monitor the status of the park's ecosystem. Canada is therefore not complying with the World Heritage Convention which calls for research to counteract the dangers that threaten World Heritage properties (Article 5(c)).

In Wood Buffalo and most other national parks, it is necessary to develop a common understanding of the relevant ecological and social values. In addition, a shared vision of the future of the greater park ecosystem should be developed by those operating and living within it (Zinkan, 1991). In order to generate this shared vision, a forum where the future of the ecosystem can be debated, together with sufficient knowledge of the ecosystem, will be crucial.

The Northern Buffalo Management Board could provide such a forum, and its terms of reference clearly permit it to adopt an ecosystem approach. It could examine the range of issues that threaten the integrity of bison habitat; conduct research; define the ecological boundaries of the bison, its habitat and the delta; identify threats to bison habitat such as the drying up and pollution of the Peace-Athabasca Delta, and recommend a management strategy and actions. The board could also negotiate for a management regime that required that control be shared among the various stakeholders so that common objectives for the greater Wood Buffalo ecosystem could be achieved.

The Canadian Nature Federation has also made several suggestions:

- a common vision and set of values that emphasize maintenance of natural and cultural resources and the ecological processes that sustain them, and that are shared by all who operate within the greater Wood Buffalo National Park ecosystem, should be developed;
- understanding of the interaction among and interdependency of the various components of the ecosystem, and the impact of humans on those components, should be increased using both indigenous knowledge and scientific knowledge;
- scientific and traditional research should be expanded and consolidated in order to create an information base which could be used to generate an ecosystem profile for the greater Wood Buffalo National Park area;
- the Federal government should provide CPS with the mandate and resources to participate in all planning forums, environmental assessment panels and land use programmes which seek to identify lands outside the park, the integrity of which is crucial to the park's survival and the preservation of biodiversity.

Wood Buffalo National Park has undertaken or is planning various activities in support of ecosystem management. For example, a technical workshop to discuss issues and possible actions related to the Peace River and the Bennett Dam was convened, and it is intended to hold an ecosystem management conference on Wood Buffalo National Park. Additionally, the park's management plan is being revised. Organizations such as the Canadian Nature Federation will insist that it demonstrates adequately how the park will implement an ecosystem management programme. The plan will be tabled in the House of Commons and may be reviewed by the Parliamentary Standing Committee on Environment.

Preserving World Heritage Site Values

In managing Wood Buffalo National Park, Canada has a mandate to maintain not only protected areas, but also World Heritage values. However, few, if any, federal, provincial or non-government institutions have acknowledged or acted on the international obligations imposed by the World Heritage Convention.

For example, the author's attempt to include the preservation of World Heritage site values as an explicit principle in the terms of reference for the Northern Buffalo Management Board, was rejected by native leaders and the Federal government. Native leaders were unaware that the park had been declared a World Heritage site and wary of the legal and policy constraints implied by such a listing. Similarly, the Minister of Environment was not told of Canada's attempts to have Wood Buffalo National Park designated a World Heritage site when he authorized the continuation of commercial logging in the park in 1983.

On a more general level, neither the existing or proposed federal national parks policy compels national park managers to specifically address the preservation of World Heritage site values. Small wonder then, that in the absence of direct federal leadership in acknowledging, promoting and preserving World Heritage site values, other governments, corporations and local communities, remain ignorant of Canada's obligations to preserve such areas.

To ensure the perpetuation of World Heritage site values in Wood Buffalo National Park and other Canadian national and provincial parks, the following are suggested:

- The World Heritage Committee and IUCN should request contracting State Parties to formulate action plans at national policy and park specific levels defining what action will be taken to ensure the preservation of World Heritage site values.

- The Federal government, in cooperation with its various protected area partners, should submit a biennial report on the status of World Heritage sites to Parliament and WCMC. NGOs should play a stronger role in monitoring such sites, promoting specific actions to protect them, and reporting threats to national and international authorities.

- The Federal government should pay more attention to communicating the value of World Heritage sites to the various governments and communities in and around the greater Wood Buffalo ecosystem, and should improve its understanding of its commitments under the World Heritage Convention and adhere to them more conscientously.

- The Federal government should consult with other governments, local communities and NGOs when planning to nominate areas for World Heritage site status. This would help secure informed support for their future management. The World Heritage Committee should demand proof that such consultations were held prior to designation of nominated sites.

Statements of concern from the World Heritage Committee or IUCN regarding threatened World Heritage sites can energize national governments and others to take action. They also promote broader public awareness of both the Convention and World Heritage properties. For example, the Canadian Nature Federation released details of IUCN's November 1991 monitoring report on World Heritage sites and Wood Buffalo to the media. IUCN's conclusion that Wood Buffalo had suffered serious degradation of its international conservation values, generated considerable interest.

Conclusion

Wood Buffalo National Park demonstrates that if the world's diversity of species and ecosystems is to survive, we cannot establish a park and ignore how the land surrounding it is exploited. This case study shows that World Heritage designation could be an effective tool for promoting public awareness of threats to natural heritage and for stimulating political action to remove them.

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Figure 1 Area of interest

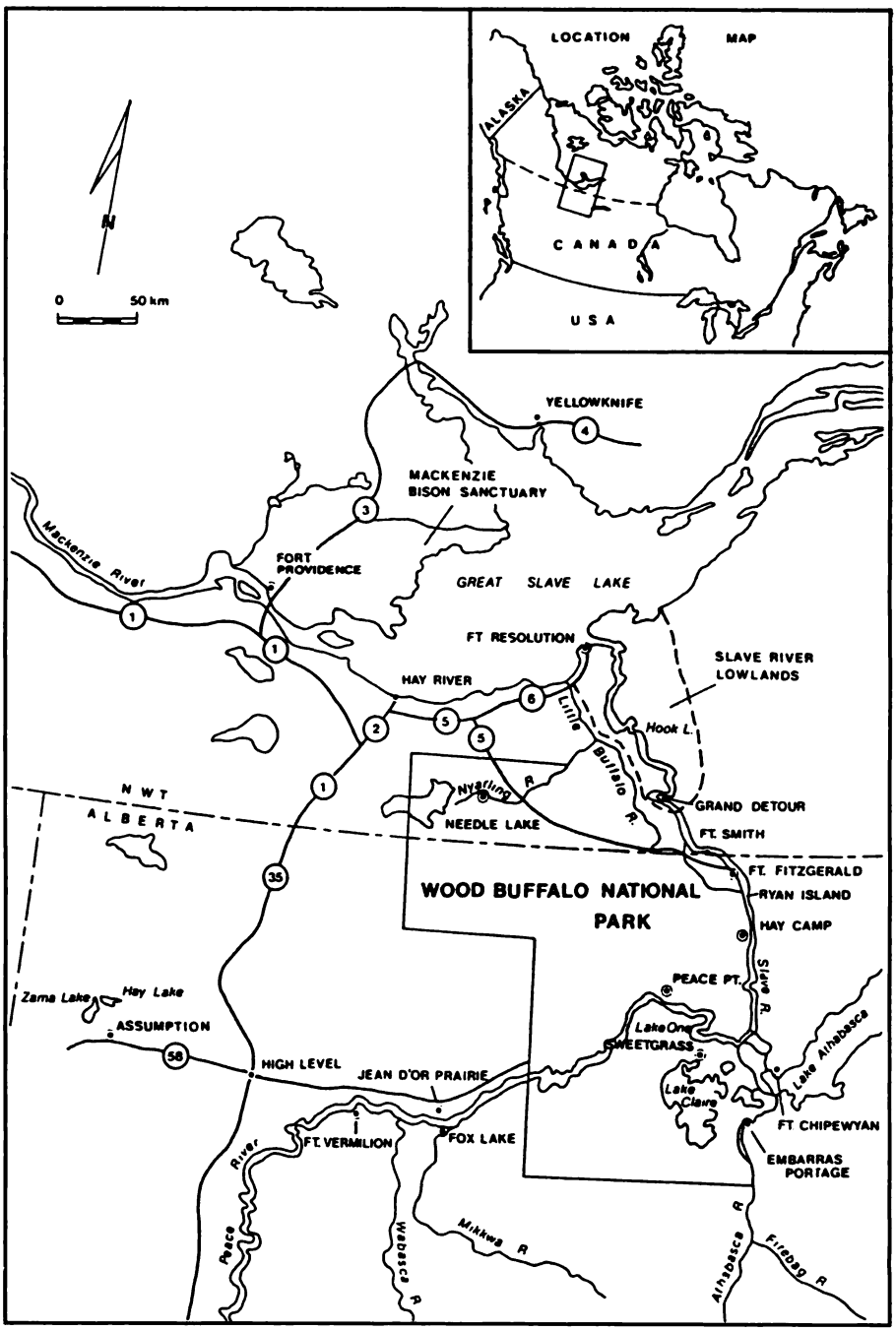

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Figure 2 Wood Buffalo region industrial development

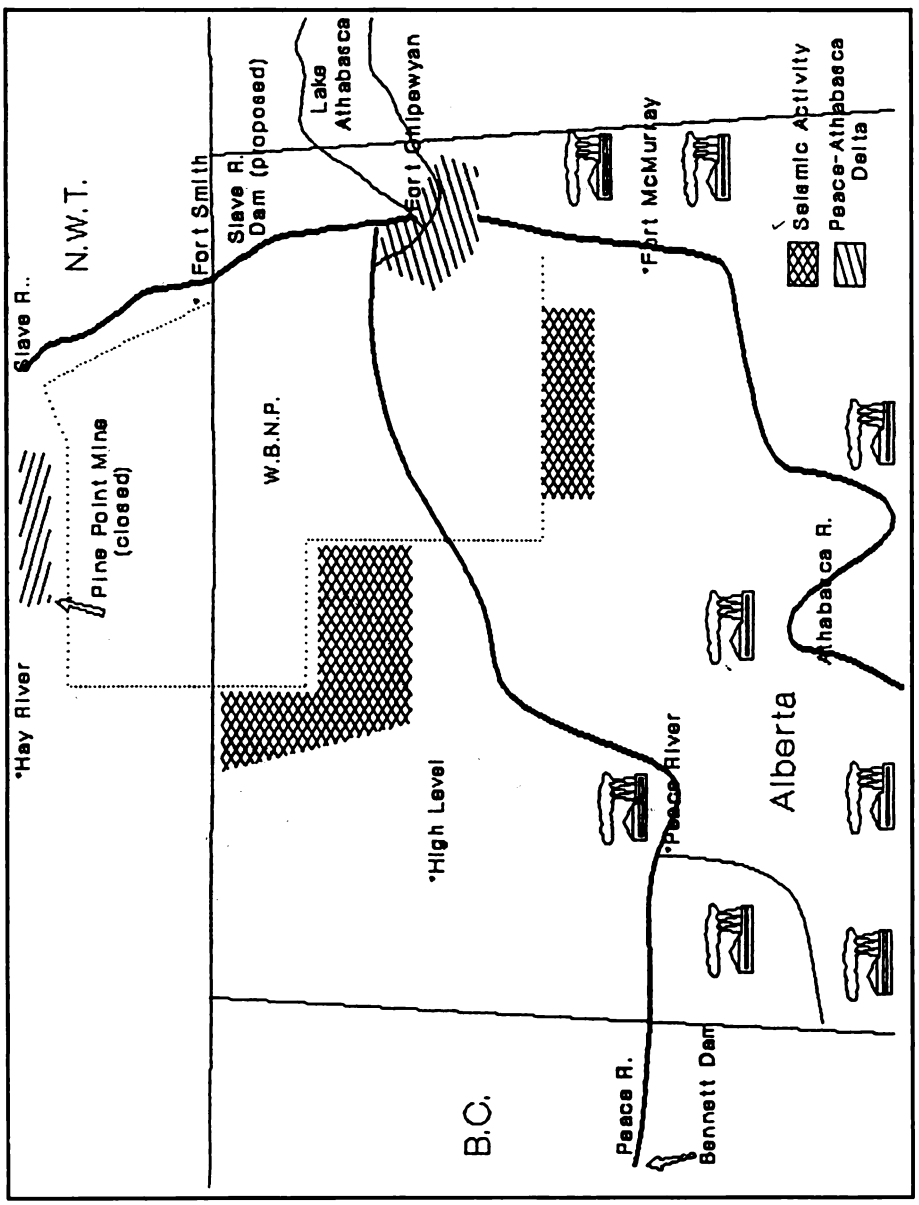
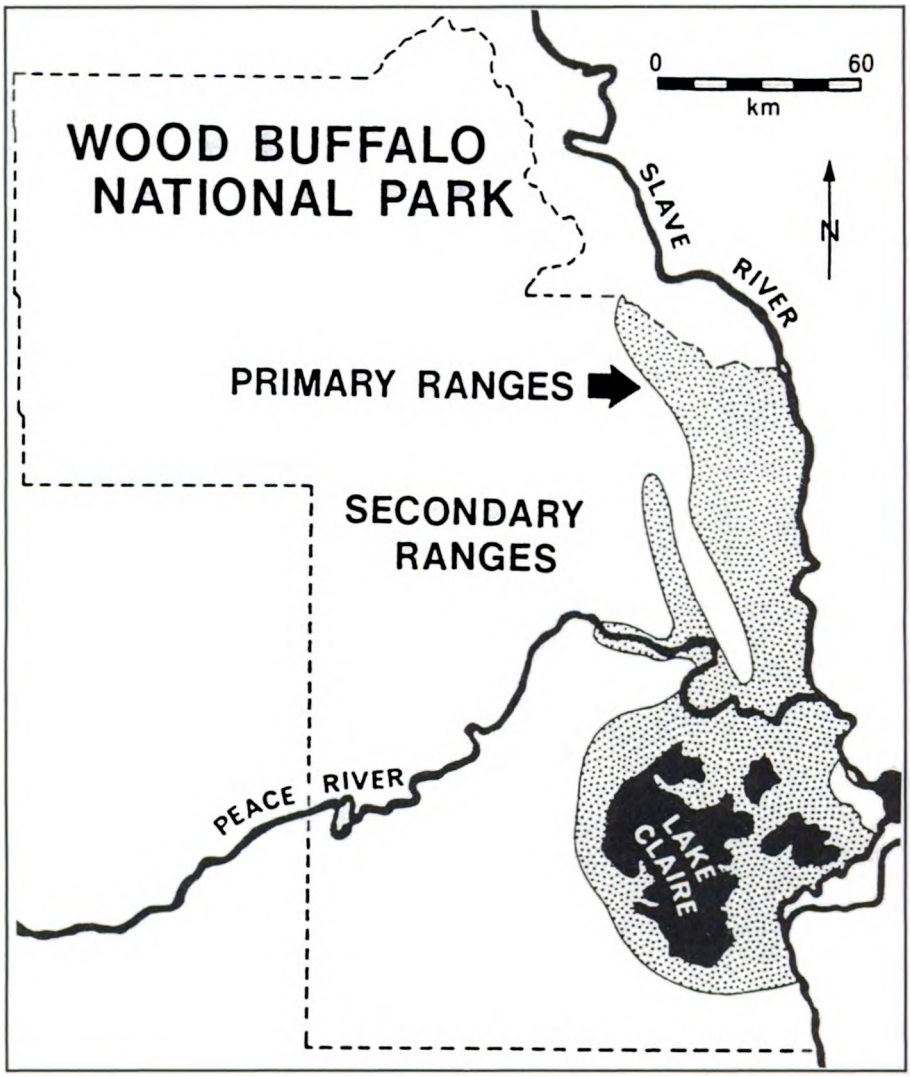


Figure 3 Current distribution of primary and secondary bison ranges in Wood Buffalo National Park



KLUANE AND WRANGELL-ST ELIAS NATIONAL PARKS: JOINT MANAGEMENT OF NORTH AMERICA'S LARGEST WILDERNESS

Michael Fay
Director of Planning and Development,
Canadian Parks Service, 415-457 Main Street,
Winnipeg, Manitoba R3B 3E8, Canada

Abstract

The 1979 nomination of Kluane National Park in Canada and Wrangell-St Elias National Park in the United States (covering a total of 75,400 sq km) was the first joint nomination of a World Heritage site. Since then, staff at both parks have worked together on resource conservation, interpretation and visitor service areas.

Cooperation has increased recently to deal with issues relating to the management of the greater regional ecosystem. These issues include proposed mining developments that threaten water quality and wilderness tourism, and management of visitor use of an international river system. There is considerable potential for yet further cooperative management in the region.

World Heritage designation could also lead to regional land use coordination along the lines of the Biosphere Reserve Programme and encourage federal, territorial, provincial and native organizations to work together. However, the jurisdictional complexity of the region will make this a challenging task.

Background

Kluane National Park Reserve, formerly part of the Kluane Game Sanctuary, was proclaimed a national park in 1976. The 'park reserve' designation is a mechanism used under Canada's National Parks Act for administering parks where native land claims remain unsettled. It recognizes that native peoples may claim lands or specific rights to use them. The Act also recognizes the rights of native people to carry out traditional harvesting activities in park reserves and, upon settlement of a claim, even within fully established national parks.

The Kluane/Wrangell-St Elias ecosystem is dominated by the St Elias Mountains and Icefield Ranges. The latter comprise the largest non-polar icefields in the world and include Canada's highest mountains (Mt Logan at 5,950m and Mt St Elias at 5,488m). The parks are also known for their abundant populations of, among others, Dall's sheep, moose, black bear, grizzly bear, mountain goat and wolf. The parks' 'human' heritage features indigenous resource use dating back for more than 10,000 years, exploration by Europeans, the Klondike gold rush, construction of the Alaska Highway, and mountaineering and research in the Icefields.

The region surrounding the parks has remained sparsely populated, but tourist traffic has grown steadily and is now a mainstay of the regional economy. Because of the rugged nature of the terrain, access to the parks is difficult; within the parks, facilities are minimal. Most visitors are passing through the region on their way to other destinations in Alaska and the Yukon and see little of the parks' truly awesome landscapes. Visitors that do penetrate the park wilderness areas are primarily mountain climbers or wilderness backpackers. Other visitors include aircraft sightseers and those enjoying a rafting experience on the Alsek and Tatshenshini Rivers.

The basis for formal cooperation between the United States and Canadian parks services in this area dates back to 1979 when Kluane and Wrangell-St Elias were jointly nominated for inscription on the World Heritage List, the first joint nomination ever made (*Parks Canada*, 1979). Since use of the parks was limited, and major land use issues concerning land under the jurisdiction of the park services hardly ever arose, management of the parks during the last two decades was relatively straightforward. Both administrations concentrated on increasing local understanding of park objectives, familiarizing passing visitors with the existence of the parks and on developing a working relationship with local native people who have harvesting rights in the parks. Only recently have major land use issues surfaced and provided a stimulus for increasing the level of cooperation and devising joint management initiatives.

Joint Management

Sharing a common boundary and ecosystem has brought Kluane and Wrangell-St Elias park managers into direct contact with each other; it is likely that this contact would have occurred even if World Heritage status had not been conferred. Thus as early as 1977, the author and other Canadian Parks Service (CPS) representatives met United States National Parks Service (USNPS) staff in Anchorage and Glacier Bay to share ideas and seek input for the first Kluane Park Management Plan (Canadian Parks

Service, 1980). Relations between park superintendents and staff have further evolved since the establishment of a USNPS presence at Glen Allen.

Today there is regular direct contact between the two agencies concerning a wide variety of management issues. For example, there has been cooperation – in the form of joint boundary camps and joint monitoring of aircraft activities – over law enforcement aimed at controlling poaching. While joint research activities have not been frequent, information has been exchanged, for example on the woodland caribou, whose range crosses the international boundary. Additionally, the proposed wolf control programmes of the State of Alaska and the Government of Yukon, for lands adjacent to both national parks, are providing further impetus for consultation and sharing of information between park staffs.

Joint training programmes have also been initiated by USNPS and CPS staff to build expertise in search and rescue techniques and mountain climbing. Registration of mountain climbers who tackle the Wrangell-St Elias range has been coordinated and staff from the USNPS regional office in Anchorage and Wrangell-St Elias have visited the Kluane Visitor Centre at Haines Junction to view visitor flow, interpretive themes and storylines, and to share marketing information so that visitor programmes and information services can be coordinated.

Both park administrations frequently invite the park superintendents of the other park to operational reviews and superintendents' conferences. Such contact is extremely valuable for discussing views, exchanging ideas and developing compatible positions. For example, USNPS managers are carefully monitoring the pilot motorized boating proposal for the Alsek River in Canada, as put forward in the 1990 Kluane Management Plan (Canadian Parks Service, 1990), so that they can decide if the proposal would be appropriate for areas under their own management.

Indirect Cooperation

Cooperation which has already taken place between the staff of the parks services has stimulated cooperation with other partners with similar objectives. Management of the Alsek and Tatshenshini river system is a good example of this.

The system crosses a number of jurisdictions on its journey to the Gulf of Alaska. In the 1980s, the popularity of commercial and private river rafting grew steadily, resulting in the need for a river management plan for the US section and a quota for the number of trips permitted. Glacier Bay National Park and Preserve took the lead, various jurisdictions were con-

sulted and an arrangement formalized (Glacier Bay National Park and Preserve, 1988). Moreover, Alsek River in Kluane National Park Reserve is a designated Canadian Heritage River under the Canadian Heritage Rivers System. So a good basis will exist for developing an international rivers plan on a cooperative basis, when British Columbia joins the Canadian Heritage Rivers Programme and begins more active river management planning.

A second example of cooperation concerns the proposed Windy Craggy open pit copper mine located between the Alsek and Tatshenshini Rivers in northwestern British Columbia. Both park agencies are opposed to the proposal because of fears that water quality and wilderness tourism will suffer. However, it is Glacier Bay National Park which would be most affected. Its administration is therefore actively seeking extension of the Kluane/Wrangell-St Elias World Heritage designation to cover Glacier Bay. This would raise the international profile and significance of the Glacier Bay ecosystem and create another focal point for cooperation.

The formation of the Northwestern Park Agencies group is yet another spin-off of the international cooperation centred on Kluane and Wrangell-St Elias. Composed of national, state and provincial park directors and superintendents from Alaska and the Yukon, the group meets annually to discuss items of mutual interest. At its 1990 meeting, the group endorsed an ecosystem management philosophy and agreed to pursue cooperative initiatives, particularly in relation to Kluane and Wrangell-St Elias. Success at this level will hopefully lead to further cooperation and, ultimately, more effective protected area management.

The Potential for Joint Management

Current efforts at joint management of Kluane and Wrangell-St Elias are in their infancy. So there is considerable potential for new initiatives. Enlarging the area covered by the World Heritage designation is one avenue being explored. This would be particularly worthwhile given that there are still vital areas of the ecosystem – such as sections of the Tatshenshini River – that are not protected under any regime and which could accordingly cause management difficulties for peripheral areas. There has also been discussion of establishing a Man and the Biosphere site, centred on park areas but including adjacent lands, the management of which has a signficant bearing on the park ecosystem. For transboundary species such as wolf, caribou and grizzly bear, cooperative management will be essential to ensure viable representative populations. Indeed, without integrated management mechanisms and agreements, ecosystem integrity will not be maintained. Such cooperation could also help deal with local issues and expectations,

particularly those concerning native use, an issue which the World Heritage designation has not had much impact on as yet.

Joint marketing is yet another area of unexplored potential. Given the similarities in visitor profiles and markets, there are further benefits to be gained by integrating thematic messages and marketing approaches. Also under discussion is the creation of a "Kluane-Chilkoot Parkway" to take increased advantage of the interpretive opportunities offered by the scenic Haines Alaska to Haines Junction Highway bordering the east side of the protected area.

Finally, much more could be done to publicize and increase awareness of the significance of this World Heritage site. The international designation is briefly interpreted by both park services, but it is generally agreed that more could be done to explain its value to local residents and visitors alike.

Lessons Learned

What has the Kluane/Wrangell-St Elias venture taught us? The following are some preliminary conclusions.

A joint World Heritage site designation would not by itself have guaranteed effective joint management. Both park administrations feel that the existing level of cooperation would have occurred regardless of whether or not an international designation had been conferred. Cooperation to date has largely been in the operational areas and typical of most protected areas sharing a common border and ecosystem.

Nevertheless, World Heritage designation can be a powerful tool for dealing with major environmental issues. An international profile is useful for supporting arguments concerning the value and significance of natural and cultural heritage sites when major economic proposals of an extractive nature, such as the Windy Craggy mine development, threaten their integrity. Where possible then, the World Heritage designation should be extended to cover all key portions of the Kluane/Wrangell-St Elias ecosystem.

The Kluane/Wrangell-St Elias World Heritage Site has the potential to act as a catalyst for comprehensive ecosystem management of this international border area. This may prove to be the most significant aspect of World Heritage site status in this particular instance.

Finally, as with most joint ventures, success depends to a large extent on the attitude and motivation of the people involved. It is apparent that the personal contacts between Kluane and Wrangell-St Elias staff have built a base of trust and goodwill. Both parties have learnt from the other's experiences and formulated future plans which are not only mutually beneficial but which also promote an ecosystem management approach.

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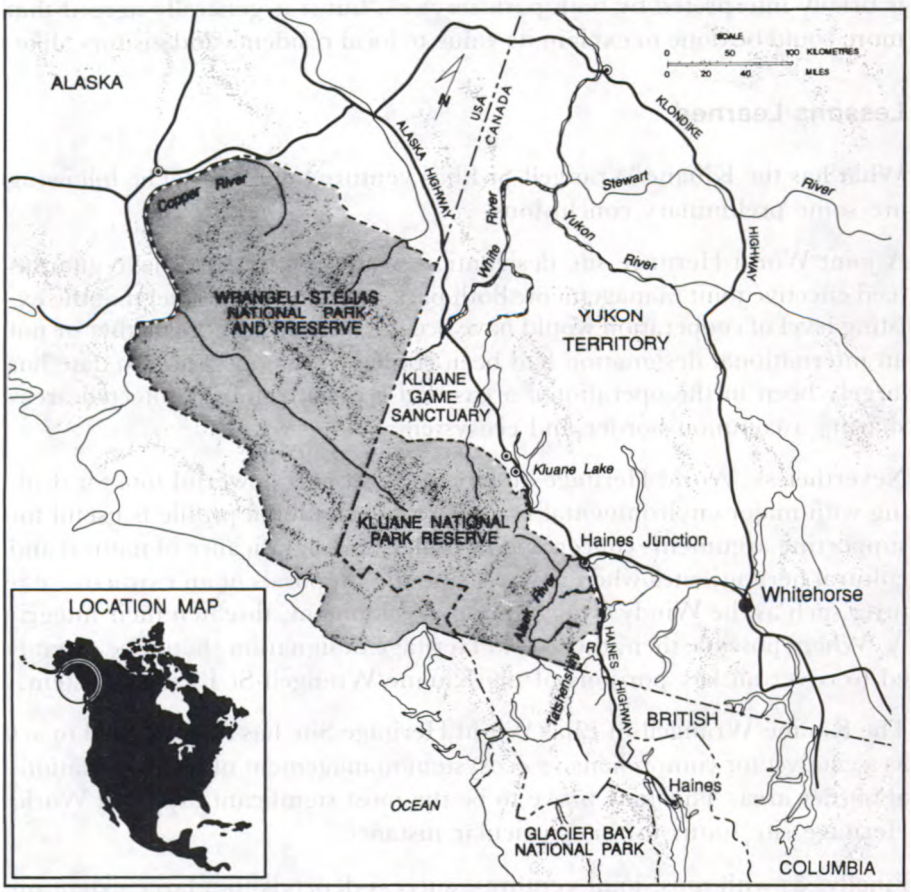
Figure 1 Kluane/Wrangell-St Elias World Heritage Site and Region



CHARTING A COURSE FOR A GREATER YELLOWSTONE TOMORROW

Dennis Glick
The Greater Yellowstone Coalition,
PO Box 1874, Bozeman,
Montana 59715, USA

Abstract

Encompassing nearly 7.2 million ha and including Yellowstone and Grand Teton National Parks, the Greater Yellowstone ecosystem in the USA is one of the largest essentially intact ecosystems in the temperate zone and indeed in the world. Characterized by superlative scenery, the region boasts the world's most extensive array of geothermal features, North America's largest concentrations of elk and bison, in addition to populations of grizzly bear and other species no longer found throughout much of their former range. The high quality of life enjoyed by the human population of the area is closely linked to these features, as is the regional economy. But current development does not augur well for the region's wildlands. The Greater Yellowstone Coalition (GYC), a non-governmental conservation advocacy group, is therefore seeking an alternative – one which would enable wildlife populations to retain their diversity and vitality, allow ecological processes to function with minimal intervention, and promote diversified economies of negligible environmental impact. The GYC's Greater Yellowstone Tomorrow project is spearheading efforts to create this alternative. Several initiatives have been carried out already, including the development and publication of an "Environmental Profile of the Greater Yellowstone Ecosystem" and dissemination of it through a Community Outreach Program.

The Setting

On a satellite image taken from outer space, Greater Yellowstone – one of the most extensive road-free areas in the lower 48 States of the United States – appears as a vast island of mountains and plateaus. The ecosystem comprises roughly 7.2 million ha, and includes two national parks (Yellowstone and Grand Teton), parts of seven national forests, three National Wildlife Refuges, plus Bureau of Land Management, state and private properties.

As well as magnificent natural features, the region boasts the world's most extensive array of geysers and geothermal resources, some of the largest herds of elk, bison and bighorn sheep found in the United States, over 300 species of bird (nearly half the total number of the country), and several endangered plant and animal species, ranging from the diminutive yellow spring beauty to the majestic grizzly bear. Perhaps even more significantly, Greater Yellowstone is one of the largest, essentially intact temperate zone ecosystems on earth and thus a resource of national and international importance. The core of Yellowstone National Park was one of the first areas to be inscribed on the World Heritage List.

But the very fact that Greater Yellowstone is an 'island' of wildness is cause for concern. Studies of archipelagos created as a result of rising seas and other phenomena have documented the loss of species that has accompanied such fragmentation. In the western US, investigations of the impact of fragmentation on natural habitats found that 42 mammal populations had disappeared from several of the region's national parks. Many of these sites are becoming isolated within a sea of development.

Close scrutiny of the satellite image of the Greater Yellowstone ecosystem reveals that it is similarly at risk. To the west, a distinguishable straight line marks the boundary between Yellowstone National Park and the Targhee National Forest. Over one billion board feet of timber has been cut in the Targhee since the 1960s and Forest Service management plans propose harvesting a further 130 million board feet annually. The process of forest fragmentation is therefore already well underway. As cutting moves into increasingly fragile habitats, critical wildlife and fisheries habitats are being destroyed and scenic vistas degraded.

But timber harvesting is just one of the threats confronting Greater Yellowstone. Around 2 million ha of National Forest lands are under lease or lease application for oil and gas drilling. In the Bridger-Teton National Forest, 99% of the available non-wilderness forest lands have been proposed for leasing in the Final Forest Plan. Not only could oil and gas exploration and development affect wildlife and aesthetic values, but if carried out in certain areas, they could also cause irreparable damage to the poorly understood subterranean 'plumbing' which controls Yellowstone's geothermal features.

New technologies often spawn new environmental problems, as Greater Yellowstone has found to its cost. Development of cyanide heap leach processing of gold has sparked a dramatic increase in hard rock mining in the western United States. The often destructive nature of mining and archaic mining laws have conspired to leave scars in Greater Yellowstone that may never

heal. The McLaren Mine, for example, located five miles upstream from Yellowstone's North Gate, is leaching a toxic, heavy metal 'soup' which flows into the park. And this is only an on-site impact. More severe, cumulative impacts off-site include road construction, powerline corridors and increased human activity.

A host of other disturbances, though perhaps not as obvious as a clearcut or an oil derrick, are also eroding the environmental stability of the area, or risk doing so. Nearly a million hectares of federal land in Greater Yellowstone are grazed by sheep and cattle. Sheep and cattle grazing, if not well managed, can degrade important wildlife habitat such as riparian areas and winter range, increase erosion and reduce water quality. And although impacts vary from site to site, numerous examples exist of direct competition between wildlife and livestock. Accordingly, proposals to expand the range of predators such as wolves or grizzly bears have met with stiff opposition from some individuals in the livestock and outfitter industries. In addition, fears concerning depredation and the spread of brucellosis from bison to cattle have led to both legal and illegal killing of wildlife.

Impacts related to recreation are of growing concern too. An increase in recreational developments (such as the massive Grant Village) and in winter visits, could stress wildlife and raise its mortality levels. The impacts of off-road vehicle use, as well as non-motorized travel, are another potential threat. Poorly understood, they require further analysis.

Many of these threats relate primarily to federal lands, but the accelerating development of ecologically strategic private lands is of equal concern. Though amounting to less than a quarter of the region, private lands harbour key ecosystem elements, such as winter range, migration corridors and ecologically rich bottomlands. These lands also contain important cultural landscapes such as farms and ranches. Rampant subdivision, the construction of holiday homes and other developments, are destroying the integrity of these traditional landscapes and whittling away important habitats. In Madison County, Montana, for instance, in the northeast corner of the ecosystem, around 35,000ha have been subdivided into parcels of 80ha or less.

The justification often cited for this ill-conceived squandering of resources is that of promoting economic stability. But it flies in the face of reality. The rural economies of most counties in Greater Yellowstone have in fact already undergone a sweeping transition – from resource extraction (timbering, mining, oil and gas development) to one which is more diversified and service-oriented, and, moreover, firmly rooted in the ecosystem's natural amenities.

Lack of coordination among resource managers is yet another problem.

Over 25 different federal and state agencies manage pieces of the Greater Yellowstone puzzle, and their missions and management goals often conflict with each other. The varied procedures for collecting and analyzing data and determining appropriate resource management practices are a further complication.

The Greater Yellowstone Tomorrow Project

The mission of the Greater Yellowstone Coalition (GYC) is to ensure the long-term preservation of the Greater Yellowstone ecosystem. To achieve this ambitious goal, the organization has undertaken a multifaceted conservation programme. This has featured environmental awareness and education activities, organization of grassroots conservation efforts, close monitoring of resource management and protection, and, when necessary, the direct appeal of the actions and plans of resource management agencies. In 1989, GYC launched its Greater Yellowstone Tomorrow Project (GYT) which is planning proactively for the ecosystem's future protection.

GYT was conceived several years ago when GYC's board of directors discussed the idea of a project which would forge an 'alternative vision' for the future of Greater Yellowstone, based on a "solid understanding of ecosystem functions, man's impact on these processes, and actions needed to assure long-term protection and restoration". The project's principal goals are to:

- develop a blueprint for action that lays out clearly the steps for achieving long-term ecosystem protection in Greater Yellowstone;
- organize an informed and motivated constituency, broad enough to ensure that recommended actions are carried out;
- serve as a catalyst for the implementation of the proposed blueprint by the year 2000.

The strategy GYC has devised for achieving these objectives includes:

- **Profiling the ecosystem:** This has involved analyzing the ecological processes and components that underpin Greater Yellowstone, including the unique relationship between it and human populations. To illustrate the possible future of the region, a series of maps and graphics depicting proposed development has been drawn up. These are based on existing plans and growth trends.
- **Designing an alternative for the future:** The GYT alternative scenario will feature protected wildlands, wildlife and aesthetic features, restoration of degraded landscapes, and a transition to sustainable econ-

omies that will meet human needs without compromising environmental integrity or the region's distinctive quality of life.

- **Formulating a blueprint for action:** The GYT "Blueprint for Environmental Protection" will set a new course for protection and sound management of Greater Yellowstone's wildland and wildlife resources, its geothermal features, open spaces and outstanding scenic qualities. The project will also collaborate with communities on developing local, long-range economic, environmental and quality-of-life goals, and action plans for a sustainable future.

Project Status

Profiling the ecosystem: A necessary first step in solving the tough problems that threaten Greater Yellowstone's wildland values and quality of life, is to build a common base of understanding of the ecosystem and the threats to its well-being. This was the reason for GYT's "Environmental Profile of the Greater Yellowstone Ecosystem" which was published and widely distributed in late 1991.

The Profile is the first comprehensive ecological and socioeconomic analysis of the ecosystem. Based on the peer-reviewed writings of GYC's Science Council, along with information generated from numerous other sources, it graphically illustrates the significance of the ecosystem and the world class nature of its wildland resources. The Profile also includes a series of maps detailing existing and proposed developments that could have a direct impact on the future character and health of the region.

An encouraging trend noted in the Profile is the regional transition from an economy based on resource extraction to one that is increasingly dependent on the maintenance of watersheds, scenery, and wildlife and wildland values. But the Profile also notes the new set of problems that this economy has brought, and which must be anticipated and incorporated into the conservation efforts of both governmental and non-governmental entities. Finally, the Profile notes that throughout the Greater Yellowstone region, efforts are underway at local, state and federal levels to bridge the gap between conservation and development. Though seldom coordinated, these actions are nevertheless planting the seeds of sustainability, and certainly complementing GYC's efforts to develop the "Blueprint for Ecosystem Protection".

The full Profile document was supplemented with an executive summary which crystallizes the report's major points. Several slide show versions tailored to different key audiences were also prepared. A special issue of

the *Journal of Conservation Biology* featured ten of the GYC Science Council's Greater Yellowstone papers.

Socioeconomic profiles have also been developed for ten Greater Yellowstone counties. These are being used to enable residents to improve their understanding of their particular county in terms of economic and demographic growth. They are proving very useful to those organizations within the region that are beginning to plan for economic and environmental sustainability. They have also increased the credibility of the GYC with the business community and improved GYC's own understanding of regional economic development issues.

The Profile thus laid the foundation for creating a shared Blueprint. It also provided the wealth of educational material necessary for nurturing a well-informed, highly motivated constituency, broad enough to ensure that Blueprint recommendations are actually carried out. Building this constituency and facilitating its involvement in the creation of the Blueprint for Greater Yellowstone's future, is the primary goal of the GYT's Community Outreach Program.

The Community Outreach Program: This is raising understanding of and concern for the Greater Yellowstone ecosystem at regional level, stimulating local efforts to plan for environmental and economic sustainability, collecting and incorporating the best thinking of regional residents into developing the Blueprint and catalyzing the creation of a community generated vision of the region's future.

The Outreach Program has taken the essence of the information gathered in the Profile to dozens of governmental and non-governmental entities throughout Greater Yellowstone. It has provided a tremendous opportunity for GYC and an array of organizations to share their views and knowledge of the region and concern for its well-being.

Some 27 communities have been visited by project staff. Participants in Outreach Program activities have included Chambers of Commerce, Conservation Districts, environmental groups, county commissioners, Rotary clubs, stage legislators, grazing associations, federal agencies, lumber mill operators, and many others. Presentations have stimulated lively discussions on the future of the region and appear to have been much appreciated by individuals and organizations concerned about current development trends. Indeed, there has been a marked increase in grass-roots efforts to plan for community and county economic development and environmental protection.

A questionnaire soliciting residents' wishes and ideas in relation to future economic development and environmental protection has been widely dis-

tributed. Information from these surveys is being analyzed in an effort to determine if there is any regional consensus on the future of Greater Yellowstone. Preliminary results indicate that there is a nearly universal appreciation of the wild character of the area and a strong desire to maintain it.

Development of GYT's Blueprint for Ecosystem Protection: The ultimate goal of the GYT project is to chart a course for long-term protection of the ecosystem and to begin the process of implementing the relevant activities. The Blueprint will be the first comprehensive 'game plan' for the overall protection of Greater Yellowstone to have been formulated with the input of regional residents. It starts where the Profile ended – namely a description of the significance of the Greater Yellowstone ecosystem.

The bulk of the Blueprint will articulate what needs to be done at local, state and national levels in order to maintain and in some cases enhance the ecosystem's significant features. Recommended actions will relate to administration, policy, law, on-the-ground management activities, research, education, economic and tax incentives, and so on. Some of these will be illustrated with case studies (identified by the Community Outreach Program) to demonstrate their feasibility.

The following information is being gathered and developed for each of Greater Yellowstone's key resources:

- state of the resource (based on the Profile and additional research);
- an alternative scenario (based on the aims of regional residents and the ideas of GYC staff, board and membership);
- guiding principles (for consideration when resource development or protection plans are being formulated);
- goals (specific goals for the long-term protection, management, and, where necessary, restoration, of a specific resource);
- recommendations (relating specifically to resource management and protection as gleaned from literature review, research, interviews with resource users and managers, policy analysts, GYC staff and board, and so on);
- case studies (preferably from the region to illustrate the types of activities recommended);
- implementation strategy (ideas for putting the recommendations into practice, including identification of who should be responsible for implementation).

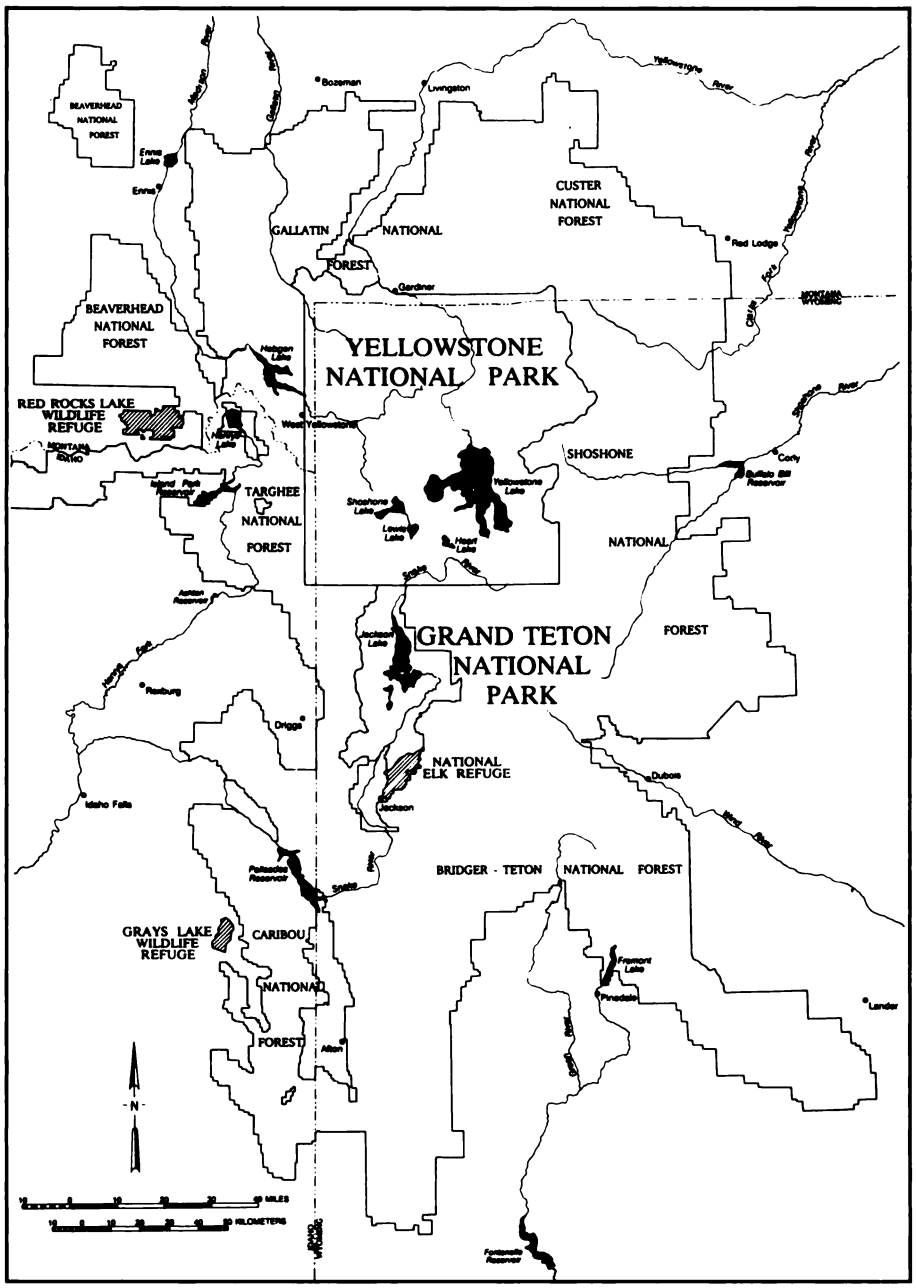
Four sections of the Blueprint are currently being drafted, including those on geothermal resources, timber and range, water resources and open space (private lands). Research by GYC staff using information gathered from the regions's communities, the Blueprint advisory committee (which represents a broad range of perspectives and expertise), the GYC Science Council and board, and others, is uncovering many of the less obvious reasons for inappropriate resource management in the region. It is also emphasizing the range of opinion on how these resources should be administered. A major challenge facing GYC is to achieve consensus on the specific recommendations that will be drawn up.

Conclusions

It is hoped that by mid-1993 the GYT project will have articulated a vision of the future of Greater Yellowstone, developed the Blueprint for Ecosystem Protection and triggered implementation of its recommendations.

More than just a plan or strategy, the GYT project is intended to be a vehicle for social, political and economic change as dynamic and alive as Greater Yellowstone itself. The project reflects the ecological make-up of the land, with the varied components all interacting and comprising a whole much greater than the sum of its parts. The blossoming of similar efforts at the local level throughout Greater Yellowstone is a sign that the GYT approach is working.

Figure 1 The Greater Yellowstone Ecosystem



3. SOUTH AMERICA

Iguaçu/Iguazu National Park in Argentina and Brazil

COLOMBIAN-PANAMANIAN BORDER NATIONAL PARKS IN DARIEN

Dilver Octavio Pintor Peralta
INDERENA (National Park Division),
Santa Fé de Bogota, D.C., Apartado Aereo 44235,
Colombia

Abstract

Los Katios National Park is situated in northwest Colombia, in the Darién/Urabá region of the Chocó and Antioquía Departments. Its importance is in large part due to its biological wealth and role in the South American continent's biogeographical history. It is the last remaining refuge for the region's fauna and flora. Darién National Park and World Heritage Site in Panama is the largest park in Central America. The parks share borders and ecosystems and have similar objectives, including that of acting as a barrier to the spread of aphthous fever. They also face similar threats due, for example, to construction of the Panamerican Highway and the interoceanic channel between Atrato and Truandó. This paper suggests that continuous communication between the parks' management authorities, coordination of activities and implementation of joint management plans would be worthwhile.

Los Katios National Park (Colombia)

Los Katios National Park is situated in northwest Colombia, in the Darién/Urabá region of the Chocó and Antioquía Departments. Created in 1973, it initially covered 52,000ha, but was extended to 72,000ha in 1979. The park is managed by the Natural National Park Division of the Institute of Environment and Renewable Natural Resources (INDERENA), attached to the Ministry of Agriculture.

The importance of Los Katios National Park is in large part due to its biological wealth and role in the South American continent's biogeographical history. The Darién region is considered to have been the main filter for or barrier to the interchange of fauna between the Americas during the Tertiary and Pleistocene periods, and in fact continues to be so. This is why it is the only region in South America which contains several species also found in Central America. The park was probably the site of a Pleistocene

refugia, which may account for its large number of endemic species. Additionally, its numerous archeological vestiges demonstrate that the area was once a cultural and ethnic 'path' between Central America and Colombia. At a more practical level, the park is important as a natural barrier to South American aphthous fever (foot and mouth disease).

According to the Holdridge Classification, the park falls within the tropical rain forest life zone, characterized by a temperature of between 24°C and 25°C and annual rainfall of between 1,900 and 3,100mm. However, two types of ecosystem are found in the park. As well as the tropical rain forest of the Darién mountains, there is the floodplain of the Atrato River.

The park is the last remaining refuge for the region's fauna and flora. It is estimated that it contains over 550 vertebrate species. Bird species recorded for Los Katios include 27% of those found in Colombia and 50% of those found in Panama. Mammals include the "danta" (*Tapirus birdii*), the "saino" (*Tayassu tajacu*), the "puerco manao" (*Tayassu pecari*), the "manati" (*Trichechus manatus*), the tiger (*Leo onca*), the puma (*Felis concolor*), the anteater (*Tamandua mexicana*) and five primate species. There are 669 botanical species registered for the park.

Darién National Park and World Heritage Site (Panama)

Darién National Park and World Heritage Site was created in 1980 and is managed by the Institute of Renewable Natural Resources (INRENARE). Covering 575,000ha, it is the largest park in Central America. Although it is Panamanian territory, the park protects several ecosystems shared with Los Katios National Park. Both parks have similar objectives, including that of acting as a barrier to the spread of aphthous fever.

The park receives annual rainfall of between 2,500 and 4,000mm and comprises the following life zones: low montane rain forest, tropical rain forest and montane rain forest.

Threats to Los Katios and Surrounding Areas

Threats to Los Katios include colonization pressure from Cacarica farmers who anticipate that the Colombian government will buy their smallholdings from them, in order to be able to finish construction of the Panamerican Highway. (The highway will link the capitals of the American countries to Alaska. Only one part – the "Tapón del Darién" or Darién Stopper – remains to be built.) Illegal occupations have occurred, but are now under control and the park's integrity has not been affected. Illegal fishing and hunting occur, as does extraction of timber of high commercial value.

Local fisheries have sprung up in the Tumaradá swamps. Although, the swamps contain abundant fish stocks, they have not been subject to much research and are being exploited without any corresponding control. Additionally, species such as the "babilla" and "manati" are hunted, which as well as reducing population levels, damages riverside vegetation.

Some parts of Darién National Park have been planted with coca and the Darién region has seen conflict between the army and guerillas, although the situation is much more serious elsewhere. It is anticipated that pressures on the parks will increase. In particular, if violence and social and economic conditions worsen, colonization can be expected to become a more serious threat.

The "Darién Path" is used by Colombians, Panamanians and tourists, to cross from one country to the other. It includes four watersheds, inhabited by three Indian groups (the Emberá, Waunanas and Cunas). There is no border control and illegal hunting is known to take place.

Construction works also threaten the parks. Two sections of the Panamerican Highway will affect Los Katios – the Lomas Aisladas-Cacarica (11km) section and the Cacarica-Palo de Letras (30km) section. The former is particularly controversial as it will cut through the Atrato River and doubtless act as a barrier to migratory flow and affect the mobility of terrestrial and aquatic fauna. It will also facilitate human access to Los Katios. It is essential that a thorough environmental impact assessment is carried out prior to construction in order that potential negative impacts can be identified and action taken to avoid or minimize them.

The interoceanic channel between Atrato and Truandó will connect Panama with the Atlantic and Pacific Oceans. But the dynamite explosions, together with flow deviations of the Atrato River and other water sources, which will be executed during construction, will affect the Darién foothills and the Baudó hills. It is also possibile that there will be biotic interchange between the two oceans.

Management of Los Katios

Since its creation, all the resources of Los Katios National Park have been allocated to:

- improvement of park infrastructure and acquisition of equipment;
- research – mainly on birds, plant communities, insects and the fisheries in the Tumarandó swamps; this research, together with other field studies, has contributed to the drawing up of a management plan for the park;

- institutional strengthening;
- environmental education in the park buffer zones and in parts of Darién Park;
- consultation and negotiation with local communities to find alternatives for sustainable use of the buffer zone's renewable natural resources;
- creation of the minimum infrastructure necessary for developing an ecotourism programme;
- inter-institutional coordination to integrate park management with regional development plans;
- patrol activities.

Proposal for Joint Management

There has been virtually no information exchange between the two parks and no coordination of their management. The single recorded exception was a meeting that took place in 1979 in which INRENARE and COPFA (Aphthous Fever Cooperative Programme) from Panama, and ICA (Colombian Institute of Farming and Animal Husbandry) participated. An agreement to develop joint activities was signed, but not followed up.

Yet in view of the similarity of the problems facing the parks and their shared ecosystems, continuous communiciation, coordination of activities and implementation of joint management plans, would be worthwhile. The following activities are suggested:

- create a binational technical committee to coordinate management of the parks;
- establish a process whereby information, ideas and so forth, can be exchanged at all levels;
- undertake aerial and ground survey of the border region in order to assess problems fully and devise alternatives for minimizing the impacts of human activities;
- elaborate a protected areas diagnosis in order to obtain an overall view of both of the parks;
- adopt the example set by INPARQUES (Venezuelan National Park Institute) concerning joint management of protected areas in border zones, as a guide to joint management of Los Katios and Darién National Parks;

- consider the possibility of establishing a binational World Heritage site so that this important part of the Darién biogeographic realm can be managed in an integrated manner.

Figure 1 Location of Los Katios National Park, Colombia

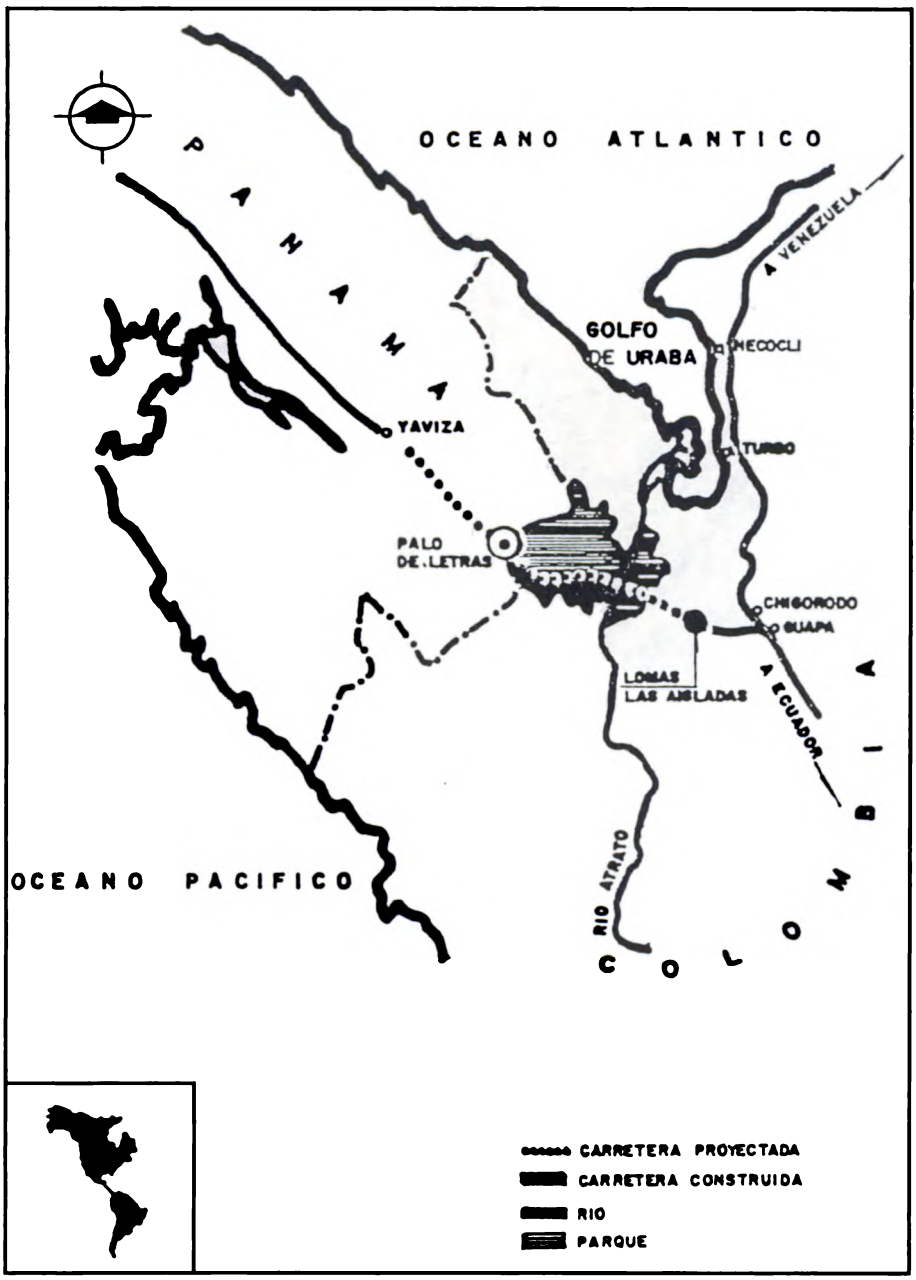
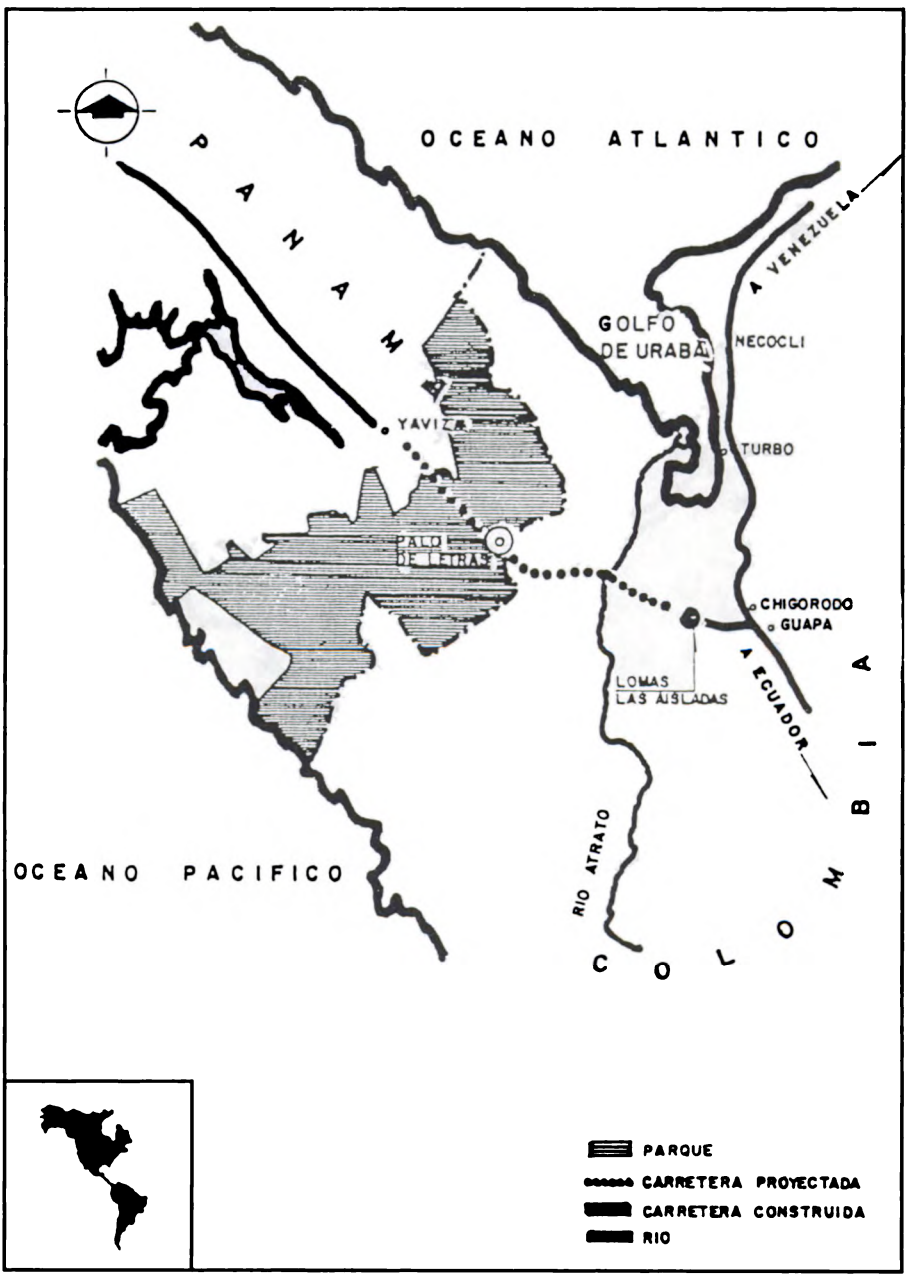


Figure 2 Location of Darién National Park, Panama



PUBLIC PARTICIPATION IN THE MANAGEMENT OF HUASCARAN WORLD HERITAGE SITE

Miriam Torres Angeles
Los Rosales 255, Lima 27, Peru

Abstract

Huascarán National Park and World Heritage Site is the only protected area in Peru that includes both high mountain ecosystems and one of the country's most important hydrological resources. Attempts are now being made to manage the various uses made of the park and to encourage public participation in the formation of park management plans. Initially there was some opposition from park staff to this. But a survey revealed that the rural communities in the vicinity of the park have a sound practical understanding of environmental and conservation issues and are well disposed to reaching agreements on use of the park if real benefits will accrue to them as a result. Various methods have been used to encourage interest and participation in drawing up a management plan for the park. The paper points out, however, that it is now especially important that undertakings agreed to by the park authorities are adhered to.

Introduction

Huascarán National Park and World Heritage Site covers 340,000ha. Created in 1975, it includes parts of 10 of the provinces of the Ancash Department, the principal city of which – Huaraz – lies 400km northeast of Lima. It is the only natural protected area in Peru that includes both high mountain ecosystems and one of the country's most important hydrological resources. The park ranges from 3,000 to 6,768m above sea level, the highest point being the peak of Huascarán Mountain.

According to the land reform of 1968, communities were to receive title to the land they had been using. But by 1975, properties around the park had still not been adjudicated. Since the park's establisment, only two rural communities within it have been awarded legal rights to land. Seventy-four families, totalling around 374 people, are settled within the park. Nearly 45% of the park's territory is used for purposes such as grazing, intensive tourism

and hydropower supply. Mineral extraction and general trading are facilitated by four roads in the park suitable for motorized vehicles. Other minor but important uses include harvesting of medicinal plants and ice. There is also some illegal farming. None of these activities is organized or well supervised by the park authorities and there is little coordination among user groups.

In a bid to manage the various uses made of the park, "Huascarán National Park Graziers Committees" (Comités de Usuarios de Pastos del Parque Nacional Huascarán) have been set up. By 1991, there were 36 of these. Each valley has its own committee. However, although their formation led to greater negotiation with and between communities, there has been a lack of technical input, such as definition of the carrying capacity (in terms of grazing animals) for each valley.

Huascarán National Park Management Plan

Work on the Huascarán National Park Management Plan officially started in 1987, but the process did not actually get off the ground until the second half of 1988. Difficulties were encountered due to the lack of qualified park staff, the serious lack of funds and equipment, insufficient technical support from the Peruvian National Park System central office and negative perceptions of the park on the part of local communities. Circumstances also mitigated against the plan's progress. Inflation made rural communities even poorer and increased farming pressures on the park, while municipal elections triggered 'political use' of the park and led to increased terrorist activity in the area. Administrative confusion among park staff also took its toll.

Approval was granted for consulting the public on the management plan. This consultation took the form of:

- presentation of the proposal for a management plan by means of a letter that was distributed to both rural and urban populations, as well as among institutions in Lima;
- discussion of the plan with users of the park (including not only local communities, but also electricity and mining interests);
- identification of basic problems (which were defined as lack of a selection process for projects proposed for implementation in the park, including lack of assessment of their environmental impact; the need to devise a means of guaranteeing the availability of the park's operative funds, and the need to draw up grazing agreements with local communities);

- a survey, based on the problems identified and specific projects proposed for the park; (survey forms were distributed in rural and urban areas and special boxes provided for the collection of completed forms, while radio announcements explained the aims of the survey and the importance of public participation).

Unfortunately, the participation of the parks's administration in carrying out the survey was not all that it might have been. Furthermore, coordination of survey activities was inadequate. The reluctance of park staff to participate was especially strong in relation to a proposed agreement with rural communities to decrease the use made of park lands for grazing. The situation was such that the Agrarian Unit was obliged to fully assume its institutional responsibilities and set up a planning team.

The survey showed that there was a need for more and better information on the objectives of the management plan and on other related issues. It also revealed that the rural communities possessed a sound practical understanding of environmental and conservation issues and were well disposed to reaching agreements with the park authorities if real benefits would accrue to them as a result. These results reassured the park staff and in effect speeded up the planning process.

The next stage was that of organizing inter-institutional working teams to analyse the survey results. Their analysis, together with the opinions of various interest groups and park staff, formed the basis of the first attempt to draft a management plan for the park.

Refining the Management Plan

Initially, twelve community workshops were organized in order to further inform local communities of the objectives of the management plan and to seek input from them. However, for security reasons, only seven workshops were actually held. Workshops were divided into two parts. The first dealt with the park's most serious problems, namely erosion due to uncontrolled grazing and the impact of this on electricity costs. Theatre and other new methods proved very useful, especially in terms of 'breaking the ice'. During the second part of the workshops, the proposed park management plan was presented.

Workshop comments and surveys were used as feedback material for reformulating the initial proposals for park management, including those concerning zoning. The plan was finalized at training sessions held at La Molina National Agricultural University and during relevant meetings between park staff and institutions and professionals. It was intended to hold three more workshops with local people, but lack of funds prevented this.

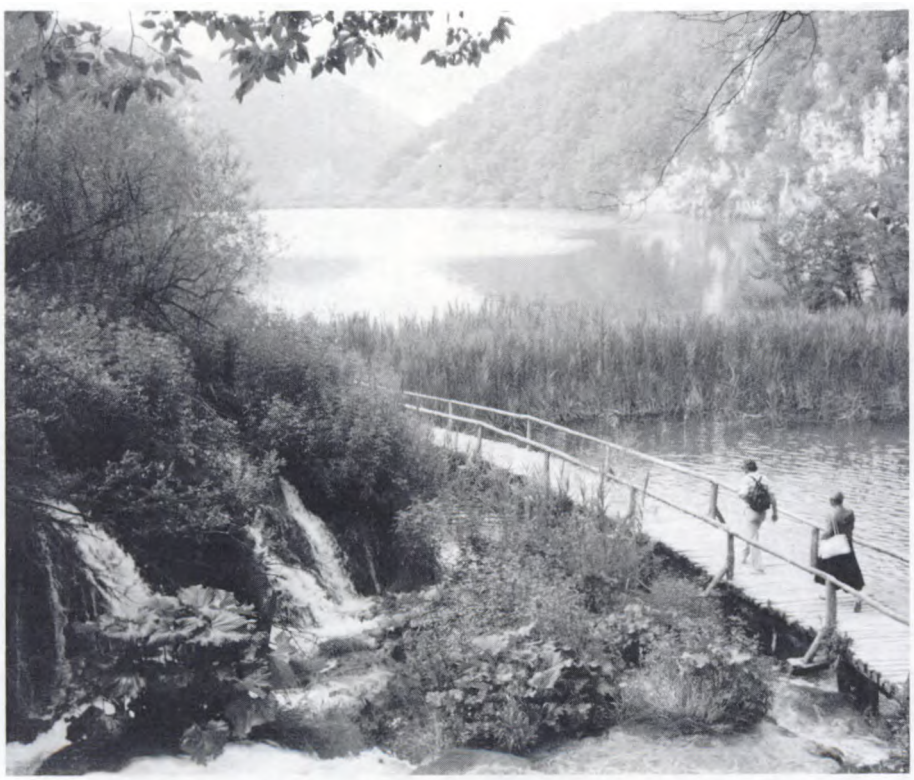
As part of the final planning process, a workshop seminar was held in July 1990. The fact that it was attended by over 150 individuals, from both rural and urban areas and Lima, demonstrated the increasing interest in management of the park.

Conclusions and Recommendations

Conclusions and recommendations are as follows:

- The process of public consultation opened communication channels between park managers and users that had been closed for many years. However, although this represents significant progress, care must be taken to ensure that undertakings agreed to by the park authorities are followed up. If this does not take place, another – and this time, potentially irretrievable – breakdown in communication can be expected to occur. It is therefore important that funds are sought to ensure that any agreements made can be adhered to.
- Technical cooperation must emphasize training of park staff and improved communication with park users (especially with rural communities and local residents.
- Public participation in the management of the park, as for any other protected area with local populations, should emphasize integrated management.

4. EUROPE



Plitvice Lakes National Park, Croatia

SCIENTIFIC RESEARCH IN BIAŁOWIEŻA WORLD HERITAGE SITE

Czesław Okołów
Director, Białowieski Park Naradowy,
17-230 Białowieża, Poland

Abstract

Białowieża National Park (BNP), a Biosphere Reserve and World Heritage site, lies at the centre of the Białowieża Forest (145,000ha) which straddles the border between Poland and Byelorussia. The park contains mainly 'old growth' forest, considered to be the best preserved European lowland forest in the deciduous/mixed forest zone. Several of the park's features make it particularly valuable for research. These include the fact that it has been scarcely altered by human activity and its location within the Białowieża Forest, making it suitable for use as a baseline study area. Several major research goals have been identified for BNP, ranging from inventory of fauna and flora, to investigation of the effects of tourism on protected areas. A brief review of some of the most significant research that has been carried out in the park is presented.

Introduction

Białowieża National Park (BNP), a Biosphere Reserve and World Heritage site, lies at the centre of the Białowieża Forest (145,000ha) which straddles the border between Poland and Byelorussia. Established in 1921, the park comprises 5,346ha, 4,747ha of which are a strict reserve, and contains mainly 'old growth' forest. Indeed, it is considered to contain the best preserved European lowland forest in the deciduous/mixed forest zone.

There are several specific reasons for studying BNP's ecosystems:

- they have been scarcely altered by human activity;
- the park is mostly under strict protection, so it is possible to conduct long-term investigations within it, based on permanent sample plots;
- the park's location within Białowieża Forest means that it is suitable for use in comparisons of the processes and phenomena of preserved forests

with those of forests subject to either considerable or little economic activity;

- the park contains relicts of primeval forests and hence many rare and endangered plant, animal and fungi species;
- owing to its unusual biogeographic location, Białowieża Forest is at the edge of the natural distribution of numerous plant, animal and fungi species.

Four research bodies operate within the park: the Department of Nature Protection of the Forestry Research Institute; the Białowieża Geobotanical Station of Warsaw University, and the Mammals Research Institute and the Plant Populations Laboratory of the Institute of Botany of the Polish Academy of Science. BNP also has a small research laboratory of its own within the park.

Research Goals

The main research goals are:

- comprehensive identification and inventory of the park's fauna and flora (including population levels) and description of its natural environment with reference to rainfall, temperature, geological structure, soils, hydrology, and so on, and any changes over time these may display;
- to increase understanding of the phenomena and processes operating within BNP;
- to increase understanding – in terms of natural succession – of the differences between natural forests free of human impact and forests subject to different levels of human activity, particularly with reference to timber production;
- to increase understanding of the effects on BNP of applied scientific investigations, educational activities and tourism conducted within it, and of human activities carried out on its boundaries or in areas surrounding it.

Organization of Research

Because BNP is relatively small, care needs to be taken to ensure that its different functions do not conflict with one other. The area containing the strict nature reserve is therefore divided into zones: I for mass tourism and education; II for intensive scientific research and education at secondary or high school levels; III for research and experiments requiring larger or

fairly isolated plots, and IV for research of unlimited duration in totally isolated areas.

All research conducted in BNP is coordinated by BNP's Scientific Council. This is an advisory body and all research projects must obtain its approval. Experimental research is permitted only if it does not cause visible changes to the fauna and flora or to natural processes. In 1991, over 50 research projects were undertaken in BNP by Polish institutes, some of them in cooperation with foreign specialists.

Most of the research conducted is based on permanent sample plots. There are over 100 of these in the park and they are supplemented by points for monitoring ground water level and air pollution, and single 'elite' trees for genetic work. The oldest plots were set up in 1936 to study changes in forest stands free of human impact (Kowalski, 1982).

The technical equipment of research institutes in Białowieża has greatly facilitated preparation of collected samples. Results of earlier research in the form of documentation and publications, and including basic data on climate, vegetation, soils, geological structure and inventory of main groups of plants, animals and fungi, has also proved especially useful.

Publications relating to Białowieża Forest are catalogued in BNP's library. By the end of 1990 there were nearly 8,300 of these (excluding popular weekly magazines containing features on the park); 3,872 present results of original research carried out in the forest and a further 1,566 are based on materials collected in the park. A bibliography of Bialowieża Forest is published regularly (Karpiński and Okołów, 1967; Okołów, 1976, 1983, 1991). Within the Byelorussian part of Białowieża Forest – which has been assigned national park status – there is also a research centre which also publishes its research.

A project to establish a transboundary Biosphere Reserve in the forest will aim to coordinate research methods and monitoring systems so that results of research concerning BNP can be compared with those concerning the Byelorussian part of the forest.

Review of Most Significant Research

Some of the most interesting research carried out in the park relates to Polyporaceous fungi. For example, important contributions to the taxonomy and ecology of this group have been made (Domański *et al.*, 1973). Work on diurnal butterflies has been similarly important. Apart from listing species and discovering local races, it has identified the threats facing several species and the measures necessary for their protection (Krzywicki, 1967).

Considerable autoecological work on selected species of fungi, higher plants, terrestial vertebrates, insects (especially ksylophagous and cambiophagous species, and those which settle on decaying wood) and intestinal parasites of mammals, has also been undertaken. The discovery of seasonal changes in the dimension of the skull of shrews, known as 'Dehnel's phenomenon' is particularly well-known (Dehnel, 1949).

The first director of BNP, Professor Józef Paczoski was one of the founders of geobotany and initiated research on vegetation in Poland (Paczoski, 1930). Its progress over half a century is summarized by Faliński (1986).

Broad ornithological investigations have been conducted since 1975 (Tomiałojć and Wesołowski, 1990). Based on permanent census plots, they have clarified certain aspects of the breeding biology of bird communities. Several detailed studies of selected species have also been carried out. It is planned to continue this research on a monitoring basis.

A project on small and large predators and their impact on other species, initiated in 1978, was completed recently. Telemetry was used to follow the movements of lynx, pine martens, weasels and polecats (Jędrzejewski *et al.*, 1990).

Research Relevant to Nature Protection

Almost all the research carried out in the park is relevant to nature protection. Some of it is applicable on a broad scale, to Poland as a whole, or even further afield. For example, documentation kept at Białowieża Geobotanical Station and based on Faliński's map detailing changes in Poland's vegetation due to human activities (Faliński, 1975a), was useful in determining the sites of national parks and other protected areas in Poland. And numerous data collected on the successional vegetation of abandoned hay meadows lying in swampy river beds (Falińska, 1990) and low quality habitats (Faliński, 1980), has helped to predict the vegetation succession of other protected areas.

More specifically, highly specialized field biologists conducted research in the managed part of Białowieża Forest and throughout northeastern Poland, and concluded that BNP did not contain all of the typical forest communities found in Białowieża Forest. An area of complementary protection was therefore created (Sokołowski, 1976). In fact, thanks to the work of scientists from Białowieża, Białystok Province now has the richest and most comprehensive set of landscape parks and nature reserves in Poland. Scientists from Białowieża prepared plans for the creation of Wigierski National Park and Knyszyński, Narwiański and Suwalski Landscape Parks.

Research on local tree ecotypes which was begun more than 40 years ago and recently completed by the Department of Nature Protection of the Forestry Research Institute with support from the World Bank, is of interest because of its potential influence on forestry practice and the protection of genetic resources (Kociecki, 1968).

But BNP is perhaps most renowned for its work on the reintroduction of the European bison. Its success is largely due to the fact that it was possible to carry out parallel investigations into the bison's biology, ecology, physiology and role in forest ecosystems (Krasiński, 1978). The chairman of the European bison group of IUCN's Species Survival Commission is Professor Pucek from Białowieża and the *European Bison Pedigree Book* is held in BNP. Park employees have been much involved in establishing Poland's population of wild bison. In 1991 two park employees spent five months in France assisting French colleagues in establishing a new bison breeding centre in Margeride. The centre's initial stock of animals came from Białowieża.

Research into the impact of tourism on vegetation, including tree root systems, due to trampling (Faliński, 1975b; Okołów, 1978) was instrumental in modifiying the flow of tourist traffic in the strict nature reserve area of BNP. Work on mortality of the bark beetle *Ips typographus* , the major secondary insect pest of Norway spruce, was equally important, since it refuted the argument that strict preservation encourages outbreaks and leads to infection of surrounding managed stands (Karpińksi, 1935; Okołów, 1987).

Finally, in addition to the influence that research conducted in BNP has on nature conservation and the management of protected areas, the park also plays an important role in the training of biology and forestry specialists.

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5. ASIA

Manas National Park, India

BUFFER ZONE MANAGEMENT IN SINHARAJA WORLD HERITAGE FOREST

H.M. Bandaratillake
Forest Department, Battaramulla,
Sri Lanka

Abstract

Covering around 11,000ha, Sinharaja is a climax forest ecosystem that has suffered relatively little from human impact. In 1978 it was declared both a Man and Biosphere Reserve and a National Wilderness Area. It was later also added to UNESCO's World Heritage List. However, protection of this forest will be assured only if the needs and aspirations of people living within and around it are taken into account. To date this has been achieved by establishing a 3km wide buffer zone and supporting economic activities associated with the forest. Extraction of forest products from the buffer zone and propagation of plant species required for cottage industries are regulated. Restoration of buffer zone vegetation is carried out through reforestation and agroforestry programmes. Visitor information, interpretation and education services are encouraging local people to participate in management of the buffer zone. Basic health and education facilities and employment opportunities are helping to improve their living standards.

Introduction

Sinharaja Forest is Sri Lanka's largest remnant of relatively undisturbed lowland rain forest. Accounting for as much as 10% of the country's species-rich lowland wet zone forest, it covers around 11,000ha and comprises both natural and modified forest. Between 1971 and 1977 it was logged at varying degrees of intensity to supply the Kosgama plywood factory. But in 1978, in response to protests from environmental groups, the Sri Lankan Government imposed a complete ban on logging in Sinharaja. Also in 1978, the forest was declared a Man and Biosphere (MAB) Reserve in view of its representativeness of Sri Lanka's tropical humid evergreen forest ecosystems.

In 1988, growing recognition of the forest's unique biological diversity prompted the Government to declare the reserve, together with its north-eastern extension, the country's first Wilderness Area (under the National

Heritage and Wilderness Area Act). Sinharaja then became Sri Lanka's first natural site to be added to UNESCO's World Heritage List.

Flora and Fauna

Based on ecogeographical classifications of Sri Lanka's vegetation, the vegetation of Sinharaja has been described as either tropical lowland rain forest or tropical wet evergreen forest. Recent studies carried out in Sinharaja have revealed that the forest contains 211 higher plant species belonging to 119 genera and 43 families. Endemics comprise between 75 and 95% of these (Zoysa and Raheem, 1987). In some families such as the Dipterocarpaceae, endemism is over 90%. Similarly high levels of endemism are found among the lower plants such as ferns and epiphytes (Balasubramaniam, 1985).

Faunal studies have identified 255 vertebrate species, 24% of them endemic to Sri Lanka. Among mammals and butterflies, endemism is over 50%. Of Sri Lanka's endemic bird species, 95% have been recorded in Sinharaja (Zoysa and Raheem, 1987).

Management

Since 1978, the Forest Department has accorded high priority to protection of Sinharaja Forest in its natural state. After Sinharaja was declared a MAB Reserve, the Forest Department increased the amount of funds allocated to its conservation. The Government prepared a conservation plan for the forest in 1986, in collaboration with IUCN and WWF.

A project proposal for implementing the conservation plan was prepared in 1988 with technical assistance from IUCN. Funding was provided by NORAD. This was the first project in Sri Lanka which sought to incorporate new dimensions of biological diversity conservation and community development within the context of forest management. The project has had a major impact on the forestry sector since it has provided an alternative to traditional methods of protected area management and has also acted as a model for extension of the concept to other wet zones in Sri Lanka.

Establishment of the Buffer Zone

A buffer zone 3km wide has been established along the periphery of the reserve in order to reduce resource demands on the reserve and to help prevent human encroachment. The buffer zone includes natural forests, *Pinus caribaea* plantations, non-forested land, private land and village home

gardens. All other lands in the buffer zone are state owned, with the bulk of forested lands administered by the Forest Department and a few small areas by other agencies such as the State Plantation Corporation.

The National Heritage and Wilderness Area Act provides the highest possible legal protection for the reserve, and forbids community activities within it. The buffer zone is protected under the legislation of the Forest Ordinance as Other State Forests. This permits activities such as collection of non-timber forest products in the buffer zone (but also seeks to regulate them).

Socioeconomic Implications

In an agricultural country such as Sri Lanka, wilderness areas have been subject to human activities. Sinharaja is no exception. The long history of human habitation in and around the reserve has complicated problems of conserving it. There are 24 villages within the buffer zone, with a total population of around 5,000. Many of these villages have expanded due to an influx of migrants, but also simply as a result of normal population growth. They are engaged in traditional activities involving extraction of forest produce from the reserve, including firewood, timber for domestic construction purposes, and rattan. Wild cardamon and medicinal plants such as 'wenivel geta' and wild pepper species, for use in indigenous medicine, are also collected. Resins are extracted from the 'nawada' and 'kekuna' trees and the inflorescence of the 'kitul' palm tree is tapped for its sap in order to make 'jaggery', a basic ingredient of many Sri Lankan sweets.

It appears from socioeconomic surveys that local villagers have always depended on Sinharaja Forest to subsidize the income they obtain from farming small landholdings, which are usually less than a hectare in size. The production of jaggery, for instance, which has a ready market all over the island, provides substantial income for villagers living in the buffer zone. The wild cardamon (which is sold at very high prices) and baskets and mats woven from rattan are further additional sources of income.

Buffer Zone Management Strategies

Assessment of resource needs in the buffer zone: The people living within and around the buffer zone are a potential 'threat' to conservation of the forest since part of their livelihood derives from produce extracted illegally from the reserve. The Forest Department is currently using socioeconomic surveys to assess the extent of the economic dependency of local people on the forest. The ultimate aim is to reduce this dependency by gener-

ating alternative sources of income. The findings of the surveys include the following:

- villagers depend primarily on agriculture, so their dependence on the forest is actually limited;
- the villagers in the buffer zone are isolated – without road access in most cases – and generally do not benefit from the development assistance available through official programmes;
- most of the people surveyed extract forest produce for traditional activities and can earn substantial amounts as a result;
- most of the people living in the region are poor, with large families and a low level of education;
- the manufacture of jaggery and rattan basket weaving are the two main cottage industries based on non-timber forest products.

Restoration of Vegetation in the Buffer Zone

Planting of *Pinus caribaea* along the periphery of the reserve was started in 1978. This was later extended to include planting up of barren and denuded lands in the buffer zone with *Pinus* and mixed species. The *P. caribaea* acts as a live boundary and prevents encroachment. It is a non-invasive species and shows no natural regeneration under local climatic conditions.

It is expected that the buffer zone will provide non-timber forest products, thereby minimizing the illegal use of the reserve for harvesting these items. The Forest Department has set up nurseries in the buffer zone to produce kitul and rattan seedlings, and the pine stands have been underplanted with *Calamus* spp. (rattan). The kitul and rattan seedlings, together with seedlings of fast growing fuelwood and timber species, are being distributed among the villagers free of charge for planting in their home gardens. The *Calamus* planting should increase the capacity of the buffer zone to support the manufacture of items from rattan. The programme will continue until all the home gardens in the buffer zone have been planted.

Harvesting of Forest Produce in the Buffer Zone

The villagers are allowed to harvest forest produce on a regulated basis within the buffer zone, but not within the reserve. Permits for tapping kitul trees and harvesting rattan and other non-timber products, are issued by the Forest Department. Other forest products that can be harvested in the buffer zone include: fruits and yams for consumption; firewood and small

timber; medicinal plants and resins; fodder for cattle, and bamboos for construction.

Visitor Information and Interpretation Service

Conserving Sinharaja Forest means limiting the accessibility of the villagers to many essential and subsidiary resources. Interpreting and explaining management strategies to them is therefore necessary in order to gain their active participation in conservation programmes. This is being attempted by means of the following:

- **Visitor information centre:** The Sinharaja Education and Information Centre was set up within the buffer zone, at the entrance to the reserve. It includes a herbarium, an arboretum and museum type collections of fauna. Audio-visual aids are available and there are displays of maps, photographs, posters and so on.
- **Brochures and leaflets:** Attractive information brochures and leaflets have been prepared in English and Sinhala.
- **Demonstration plots:** These have been established on state lands and private home gardens in the buffer zone to demonstrate improved cultivation techniques to villagers. The objective is to raise the level of income earned from agricultural activities by villagers in order to reduce their dependency on the forest. Incentives such as agricultural tools and fertilizer are provided free of charge to villagers who participate.

Education Programmes

Educational programmes aimed at the general public, local villagers and schoolchildren, are being implemented in the buffer zone. These seek to explain the reasoning behind management decisions which may affect resource availability for local villagers and why their participation is sought in conservation activities. Local leaders, village temples, schools and village level NGOs have assisted with seminars, workshops and exhibitions.

Provision of Social Services for People in the Buffer Zone

A number of social services are required if the dependency of local people on the forest is to be reduced and their standard of living improved. The Sinharaja Conservation Project provides the following special assistance to people living in the buffer zone:

- road improvement and repair;

- health facilities in the form of 'health camps';
- assistance with provision of education;
- assistance with applications for credit facilities, subsidies, etc, in connection with agricultural activities.

Employment of Local People

Youths living in the buffer zone have been employed as tour guides to accompany visitors' excursions into the reserve. They have been given some training in ecology and conservation of Sinharaja. The Forest Department also employs village organizations as small-scale contractors to carry out various tasks such as maintenance of roads, buildings and nature trails. Other villagers from the buffer zone have been employed in the reserve as watchers and labourers.

Employing local people in the reserve, in addition to providing them with some income, is creating conservation awareness and a link between the villagers in the buffer zone and the Forest Department.

Participation of Local People in Management Activities

A high-level steering committee has been set up under the chairmanship of the secretary of the appropriate ministry to oversee monitoring and take policy decisions on project activities, including management of the buffer zone. Two local monitoring committees are to be set up in 1992 in Ratnapura and Galle districts. Members will include local Forest Department officials, local government authorities, village representatives and local NGOs. The committees will meet every quarter so that problems with the management strategy can actually be identified in the field. This system will also further enable local people to participate in the planning and management of the buffer zone.

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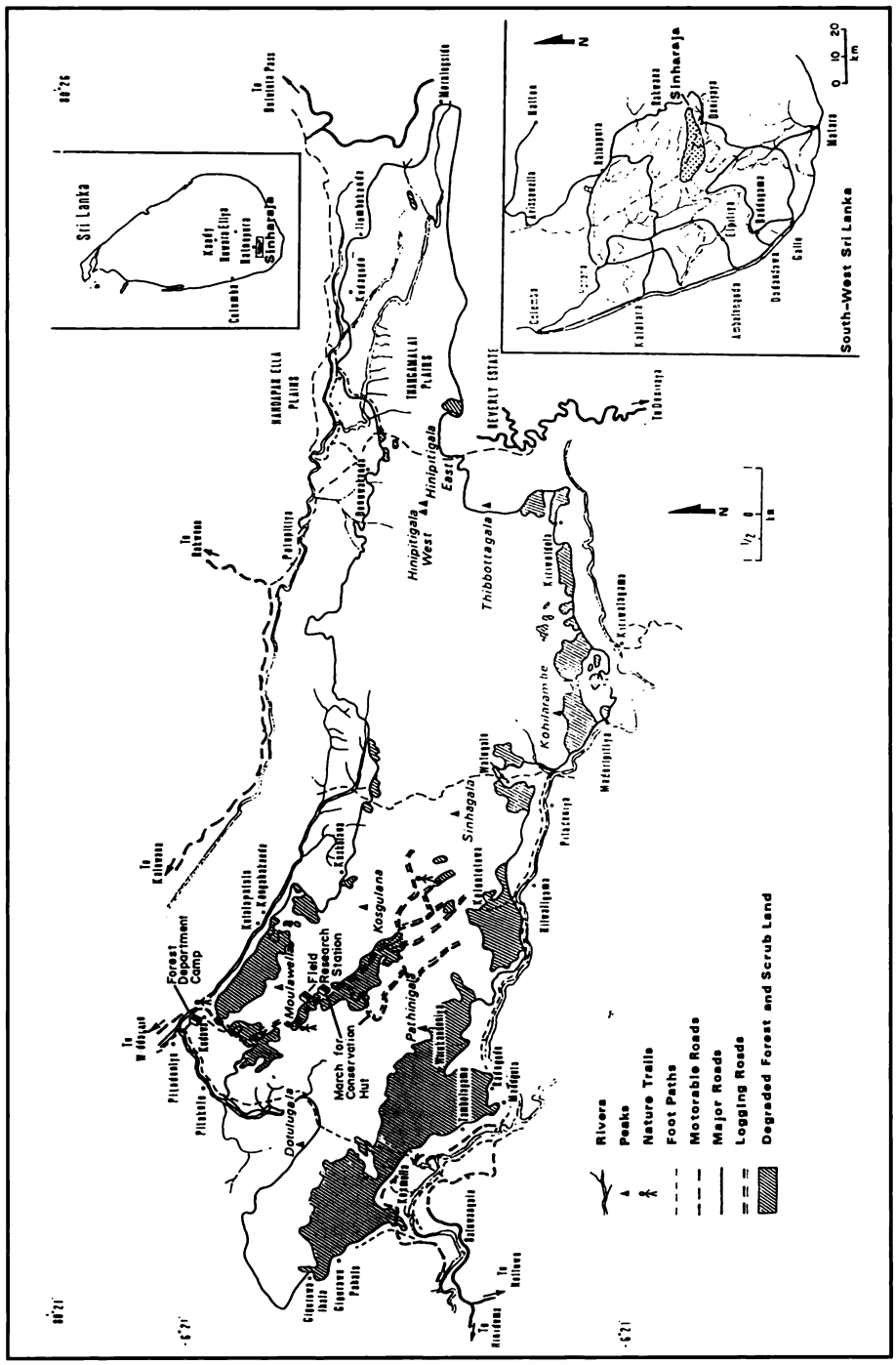
Figure 1 Sinharaja Forest Reserve



ENVIRONMENTAL IMPACTS OF BACKCOUNTRY TOURISM ON THREE SIDES OF EVEREST

Alton C. Byers
Environmental Adviser, Woodlands Mountain Institute,
Main and Dogwood Streets, Franklin,
West Virginia 26807, USA

and

Kamal Banskota
Resource Economist, International Centre
for Integrated Mountain Development,
Kathmandu, Nepal

Abstract

Fuelwood, landscape degradation, and refuse disposal problems have reached critical proportions in various alpine base camp regions in the vicinity of Mt Everest. Accessibility, topography, and differing management policies have clearly influenced tourist impacts in each region. They range from the distinct and quantifiable social/landscape changes in the Sagarmatha World Heritage Site during the past 20 years; to the medium-scale refuse problems in the Rongbuk base camp region of Qomolangma Nature Preserve, in the Tibet Autonomous Region of China; to the small-scale, but growing, impacts on the vegetation and landscapes of the remote and uninhabited inner valleys of the Makalu-Barun National Park and Conservation Area, in Nepal. In spite of recent progress made in controlling these problems, it is suggested that future programmes designed to protect or minimize the impacts of back-country tourism should be more action-oriented and realistic if further degradation is to be prevented. Suggested means of developing programmes more effectively include: involving local people; supporting local conservation NGOs; establishing international partnerships, and strengthening institutional infrastructure. Important programme elements would include improvement of user education; the substitution of fuelwood with fuels other than wood; stricter sanitation regulations; use of rotational strategies; improvement of liaison officer support and deposit systems; stricter refuse regulations; consideration of the entire Mt Everest region for World Heritage site status, and enhanced communication between users, conservation practitioners, and host governments.

Introduction

The fragility of high mountain environments and their vulnerability to outside disturbance is well documented (Poore, 1992; Price 1981). Over the past 20 to 40 years mountaineering and trekking expeditions have inflicted significant impacts upon alpine and subalpine landscapes in many areas of the Himalaya. Increases in visitor numbers are predicted for many of these areas and new control mechanisms will therefore be needed if further degradation is to be prevented, existing ecosystems rehabilitated and future impacts minimized.

This paper examines the histories and present condition of three base camp regions in the vicinity of Mt Everest in an effort to provide insight into how improved management mechanisms might be developed. Focusing primarily on biophysical impacts, three regions are discussed: the Sagarmatha National Park in Nepal; the Qomolangma Nature Preserve, in the Tibet Autonomous Region of China and the Makalu-Barun National Park and Conservation Area in Nepal. Following a review of each case study, twelve potentially important factors for future remedial programmes in the Everest region, and possibly elsewhere in the mountain world, are identified and discussed.

Case Studies

Nepal: Sagarmatha (Mt Everest) National Park

Officially established in 1976, and designated a World Heritage site in 1979, Sagarmatha (Mt Everest) National Park in northeastern Nepal (Figure 1) is one of the more publicized areas of the world in terms of scenery, adventure, local people and visitor impact. The 1,113 sq km park is roughly triangular in shape and enclosed by mountain peaks of more than 6,000m. The park's northern boundary is an approximately 40km section of the Nepal/Tibet Autonomous Region border, and shares the 8,848m summit of the world's highest mountain with the adjacent Qomolangma (Mt Everest) Nature Preserve. The lowest elevation in the park is 2,800m, at the entrance near Jorsale.

The park's vegetation is dominated by three physiographic/vegetation units that may be roughly described as south-facing shrub-grassland, north-facing forest, and alpine regions above 4,000m. The climate is semi-arid with an average precipitation of 1,070mm/yr for the main village of Namche Bazaar (3,450m), with precipitation generally decreasing northward and with altitude.

The park is the home of the famous Sherpa of Khumbu, probably one of the most renowned and intensively studied mountain people in the world.

They practice a form of Tibetan Buddhism and are believed to have migrated to the Khumbu region in the 1530s, when it was still pristine and fully forested (Oppitz, 1968). However, evidence suggests that people and livestock may have been frequenting and substantially modifying the valley's vegetation and landscapes for the past thousand years or more (Byers, 1987a).

The establishment of permanent villages was linked to the introduction of the potato (probably from the Darjeeling area) sometime during the early- to mid-1800s. Prior to the border restrictions imposed by China in the late 1950s, trade with Tibet was an important activity which provided income to supplement animal husbandry and agriculture. The introduction and exponential growth of tourism in the Khumbu between the late 1950s and the present appears to have cushioned many possibly adverse economic effects experienced by some of Nepal's other high altitude Bhotia (Tibetan origin) dwellers (Furer-Haimendorf, 1975).

A favourite destination of climbers for more than 40 years, Sagarmatha National Park is now one of the most popular tourist destinations in Nepal, with visitor numbers growing from 20 in 1964 to more than 11,000 in 1988 (Banskota and Upadhyay, 1991). In addition, Stevens *et al.* (1991) report an average of 40 mountaineering expeditions per year for the 1990 season.

The Khumbu has long been cited as a representative model of contemporary environmental degradation in the High Himalaya (Ives, 1986; Thompson and Warburton, 1985), with tourism growth more recently highlighted as a significant contributory factor (Stevens *et al.*, 1991). For example, some sources claim that, partly because of increasing fuelwood demands, more deforestation has occurred in the Khumbu during the past two decades than in the preceding 200 years (see, for example, Hinrichsen *et al.*, 1983). Although more detailed studies have since suggested that such claims are overstated (Byers, 1987a; Ives and Messerli, 1989), significant and visually obvious impacts include the following:

- **Litter:** The trek from Lukla (a STOL airstrip two-days walk south of Namche) to the Everest Base Camp has long been referred to as the 'garbage' or 'toilet paper' trail because of the quantities of refuse generated by trekking groups and individuals. Perhaps of greater concern than paper refuse are the canned goods packed by expedition porters, which, once emptied, are normally left in makeshift dumps near villages and lower altitude campsites.
- **High altitude refuse dumps:** Numerous international 'clean-up' expeditions have been launched during the past two decades in an attempt to remove the tons of tin cans and garbage left in the Everest base camp (5,200m) by mountaineering expeditions. A 1991 survey by the Nepal

Mountaineering Association estimated that 16,510kg of garbage had been left from 127 expeditions between 1952 and 1991, between Camps 2 and 5 (Brewer-Lama pers. comm., 1992). Above the base camp at the South Col, approximately 500 empty oxygen bottles have been left since the 1963 American Everest expedition (McConnell pers. comm., 1991).

- **Campfires:** Although long considered an integral part of the trekking experience, the use of fire for cooking is prohibited by park regulation which mandates that tourist groups must use kerosene stoves. Support staff (porters, cooks, sirdar), however, continue to use wood and in fact often outnumber clients by three to one. Lodges which supply food and shelter for a large percentage of visitors are also thought to account for a significant proportion of the region's yearly fuelwood consumption (Stevens *et al.*, 1991).
- **Forest (subalpine) degradation:** Forests are an integral part of village life in the Khumbu and provide fuelwood, structural timber, animal bedding and grazing areas. In an attempt to control the negative impacts of over-harvesting, fuelwood collection from most remaining forests on southerly slopes (that is, in the vicinity of the villages) has been banned since the park's establishment in 1976, and is permitted only in designated areas on the northern slopes of the Imja Khola. Dead wood may be collected, however, from currently protected forest areas. Unfortunately, collection in the subalpine forests near Pangboche for use by groups and expeditions has never been well-regulated, and in spite of the aforementioned regulations, pressures on forests both inside and adjacent to the national park remain (Stevens *et al.*, 1991). Most structural timber is now imported from areas south of the park although permits for limited harvesting are granted on occasion by the park warden.
- **Alpine degradation:** With the exception of the Everest base camp and certain nival areas, alpine regions appear to have been largely ignored in discussions of the degradation impacts related to tourism (Byers, 1987b). This is despite the fact that alpine landscapes are particularly sensitive to livestock and human pressures and may represent priority regions in need of increased park management interventions. In Sagarmatha, continual loss of ground cover and protective A horizons on the thin morainal soils has been linked to the harvesting of juniper shrub species for fuelwood (mostly for higher altitude lodges and for summer yak herders), mining of alpine turf for lodge and wall construction, and overgrazing by livestock. Because of these disturbances, increases in protective herbaceous groundcover during monsoon periods are now minimal. Alpine regions may thus exhibit substantially higher rates of soil loss (>30t/ha/yr) than the much publicized forests and shrub-

grasslands of lower altitudes (< 1t/ha/yr), in spite of the lower annual precipitation totals and intensities of the former (Byers, 1987a).

- **Sanitation:** In the Khumbu, sanitation for large groups of people remains an issue because of the slower decomposition rates of human waste at high altitude. Toilet paper litter, absence of latrines at some of the high altitude trekking lodges and widespread water contamination, continue to be problems. While the burying of individual waste in 'cat-holes' has been encouraged internationally as an appropriate and preferred back-country practice for the past twenty years, overuse has resulted in the creation of 'moonscapes' in the vicinity of more popular campsites (McCue pers. comm., 1991).

Tibet Autonomous Region of China: Qomolangma Nature Preserve, Qomolangma (Rongbuk) Base Camp

The Qomolangma (Mt Everest) Nature Preserve covers an area of 35,000 sq km and is located in the Shigatze prefecture of the southern Tibet Autonomous Region of China (Figure 2). The northern boundary roughly parallels the 29° N latitude line just south of Lhasa (4,050m), with the southern boundary delimited by the international border with Nepal. Contiguous to the preserve in Northern Nepal are the existing Langtang National Park, the Sagarmatha (Mt Everest) National Park, and Makalu-Barun National Park and Conservation Area.

The Qomolangma Nature Preserve contains a diversity of landscapes and environments ranging from the ice-clad, 8,000m+ peaks of the High Himalaya to subtropical, densely forested river valleys below 2,000m (Fleming, 1989). The preserve provides habitat for the rare or endangered snow leopard, the kiang (wild ass) and black-necked crane. It also supports Tibet's only populations of the Assamese macaque as well as substantial populations of langur monkey, Himalayan palm civet, jungle cat, Himalayan musk deer, and Himalayan tahr (Feng *et al.*, 1986; Li, 1990).

The role of the High Himalaya as a meteorological barrier is striking and of great importance for the preserve's overall geoecology (Stainton, 1972; Troll, 1972). The moist, southern aspects of the range are strongly affected by the South Asian monsoon; average annual rainfall is between 2,000 and 2,500mm. In contrast, regions north of the range, and thus within its rain-shadow, receive less than 250mm annually and exhibit continental, semi-arid plateau climates with characteristically xeric vegetation formations.

Compared to Nepal, the terrain on the Tibetan side of Everest is generally much higher in elevation but considerably less rugged, consisting of round-

ed hills and broad, flat, river valleys. Approximately 12,000 families live within the preserve area with a total population of about 68,000 Tibetan people. On the basis of their respective livelihoods, the major socioeconomic groups are considered to be: those engaged in agriculture; those engaged in agriculture and animal husbandry (yak, yak hybrids, sheep, and goats), and those engaged in animal husbandry only (Wangchuk Namgyal, 1990). Major crops include highland barley, winter wheat and potatoes.

An important cultural feature and tourist destination in the preserve is Rongbuk (Dza Rongphu) monastery, a Tibetan Buddhist monastery in the main Dzaka Chhu river valley draining from the base of Qomolangma. The monastery is believed to be the highest in the world, situated at 5,060m, not far from the spout of the Rongphu Glacier. It became known to the world in the 1920s through the accounts of the first British mountaineering teams to climb Mt Everest. They passed through Dzaka Chhu valley en route to their climbing camps (McCue pers. comm., 1991).

Everest's north face in Tibet is served by a road originally constructed for the 1960 Chinese Mt Everest expedition. Tour groups and climbing expeditions can drive in 4-wheel drive vehicles or low-geared trucks to the base camp at 5,232m. Although tourists have only visited the region since 1980, concern about the littered campsites, expedition trash at base camp and higher climbing camps, improper disposal of human wastes, and pressures on local vegetation for fuelwood, was expressed as early as 1989 by Qomolangma Nature Preserve officials (Management Bureau, 1989). Unless controlled, the ease of access provided by the motorable road, combined with the predicted increases in mountaineering and trekking groups, will probably continue to exacerbate these problems.

Efforts to control these impacts were begun in 1990 by the Dingri sub-bureau of the preserve. Ten trash-holding bins were installed in the base camp, local people hired to bury refuse and plans developed to transport other refuse to a lower landfill once a year (Management Bureau, 1989). Additionally, more than a ton of trash discarded by past climbing expeditions was collected and trucked out from three campsites by the Everest Environmental Expedition (McConnell and Nichol, 1991). Working together, Qomolangma Nature Preserve and international expedition members built eleven stone-holding areas for temporary garbage disposal, situated new metal trash bins for the collection of non-burnable refuse, and oversaw construction of a landfill near Shegar. Valuable insights regarding the difficulties of disposing of human waste at altitude, preferred packaging materials, draft protocols for back-country users and cultural/logistical realities were gained during these international endeavours. New regulations regarding future use of the base

camp region by tourist groups have now been included in the tourism component of the Qomolangma Nature Preserve master plan.

As pointed out by McConnell and Nichol (1991), however, clean-up expeditions offer only short-term solutions. The responsibility for preservation of the Rongphu base camps lies not with the Qomolangma Nature Preserve, but rather with "...cleaner (international) expeditions whose members accept the responsibilities of travel in fragile environments" (*American Alpine News*, 1990).

Nepal: The Makalu-Barun National Park and Conservation Area

The Makalu-Barun National Park and Conservation Area, officially gazetted in 1991, covers an area of 2,330 sq km within the Solukhumbu and Sankhuwasabha Districts of Nepal (Figure 3). Within a north-south distance of some 40km, elevations range from 435m at the Arun-Sankhuwa confluence to 8,463m at the Makalu summit. A large precipitation variation follows the altitudinal transect: lower elevations, in the full path of the South Asian monsoon, may receive between 4,000 and 6,000mm annual rainfall, which diminishes to less than 1,000mm/yr in the subalpine and alpine regions of the higher mountain summits.

Remarkably diverse and distinct bioclimatic zones, ranging from tropical to nival, are found within very short distances. Distinct vegetation zones correspond to this precipitation/temperature gradient including tropical sal forests at elevations below 1,000m; temperate zone oak/maple/magnolia forests between 2,000 and 3,000m; fir/birch/rhododendron forests in subalpine areas between 3,000 and 4,000m, and the herbs, grasses, and rhododendron/juniper shrub of the alpine pastures at between 4,000 and 5,000m (Cronin, 1979; Dunsmore, 1988; Shrestha, 1989; Stainton, 1972).

Surrounding the uninhabited wilderness area is the Conservation Area, an 830 sq km multiple use zone with a population of 32,000 people from a variety of ethnic groups. Rai, Sherpa, and Bhotia groups dominate and seven different languages are spoken. The population is dependent primarily on low productivity subsistence agriculture and pastoralism, supplemented by the utilization of forest products, small-scale seasonal trade, and seasonal migration for labour. Slash-and-burn agriculture is practiced extensively between 1,500 and 2,300m.

Tourism in the Makalu-Barun area began in 1954 with the ascent of Makalu by a French team (Banskota and Upadhyay, 1990). There has been relatively little trekking tourism since then, although there have been approximately 131 international mountaineering expeditions to the region, with 50%

of them attempting to climb Makalu (Sherpa and Sherpa, 1989). However, although trekking tourism is a relatively recent phenomena, it has now surpassed mountaineering in terms of visitor volume (Banskota and Upadhyay, 1990). Nevertheless, only 243 foreign visitors were recorded for the 1988/89 season. Reasons for the small numbers of visitors include the region's relative inaccessibility, steep terrain, rainy climate and the perception among trekking agencies that the Makalu base camp trek is less difficult than other attractive options, (for example, Annapurna, Everest or Langtang).

Tourism will probably increase in this region, although not at the same rate as has occurred in Sagarmatha National Park and the Rongbuk base camp in the Qomolangma Nature Preserve. Reasons for this currently include the region's new status as a national park with correspondingly improved infrastructure (Task Force, 1990), increased international interest in cultural and nature tourism, and in future will include improved general access to the region once the proposed Arun III Hydroelectric Project and access road have been built (NEA, 1990).

But at the moment, trekking tourism is confined mainly to an approximately nine-day trek (one-way) from the airstrip at Tumlingtar to the Makalu base camp. Compared to the regions discussed previously, this is a true wilderness trek with no facilities beyond the village of Tashigaon, four to five days (group trekking) distant from Tumlingtar.

The Makalu-Barun National Park's tourism development programme has been designed to prevent back-country degradation while promoting local economic development (Banskota and Upadhyay, 1990; Task Force, 1990). It will provide a unique opportunity to preserve one of the last remaining wilderness areas in east Nepal through preventative, innovative activities based on the experiences of other mountain parks in Nepal and elsewhere.

Impacts of tourism are already apparent, however, and indicate a need to implement the programme as soon as possible. Several impacts observed in March 1991 are described below (Byers, 1992; Sherpa, 1991).

- **Forest disturbance:** Dense forests, mostly in excellent condition, characterize much of the trek. Significant tree/shrub removal was noted, although only in the vicinity of kharkas or areas where local herders graze their animals.

- **Subalpine and alpine disturbance:** In the Barun valley, from Yangle kharka towards base camp, some landscape modification due to grazing is evident in isolated areas. More disturbing is the fact that the large shrub juniper/dwarf rhododendron areas above the tree-line appear to have been burned recently by seasonal herders. Reasons given for the

burning include: the desire to increase pasture; attempts to create a fuelwood (and income) source for the Makalu base camp and other camps at higher altitudes, and, simply, boredom.

- **Fuelwood:** The preferred wood collected by staff appears to be tree *Rhodendron* sp., often harvested live, with a minor corridor of depletion obvious along the trekking trail and attributed partly to tourist groups.
- **Litter:** Some litter along the trail was noted and believed to have been left by tourists and porters. The fact that casual collection by two trekking groups in April 1991 was sufficient to clean up much of the trail provided an indication of the currently low levels of impact. More substantial refuse piles of cans were observed, however, at most campsites and in the base camp region. Even in the comparatively undisturbed camping areas, it was apparent that burying would be neither environmentally nor aesthetically sustainable.
- **Sanitation:** In spite of comparatively fewer numbers of annual visitors, sanitation conditions at most campsites, and particularly at the Makalu base camp, are poor and comparable to conditions found in the Sagarmatha or Qomolangma alpine areas. The limited space available for camping in this rugged area, and consequential clustering of tour groups, exacerbates the problem.

Common Characteristics and Management Needs

As has been shown in the preceding discussion, the biophysical, cultural and historical attributes of the Sagarmatha, Qomolangma and Makalu-Barun protected areas, differ significantly. But perhaps more significant than these differences, are the similarities between the three in terms of sources of problems and prospective solutions.

All three, for example, have experienced varying levels of environmental degradation that are particularly serious in the cold, fragile, and environmentally unforgiving alpine and subalpine ecosystems. Each is found in a remote setting, was established only recently as a protected area and is located in a lesser developed country. Each of these factors can complicate the simplest efforts to undertake maintenance and enforce regulations. Given current visitor levels, the fragility of the alpine/subalpine environments and expected increases in vistor numbers, the back-country practices advocated two decades ago may no longer be appropriate for these areas. The preceding review also suggests that programmes designed to protect or minimize the impacts of back-country use in all three regions must become more action-oriented, creative and realistic, if further degradation is to be prevented.

Several suggestions which may facilitate the overall effectiveness of protected area programmes in the Everest region, and possibly in remote alpine regions elsewhere in the mountain world, are described below. These are divided into two categories which reflect the need to consider both the human/institutional and the physical interventions which may be required to initiate positive change.

Human and Institutional Resources

Involving local people: Partly as a result of the widely acknowledged success of the Annapurna Conservation Area Project in Nepal, the 'parks with people' model has been endorsed by in-country and international governments, conservation organizations, NGOs, and donors the world over (Poore, 1992; Wells *et al.*, 1991). Rather than excluding indigenous people from the protected area, the strategy seeks their active participation in design, implementation, and management as a fundamental means of achieving effective, long-term conservation and development objectives. Monitoring back-country conditions, enforcing regulations and supervising regular clean-up campaigns are three specific ways in which local people can be involved in managing a protected area, motivated by a sense of ownership and vested interest in maintaining the resource base. Similar designs have also been incorporated into the policies of the Qomolangma Nature Preserve and Makalu-Barun (Management Bureau, 1991; Task Force, 1990) and offer promising although as yet untested solutions to traditional parks/people problems.

Supporting local NGO initiatives: Local NGO efforts and programmes designed to educate both visitors and local people should be strongly supported by in-country and international development and conservation entities. In Nepal, for example, *Ecotrek*, the newsletter of the Himalayan Guides for Responsible Tourism, contains essays (based on experience) on back-country protocols and environmental issues in the Himalaya. The Kathmandu Environmental Education Project (KMTNC, 1991) plans to facilitate the trekker education process by operating as an information centre for prospective trekkers. The Sagarmatha Pollution Control Project, a locally-based committee established with assistance from WWF in 1991, is reportedly coordinating future clean-up activities in Sagarmatha National Park and lobbying for a system of back-country use deposits (Sherpa, 1991; Stevens *et al.*, 1991). Workshops, training seminars, educational materials for tourists, and refuse and sanitary infrastructure, are included in the programme.

International partnerships: Protected areas are global treasures whose existence and preservation depends largely on an international system of

recognized and shared responsibility. Increased international and regional cooperation in the management of mountain ecosystems was specifically cited as a priority area in Chapter 13, Agenda 21 of the 1992 United Nations Conference on Environment and Development (Rio de Janeiro, June 1992). They were also highlighted by other recent initiatives such as the International Consultation on Protected Areas in Mountain Environments (Volcanoes National Park, Hawaii, October 1991) and the IV World Congress on National Parks and Protected Areas (Caracas, Venezuela, February 1992). Partnerships between international conservation entities and the national parks of the Everest region, and elsewhere in the mountain world, should be encouraged to generate project funding, to design and establish long-term support mechanisms (endowments, income-generating activities), and to provide and exchange technical expertise. Several ways in which Woodlands Mountain Institute, a scientific and educational organization based in West Virginia, USA, facilitates these processes for the Makalu-Barun and Qomolangma areas are discussed in Taylor-Ide *et al.* (1992).

Strengthening institutional infrastructure: At the same time, there is a need to focus on strengthening in-country institutional infrastructure via training, international seminars, and advanced degree opportunities for protected area personnel. The importance of this cannot be overstated if park authorities are to be expected to actually support and enforce required regulations, manage the natural resource base, and promote the economic development and participation of local people.

Action Programmes

Education: The need for increased education of back-country users prior to their departure is emerging as a particularly strong theme in the 1990s. Clean-up expeditions offer temporary solutions only, and the good accomplished often lasts for less than a season. Mountain climbers have been notoriously insensitive to the need for sustainable back-country practices and must be targeted and reached more effectively (Hesse pers. comm., 1991). But trekking groups, individuals, and support staff are also at fault. Likewise, protocols and codes of conduct being developed by various entities (see, for example, Banskota and Upadhyay, 1991; Management Bureau, 1991; McConnell and Nichol, 1991; McCue, 1991; Stevens *et al.*, 1991) need to be endorsed and enforced by individuals, trekking companies and governments. Finally, there is a need for each of these groups to better understand the economic value of these unique back-country regions and to protect them accordingly, a process which can only come about through improved education and communication.

Fuels: Ferris (1991) has suggested that "kerosene is the best – the only practical – alternative" to reducing the use of fuelwood by tourists and their porters in the Nepal Himalaya. Although trekking groups are required to cook for their clients with kerosene in all national parks in Nepal, Ferris points out that staff using fuelwood outnumbered trekkers by four to one in Langtang in 1990. So it is obvious that the regulation also needs to be applied to porters if significant reductions in fuelwood use and back-country degradation, are to be attained. However, new policies regarding the provision of trekking clothing and equipment (sleeping bags, tents) for porters – chronically ill-clad in spite of much discussion during the past decade – will then be necessary because of their reliance on fires to keep warm at night. Likewise, cultural preferences for campfires, an understandable reluctance to change, and technological problems related to poor stove reliability and efficiency, are items which must be addressed further. At present, even the most painstakingly planned trekking or climbing expedition can expect to experience great difficulty in actually enforcing a kerosene-only policy in remote regions.

Sanitation: Although certain parks in the United States use helicopters to regularly fly out portable latrines and human waste, such a strategy is not currently feasible in Nepal or Tibet. The construction, maintenance and obligatory use of latrines still appears the most practical alternative. Tented latrines may be appropriate for lower altitude base camp approaches. Permanent structures, however, such as those recently constructed by the Pollution Control Project in Sagarmatha, are indicated for the fragile alpine regions. Enforcement of the oft-proposed regulation to burn all toilet paper is also needed, a practice which poses little inconvenience to tourists except at higher (>5,000m) altitudes.

Rotations/moratorium: Where appropriate, campsites at high altitude should be rotated in order to allow plant and soil regeneration. Where space is limited and/or impacts begin to reach critically high levels, 'resting' periods for either the entire region or selected areas should be enforced.

Liaison officer support and deposit systems: Traditionally, liaison officers have been a part of climbing expeditions to Nepal and Tibet, but their duties have rarely included enforcement of clean-up regulations. This should perhaps change. Increasingly, it is also being recommended that both climbing and trekking parties should be required to leave a deposit fee of between US$250 and US$300, reimbursable at the end of the trip upon evidence to the officer in charge that it adhered to regulations.

Garbage in, garbage out: Burying solid waste, although preferable to dumping, is no longer feasible in the Himalayan back-country and strict

regulations to 'pack it in, pack it out' are strongly indicated. Such regulations are already in effect in Sagarmatha and form part of the tourism development plan for the Makalu-Barun.

Consideration for World Heritage site status: Sagarmatha National Park was designated a World Heritage site in 1979. Recently it has been suggested that an extension of the Sagarmatha World Heritage Site, to include appropriate sections of the Qomolangma Nature Preserve and Makalu-Barun, could promote and lead to an overall transborder system of management cooperation that would also facilitate preservation of the entire Everest alpine/subalpine region (Thorsell, 1992). Further consideration is clearly indicated in view of the numerous practical and indirect benefits which the World Heritage site designation carries.

Communication: The problems discussed here are of international concern and beginning to attract the attention of major donors, conservation groups, trekking entities, and tourists. It is likely that additional pressure to preserve and protect the Everest region will be placed on the Governments of Nepal and Tibet by such well-intentioned groups. However, the best of intentions, strategies, and action programmes will be meaningless if rejected because of cultural and/or political insensitivities, whether real or perceived. Adequate communication and understanding between concerned international partners, host governments and local communities will therefore be fundamental to any strategy or project designed to protect these regions.

Conclusion

Significant landscape degradation has occurred in each of the three regions discussed in this paper. In addition to the progress made by the Governments of Nepal and the Tibet Autonomous Region of China, it has been suggested here that future programmes designed to protect or minimize the impacts of back-country tourism must become more action-oriented, creative and realistic if further degradation is to be prevented.

The suggestions for increasing programme effectiveness presented in this paper are hardly original and have been discussed within the conservation community for decades. But their potential for implementation and success appears more promising than ever before given the increased levels of in-country and international concern for high mountain preservation.

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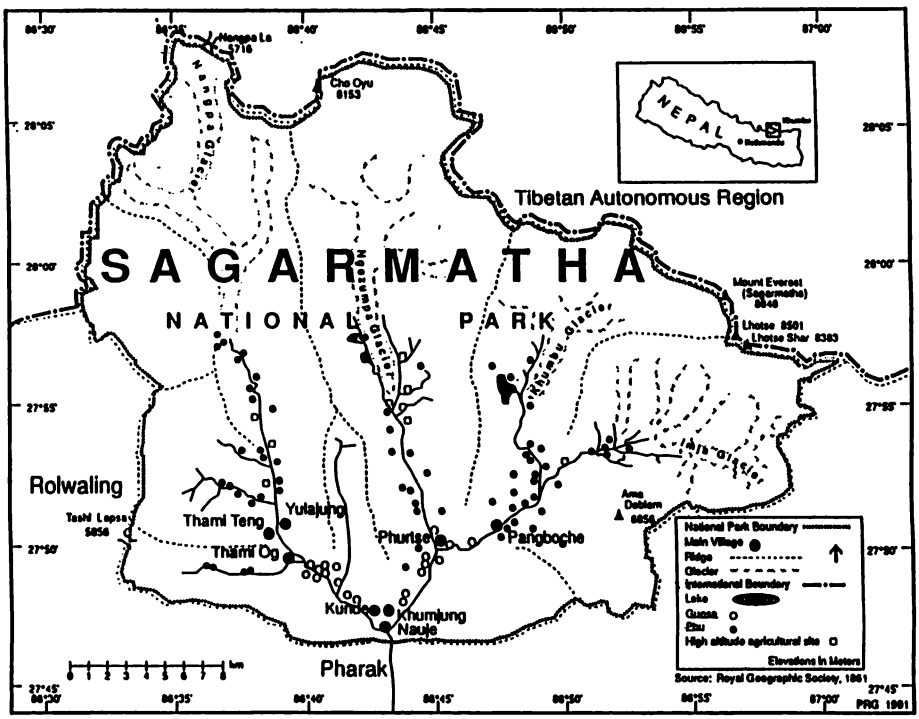
Figure 1 Sagarmatha National Park



Source Stevens *et al.* 1992

Figure 2 Qomolangma Nature Preserve, Tibet Autonomous Region

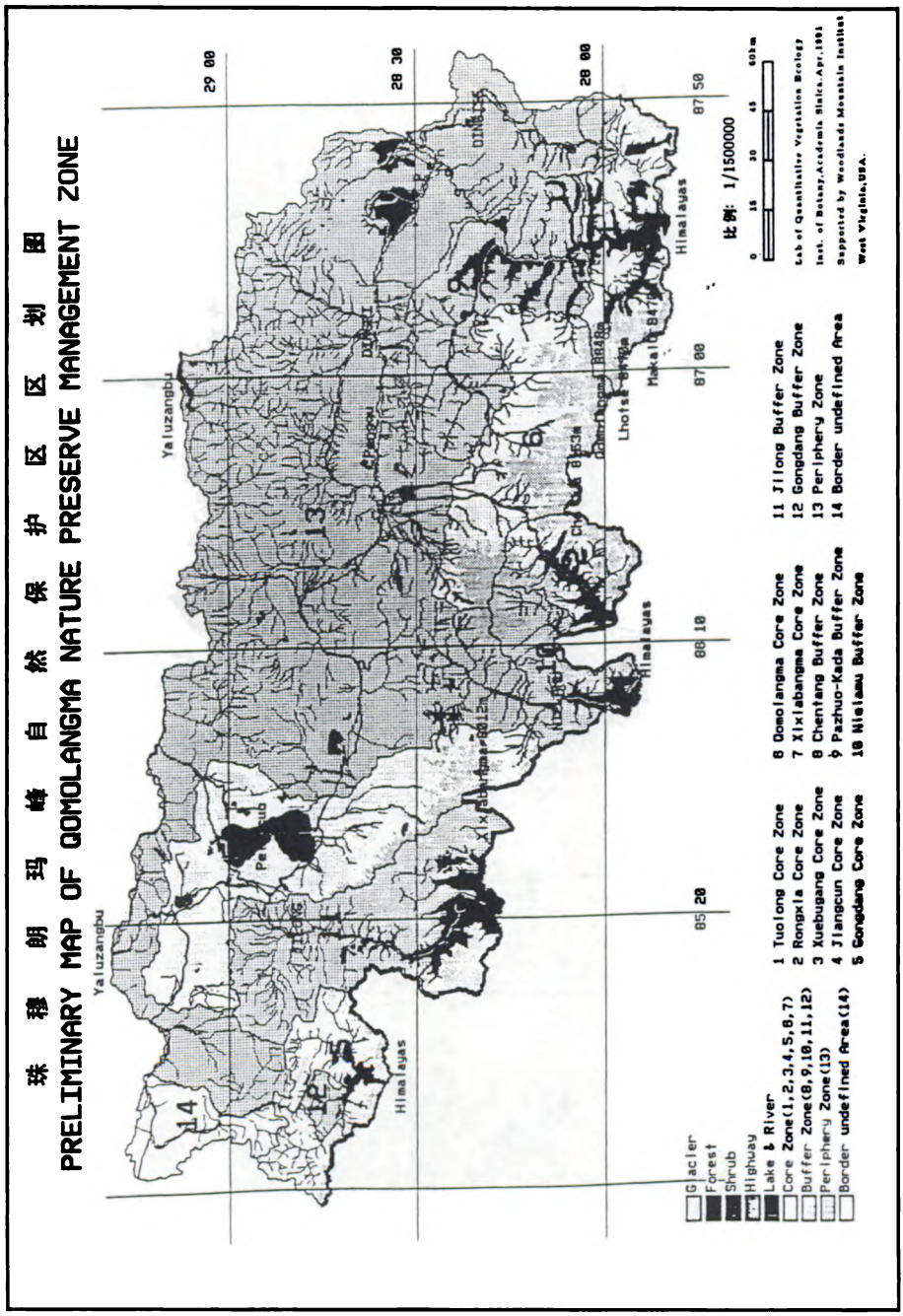
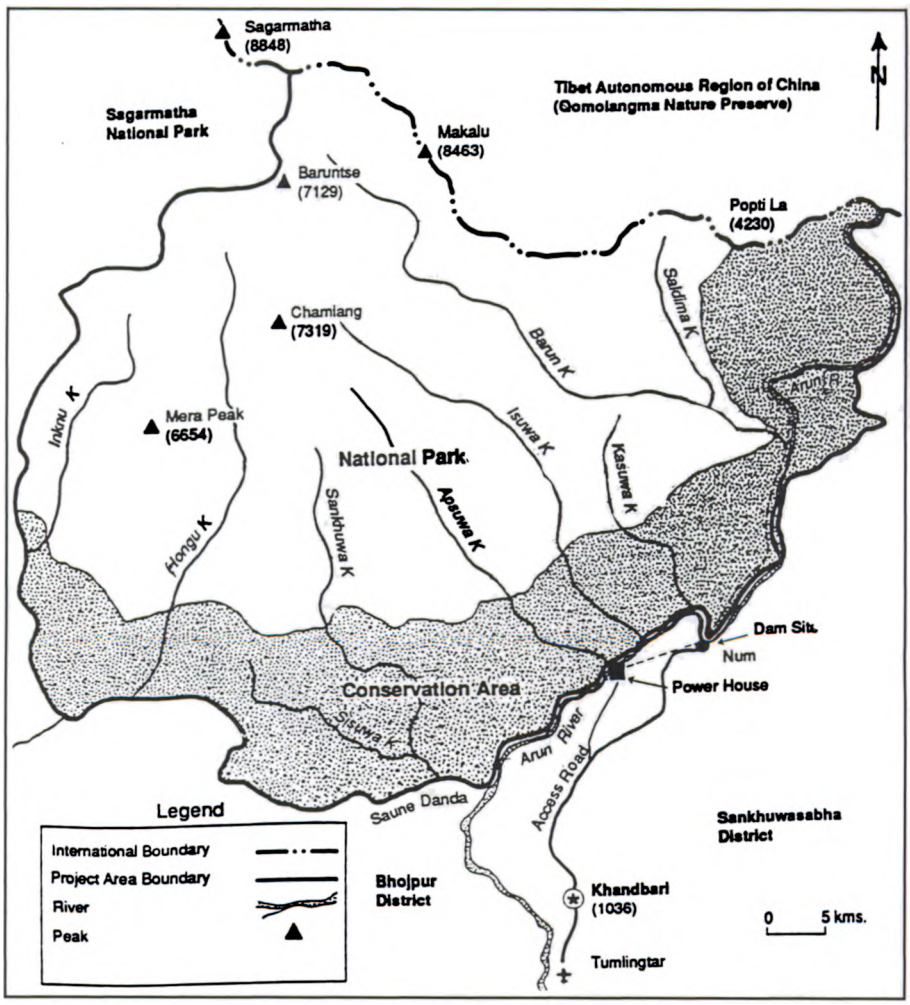


Figure 3 Makalu-Barun National Park and Conservation Area



SOCIOCULTURAL IMPACTS OF MOUNTAIN TOURISM ON NEPAL'S SAGARMATHA (EVEREST) WORLD HERITAGE SITE: IMPLICATIONS FOR SUSTAINABLE TOURISM

David W. Robinson
School of Outdoor Recreation, Parks and Tourism,
Lakehead University, Thunder Bay, Ontario P7B 5W1, Canada

Abstract

A broader understanding of international tourism could assist planners of parks and protected areas in developing sustainable tourism policies. This study therefore sought to increase the understanding of tourism impacts on alternative tourism destinations which are both culturally and ecologically sensitive. The perceptions of western tourists (n = 70) of current levels of tourism impacts on the culture and ecology of the Khumbu region of Sagarmatha (Everest) National Park in Nepal were assessed. Each individual questioned had recently completed three or more consecutive weeks trekking in the region. Some respondents expressed reservations, but most were generally supportive of tourism for the area, and also felt that it had improved the quality of life of the Sherpa people who inhabit this region of Nepal. However, in contrast to the intentions of the Nepalese Government to substantially increase tourism volume in this region within the next ten years, most respondents felt that visitor numbers should not be increased.

Introduction

Recent studies of international tourism show that the modern tourist is increasingly looking for a blend of high quality natural and cultural experiences, which provide an alternative to the conventional tourism experience typically involving large numbers of tourists, tasteless and ubiquitous development, environmental and social alienation, and limited interaction with authentic local culture (Butler, 1990; Menezes & Chandra, 1989). Current trends also indicate that alternative travel is booming, and that the most popular special interest tours involve outdoor activities of an adventure or nature appreciation variety (Kutay, 1989; Menezes & Chandra, 1989). This

form of tourism commonly occurs in remote wilderness or mountain environments and within distinctive cultural contexts.

Analysts have long expressed concern over the effects of popular tourism on traditional behaviours and lifestyles, human values, and the environment of host destinations (see, for example, Butler, 1990; Mathieson & Wall, 1982). Moreover, alternative tourism destinations are often remote and undeveloped in character, and located in areas which are both culturally and ecologically sensitive; consequently, they are particularly vulnerable to the pressures of modern tourism (Dogan, 1989).

Properly managed, tourism can be a low to non-consumptive industry, with limited impacts on natural resources and local cultures, and a source of economic and social benefits for local communities. However, if developed beyond the capacity of the environment, the resource base, and the abilities of the local population to sustain it, not only does tourism cease to be a renewable industry, but the quality and authenticity of the tourist's experience declines (O'Reilly, 1986; Plog, 1974).

Tourism Development in Nepal

Having experienced unprecedented tourism growth in the past 25 years, Nepal is now one of the most popular alternative tourism destinations. In 1966, a mere 6,179 tourists visited Nepal; this number had risen to 265,943 by 1988 (Ministry of Tourism (MoT), HMG Nepal, 1989). The economic benefits of such massive increases are very apparent. In 1962, gross foreign exchange earnings from tourism stood at US$78,000. They now exceed US$64 million, making tourism Nepal's major industry by far (MoT, HMG Nepal, 1989).

The Nepalese Government plans to boost the number of tourists to between 500,000 and one million by the year 2000 (Buckley, 1991; Hagen, cited in Tseten, 1990). The proposed increase is aimed at maximizing tourism income, but some critics claim that it ignores the cost to the nation's cultural and environmental heritage (Mani Dixit, 1990).

Nepal's fame lies primarily in trekking and mountaineering, and it was here in the 1960s that the world's first commercial treks took place. Trekking and mountaineering visits to the Himalaya region of Nepal currently account for 13.9% of all tourist visits to this country (MoT, HMG Nepal, 1989). The number of trekkers has increased from 642 in 1966, to 36,937 in 1988 (MoT, HMG Nepal, 1989) and now stands at over 50,000 a year (Buckley, 1991). The massive increase in total tourist volume planned by the Nepalese Ministry of Tourism will lead, inevitably, to significant in-

creases in trekker numbers. The majority (81%) of tourists who venture into the high region of Nepal are of North American and European origin (MoT, HMG Nepal, 1989), and from cultures which are markedly different from the predominantly Buddhist Sherpa culture of the Nepalese Himalaya.

For many tourism analysts, the Khumbu (or Everest) region of Nepal's Sagarmatha National Park vividly portrays the paradoxical nature of tourism development in culturally and ecologically sensitive areas. Studies by Sharma (1989), Shrestha (1989), Singh & Kaur (1986), Tseten (1990), and Furer-Haimendorf (1984), indicate that, while massive increases in tourists to this area have generated a variety of economic and social benefits at both local and national levels, these increases have also pushed the region's carrying capacity to almost critical limits.

Purpose

A broader understanding of the international tourism experience could assist planners in developing sustainable tourism policies for parks and protected areas. This study therefore examines tourism impacts on Nepal's Sagarmatha (Everest) National Park. In presenting empirical data on tourists' perceptions of impacts, the paper aims to provide a contemporary example of an international alternative tourism destination where capacity levels are apparently ignored by centralized decision-making agencies, and to identify aspects of the Nepalese experience relevant to the development of sustainable tourism in other culturally and ecologically sensitive areas of the world.

Methods

The study area: Established in 1976, Sagarmatha National Park is famous for both its towering mountains, including Mt Everest, and the 'living culture' of its Sherpa people, approximately 4,000 of whom live within the park's borders.

In 1988, 11,366 individual trekking permits were issued for the Khumbu or Everest region (MoT, HMG Nepal, 1989), making it the most popular trekking and mountaineering area of Sagarmatha National Park. The Khumbu is unique in having undergone a relatively rapid transition from a subsistence to cash economy over the past 30 years. This change, brought about primarily through an increasing dependency on tourism-generated income, means that the Sherpa now enjoy a standard of living which is as high as that of any of the country's ethnic minorities. This new life style has not, however, been without cost.

Subjects and procedure: Subjects consisted of 70 western tourists who had recently completed three or more consecutive weeks trekking in the Khumbu district of Sagarmatha National Park. They were questioned over a six-week period during October and November 1990, in Kathmandu, the capital of Nepal. Permission to conduct this study was officially granted by the Nepalese Ministry of Tourism in Kathmandu.

Results

Sociodemographic profiles: The majority of the respondents were white (98%), male (70%) and under 45 years of age (86%). Mean age was 34.5 years. The respondents were of North American (61%), European (22%), and Australian or New Zealand (17%) origin. The sample was generally well-educated, with 82% holding a university degree, and 14% holding graduate degrees. Mean annual income was US$42,000. Most of those questioned were also experienced recreational travellers, with 87% having visited at least one other Third World country for non-business purposes.

Interviewees also showed some level of concern for social and ecological issues. Thus, 37% of the respondents were members of an environmental organization, 49% were involved with a charity organization, and 32% were members of an outdoor recreational organization. Also, 70% donated to charitable organizations (mean donation US$393/yr), and 46% donated to environmental organizations (mean donation US$140/yr).

Trekking parameters: The respondents had spent an average of 36 days in Nepal, and an average of 24 days trekking in the Khumbu district of Sagarmatha. The average number of western tourists in a trekking group was seven, and the average number of Sherpa employed by and travelling with a trekking group was 12 (giving a Sherpa-to-tourist ratio of roughly two-to-one). Some respondents, however, trekked with groups consisting of as many as 20 tourists and 55 Sherpa, amounting to an entourage of 75 people – a group size which points to potentially large ecological impacts. The majority (94%) of respondents had minimal or no understanding of the Sherpa language.

The trekking parameters suggest that visitor-host/resident contact was extensive. As a result, and over time, alternative tourism of the type found in this area appears likely to result in more changes in local behaviour, than would occur in more conventional tourist settings, where large numbers of tourists have limited but intensive contact with local people (Butler, 1990; Dogan, 1989).

Overall attitude toward tourism: Generally, respondents had a posi-

tive attitude toward tourism in this area. Approximately 13% strongly favoured it, 58% somewhat favoured it, while a further 29% were neutral (Table 1). With regard to the quality of life, 10% felt that tourism had significantly improved it, 70% felt that tourism had somewhat improved it, while approximately 13% felt that tourism had somewhat worsened it (Table 2).

However, although most respondents had a fairly positive regard for tourism, there were reservations concerning proposed increases in visitor volume. While 13% felt that visitor volume in this area should increase (somewhat to significantly), 53% felt that there should be no further increase in visitor numbers, and a further 34% felt that the volume should decrease (somewhat to significantly) (Table 3). These findings indicate an obvious discrepancy between visitor attitudes and the intention of the Nepalese Ministry of Tourism to increase tourism volume significantly within the present decade.

Tourist perception of impacts: The perception questions posed 13 hypothetical impact scenarios, which were drawn from existing descriptive research studies (particularly the works of Singh and Kaur (1986), Sharma (1989), and Shrestha (1989)) on current tourism impacts in the Himalaya regions of Asia. Subjects were asked, in light of their recent trekking experiences, to indicate the level they believed impacts had reached (assuming they had) in the Khumbu district of Sagarmatha National Park. Responses were made according to a five-point scale, anchored by the statements "not at all serious" (1), "moderately serious" (3), and "very serious" (5).

In order to identify the underlying pattern of perceived impacts, a principal components factor analysis with varimax rotation was performed on the 13 variables. The rotated solutions yielded four factors explaining 78.1% of the variation. Considering loadings of over 50%, the four factors essentially reflected the following types of impacts: loss of traditional employment systems, social disruption, acculturation, and ecological effects (Table 4). Table 5 gives the means and standard deviations for the 13 items, and shows the composite score of each of the four identified factors. The composite scores indicate the perceived impact level of each of the four types of impact.

Thus ecological effects (composite score 4.01) were perceived to be occurring at a serious level in this area. Clearly, they are tangible and observable, and impinge directly upon the quality of the tourist's trekking experience. Impacts on the Sherpa culture and the local society are less tangible, and consequently less readily observed. Nevertheless, perceptions of the level of these give cause for concern. Loss of traditional employment systems (com-

posite score 3.30) was perceived to be more than moderately serious, and acculturation (composite score 2.68) and social disruption (composite score 2.67) were both perceived to be approaching a moderate level of seriousness.

Summary and Discussion

These results point to the often paradoxical nature of tourism development in regions which are both culturally and ecologically sensitive. Although some expressed reservations, the respondents were generally supportive of tourism for this area and felt that it had enhanced the quality of life of the Khumbu communities. On the other hand, the respondents also perceived both cultural and ecological costs. Additionally, and perhaps related to their perceptions of current impact levels, most respondents felt that the volume of foreign tourists in this area should not be increased, and many felt it should be decreased.

The findings of this study support those of previous descriptive studies of this region, and indicate that tourism development within it has not always adhered to the sustainability principle. Rather, the emphasis appears to have been on increasing tourism volume and enhancing tourism revenue. But in recent years, the Nepalese Government has begun to recognize the extent of ecological impacts occurring in this region, and, with the assistance of international agencies, is now attempting to remedy them.

Concerning cultural and social disruption, however, the Nepalese Government continues to operate either in ignorance of such impacts, or in the belief that the Sherpa culture is sufficiently resilient to withstand the presence of large, and increasing, numbers of tourists.

Implications for the development of sustainable tourism: Remote, alternative tourism destinations commonly share various characteristics. Val (1990) lists the following: a large aboriginal population with strong cultural ties to past traditions and evolving ties to a land and renewable resource base; a devolving or recently transferred right to self-government from either a central authority or former colonial power; recognition on the part of aboriginal groups that their regions, traditions and cultures are of interest to the modern tourist, and a limited or developing tourism infrastructure.

Understanding the resource base: Tourism policy which places emphasis solely on increasing tourist volume and accumulating revenue is insufficient and potentially self-defeating. Rather, there is a need for sound planning which not only identifies tourism opportunities, but also considers acceptable limits of change in order to conserve the natural and cultural assets which are the primary attractions to the destination area. A sustaina-

ble tourism development plan is therefore one which establishes a *priori* the carrying capacity of the region concerned.

Capacity levels are influenced by the characteristics of the tourists, and the characteristics of the destination area and its population. The former includes the tourists' characters and personality traits, the numbers of tourists, lengths of stay, and types of tourist activity. The latter include natural environmental features and processes, economic structure and economic development, and social structure and organization (O'Reilly, 1986). The interrelationships of all these factors need to be taken into account if tourism is to be developed sustainably. This clearly requires collection of a significant quantity of information.

Community involvement: If tourism is to be sustainable, local communities must be involved in any decision-making which will directly influence their life styles, affect their community development, or use their locality's natural resources. Development should in large part incorporate a 'bottom-up' approach (Hough & Norbu, 1989) rather than a 'top-down' or bureaucratic approach. In this respect, the integration of the Khumbu into Nepal's national system of panchayat (village government) has begun to enhance community involvement in directing some aspects of tourism development (for example, the growth of tourism related facilities). However, major decisions concerning tourism in this area (for example, increases in volume of tourists, increases in the number of trekking companies which operate tours in the Sagarmatha district), are still made solely by governmental agencies in Kathmandu.

Tourism can become part of the economy of a remote region in a way that is consistent with the skills, interests and traditions of its aboriginal peoples. But for this to occur, local communities must first develop an understanding of what tourism means as a concept (Wray, 1989), and become aware of changes that tourism may make to their life styles and social structures. Beyond this, if utilization of cultural assets is to be sustainable, tourism must be developed within the traditions of existing communities, and this requires major local input in decision-making at all phases of development. The more knowledgeable local people are about the potential rewards and pitfalls of tourism, and the more they are involved in and benefit from tourism development, the more likely it is that that they will commit themselves to the preservation of the natural and cultural values upon which that tourism is based.

Involving local communities in tourism development has advantages, including: promotion of community acceptance of tourism development; the inclusion of local traditional knowledge and knowledge of the local resource

base in development plans, and lower management costs through employment of local people to monitor and enforce sustainable development policies (Val, 1990).

Concluding Comments

Aboriginal peoples and culture should not be regarded as resources to be manipulated or exploited by those sectors of the tourism industry which are driven more by the profit motive than by a commitment to sustainability.

As Greenwood (cited in Kutay, 1989) points out, all viable societies create traditions, accept external elements, and are constantly reinventing themselves. Tourism as an agent of change and development can have a major influence on this process. Some societies, such as the Masai of Africa, reject the influences of tourism (Kutay, 1989). Others, such as the Sherpa, attempt to embrace them within the confines of their own traditions. Yet others will abandon their cultural roots altogether as a result of coming into contact with them.

With proper management, though, tourism can help preserve and strengthen aboriginal cultural identity, while at the same time making a positive contribution to economic development and the efforts of an aboriginal group to attain viable forms of self-governance. It is therefore essential that planners and policymakers accept that the vitality, longevity and prosperity of tourism in culturally and ecologically fragile areas depends not only on their ability to identify and develop opportunities, but also on their ability to conserve the natural and cultural assets of these areas (Val, 1990).

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Table 1 Attitude to the presence of tourism in the Sagarmatha region of Nepal

Response	Percentage
strongly oppose (1)	0.0
somewhat oppose (2)	0.0
neither oppose or favour (3)	29.0
favour somewhat (4)	58.1
strongly favour (5)	12.9

Mean 3.84, S D .63 (= standard deviation)

Table 2 Attitude to the influence of tourism on the quality of life in the Sagarmatha region of Nepal

Response	Percentage
significantly worsened (1)	0.0
worsened somewhat (2)	13.3
not changed (3)	6.7
improved somewhat (4)	70.0
significantly improved (5)	10.0

Mean 3.77, S D .81

Table 3 Attitude to the volume of tourism in the Sagarmatha region of Nepal

Response	Percentage
significantly decrease (1)	6.3
should decrease somewhat (2)	28.1
should not change (3)	53.1
should increase somewhat (4)	9.4
significantly increase (5)	3.1

Mean 2.75, S D .84

Table 4 Factors representing perceived levels of current tourism impacts

Factor	Factor Loading
Factor 1	
Loss of Traditional Employment Systems	
over-dependence on tourism	.94
emigration from villages	.82
development of new social class system	.77
erosion of sensuous/aesthetic characteristics	.76
loss of traditional employment	.55
Factor 2	
Social Disruption	
disruption of family and community relationships	.81
hostility-resentment within communities	.77
decline in morality/increased social problems	.59
Factor 3	
Acculturation	
erosion of indigenous language	.84
erosion of local traditional culture	.74
Factor 4	
Ecological Effects	
waste disposal	.86
slope and soil erosion	.82
increased deforestation	.74
Variance explained = 78.1%	

Table 5 Means, standard deviations, and factor composite scores for perceived tourism impacts

Factor items	Mean	S D
Loss of Traditional Employment Systems		
over-dependence on tourism	3.47	1.03
emigration from villages	3.34	1.16
development of new social class system	3.41	1.20
erosion of sensuous/aesthetic characteristics	2.89	1.12
loss of traditional employment	3.39	1.19
Composite score = 3.30		
Social Disruption		
disruption of family and community relationships	2.78	1.06
hostility-resentment within communities	2.16	0.95
decline in morality/increased social problems	3.08	1.28
Composite score = 2.67		
erosion of indigenous language	1.97	0.97
erosion of local traditional culture	3.38	0.69
Composite score = 2.68		
Ecological Effects		
waste disposal	4.20	0.95
slope and soil erosion	3.52	1.39
increased deforestation	4.32	1.08
Composite score = 4.01		

MANAS: WORLD HERITAGE IN DANGER?

Sanjoy Deb Roy
Additional Inspector General of Forests and
Wildlife, Ministry of Environment and Forests,
Paryavaran Bhaban, CGO Complex,
Lodi Road, New Delhi 110 003, India

Abstract

The importance of Manas as a repository of an amazing range of biodiversity cannot be overemphasized. Part of the area was declared a wildlife sanctuary in 1928. In 1985 the sanctuary was designated a World Heritage site and then in 1990 a national park was created. Although it covers only a small area, Manas National Park contains 22 of India's endangered mammals, some of which are endemic. But since 1988 not all has been well in Manas. Political strife in the State of Assam has caused many management problems. The World Heritage Committee has therefore suggested that the site be inscribed on the World Heritage Sites in Danger List. However, it is not clear that this would assist the Assam government in its efforts to protect the park.

Introduction

The area of Manas nestles in the foothills of the Bhutan Himalayas and is forested to the east, west and north. Indeed, it contains some of the region's finest forests. Towards the south, however, the human population (comprised principally of Bodas plains tribe people) is increasing and could eventually threaten the area's natural values. Population density has already reached over 600 people per sq km.

Part of the area was declared a wildlife sanctuary in 1928. Divided into two sections by the Manas river, which flows down into the Assam plains from the steeply rising Bhutan mountains, the Manas Bhutan Wildlife Sanctuary covered 390 sq km. However, few management activities were carried out until the beginning of the 1960s. This was largely because resources were lacking, but also because the true value of the area remained unrealized.

Fortunately, Manas's inaccessibility meant that it remained relatively untouched and was not subject to excessive exploitation. Nevertheless, hunt-

ing of animals for meat, commercial fishing, grazing of domestic stock and collection of small timber, thatching material, fuelwood and other items by villagers, was common. In addition, the open grassland was burned frequently by herdsmen, and the forests logged by the Forest Department. Logging was limited, though, due to the difficulties involved in reaching the forests and the short time available for carrying out harvesting operations.

Between the early and mid-1960s, most of the above activities were gradually eliminated. Firstly, the leasing of the forest was stopped and then the activities of the villagers controlled. The latter was a particularly difficult task which took several years to accomplish, and even then, controlling poaching remained a problem because of insufficient resources.

In 1974, Project Tiger was launched in India; Manas was an obvious initial choice for a project site. Availability of resources for protection of the area improved and, for the first time, scientific management was added to anti-poaching measures. In 1985, the sanctuary was designated a World Heritage site and then in 1990, a national park was created and a further 500 sq km added to the existing protected area.

Biological Riches

The importance of Manas as a repository of an amazing range of biodiversity cannot be overemphasized. Although it covers only a small area, the park contains 22 of India's endangered mammals, some of which are endemic. The extraordinarily high diversity of its habitat types is probably unique in the Indo-Malayan Realm. Its uninterrupted forests to the east, west and north, should ensure that it remains a high-value biodiversity site.

The size of the park is inadequate in ecological terms, but the presence of Manas Bhutan Wildlife Sanctuary to the north compensates a little for this. Although the park and the sanctuary are politically separated, they can be considered complementary to each other and as forming a composite ecological unit. This view is supported by the fact that various animal species (including gaur, wild dog and elephant) use both the park and the sanctuary, depending on their seasonal needs and irrespective of the international boundary. The area may contain the last strain of the Asiatic wild water buffalo. It also contains the pygmy hog, which is endemic to the area, and the golden langur.

Current Status

With the implementation of increased protection measures, the status of Manas has improved markedly, as evidenced, for example, by the gradual

rise in animal populations. Admittedly it is difficult to estimate the populations of all the area's species. But meticulous counts of the tiger, which is the indicator species, and three elephant censuses, have all shown that animal populations have risen significantly.

Two species in particular – the pygmy hog and the swamp deer – have responded very well to new management techniques employed in the open grassland areas. Making even a rough estimate of the pygmy hog population in the area remains a problem, but monitoring of the indirect evidence of its existence, the increased frequency of sightings and its dispersal to many new areas, suggest that numbers of this species are increasing. The swamp deer population can be estimated with more certainty – once as low as 50 individuals it now numbers 450. Population figures for elephants are equally encouraging, with nearly 55% of the total population in the subadult category (under 12 years old). The ratio of tuskers to tuskless males is around 1:1, while the gender ratio is 2 males to every 5 females.

Buffer Zone

The Manas Tiger Reserve comprises a buffer zone and the national park. There is also a small sanctuary to the east of the core of the buffer zone and another newly declared game reserve to the west. Excluding these two areas, where normal forestry operations have been curtailed, the buffer zone is managed by foresters. For a long time, a large number of tribal settlers have lived in forest villages within the zone. The Bhutan forests are located to the north of the buffer zone, but there are many settlements, including some small townships, mostly along the valleys and rivers that emerge from the mountains.

This entire area was once a rich, diverse and extensive habitat for wild animals, but is now severely depleted and much disrupted. Encroachment is a serious problem, which the Assam government has so far been unable to solve. The area contains one of the most commercially valuable sal forests. It is the State government's chief source of revenue, which explains why forest operations have been permitted to continue there.

Political Turmoil and Armed Conflict

Sadly, just when the outlook for the area's wildlife started to look reasonably bright, political turmoil surfaced. In the mid-1980s, students belonging to the ethnic plains tribe started campaigning vigorously for the right to self-rule. The State government was reluctant to accept the demand and consequently the agitation became violent. Armed activists inflicted heavy

damage on government property and even killed some government officers. The whole of northwestern Assam – including the Manas Tiger Reserve, the buffer zone and its core – were affected. A forested and generally inaccessible area, it became a convenient hiding ground for extremists. Forest officers, generally residing in isolated numbers in remote areas, became a target of extremist groups and several were killed. Most of the roads in the area were rendered useless due to the blasting or burning of bridges and culverts. Forest offices in the interior and remote areas were therefore closed down.

Initially though, the core area of Manas remained unaffected. This was probably because the wildlife staff here were armed and had access to wireless communications. But in February 1988 several forest offices in the interior were raided by large gangs. One range headquarters was seized by more than 400 armed extremists and held for over 24 hours, during which time a fierce gun battle took place.

The Assam government's initial efforts to control the situation were unsuccessful. After attacks on some of the interior wildlife posts, it decided to withdraw wildlife staff and deploy them instead at range headquarters.

The combined effect of extremist attacks and lack of timely police assistance was extremely demoralizing for wildlife staff. Additionally, various timber and animal poachers, whose activities had been at least partially controlled by the wildlife staff, lost no time in taking full advantage of the chaos and established contact with the extremists. Villagers around the park's core were divided between those who supported them and those who opposed them. The latter were more numerous but too frightened to pass information to the authorities.

In the western part of the core area, trees near streams and rivers were felled by poachers and floated downstream. However, when these arrived at commercial centres, the forest authorities were informed and duly able to seize the timber. The poaching was stopped in under a month and before any serious damage had been inflicted on wildlife habitats.

Unfortunately, poaching of animals for meat proved to be more of a problem. Formerly, it had been limited to some extent by armed antipoaching staff posted at strategic locations in the interior. But it was difficult to maintain this presence in view of the deteriorating political situation. However, the State government provided an armed forest protection force to help defend the park's most important main offices and residential buildings against attack, and then in mid-1990 a regular armed forced was also engaged to assist it. Meanwhile, with the police gradually gaining the upper hand, terrorist activities were beginning to die down.

However, in September 1990, another range headquarters in the east was raided and looted by a large number of armed extremists. Armed police originally posted at the site had been transferred, thereby creating an opportunity for attack. But since this time, no further violence has been reported, due to improved coordination between wildlife staff and the police.

Damage Incurred

Damage to park property due to terrorist activity has been calculated at 50 million rupees. During the last two years, over 6 million rupees have been provided to repair some of the damage. However, ecological damage was probably far more significant, although no definitive statement can be made since many areas remain inaccessible or unstaffed.

Fortunately, although the numbers of some species of animals may have declined due to extremist activities, their habitat has not been significantly degraded. Dense cover conditions and poor ground level visibility probably go some way to explaining this. A careful field assessment is required, however, to assess the situation accurately.

Conclusion

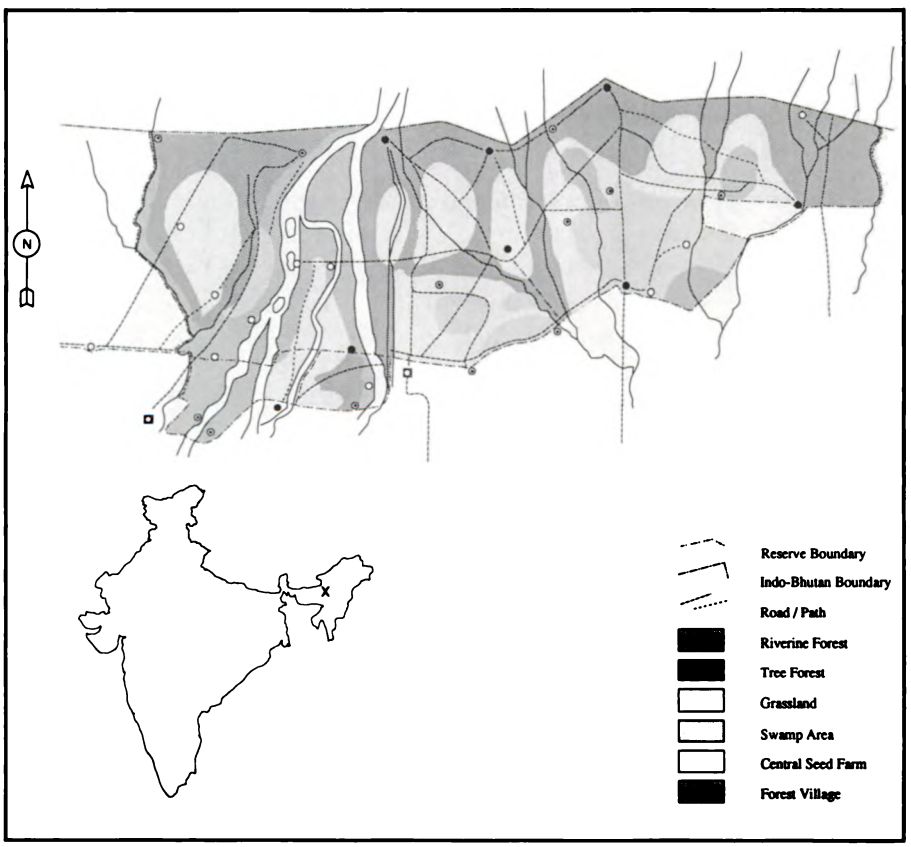
In the event of political violence, it is not unusual for wildlife management to suffer. It is probably only strong leadership, backed by a highly experienced field staff, that can prove equal to warding off resultant threats. Unfortunately, in this particular case, the leadership buckled under pressure and the wildlife staff understandably gave up the fight. Since then, an able leader of proven worth has been appointed to Manas. Hopefully, he will be able to boost morale. The political situation has also improved considerably. So for the moment at least, the main danger appears to have been averted.

Nevertheless, threats to Manas persist in the form of the impoverished population on its southern fringe. Here the park is flat and the soil extremely fertile. Already, many determined attempts to cultivate it have been made. Legal measures could be implemented to control such activity, but this would be treating a symptom rather than the cause. An extensive ecodevelopment plan has therefore been drawn up instead. This has been adopted by WWF-India and is likely to be put into action in the near future, principally by the wildlife authorities. The plan envisages improving the living standards of the fringe population and reducing its dependency on the forest through environmental education.

Relations between the Bhutan and Assam governments are good, which aids wildlife management of this transfrontier area. Putting Manas on the World

Heritage Sites in Danger List would put pressure on the Assam government to improve the park's conservation status. However, it is already genuinely concerned about the park and taking steps to restore a normal situation there. Thus it appears unlikely that adding the park to the Danger List would improve matters. The need is rather to support the government's current efforts.

Figure 1 Manas National Park, India



6. AFRICA

Ngorongoro Conservation Area, Tanzania

THE EFFECTS OF WAR ON WORLD HERITAGE SITES AND PROTECTED AREAS IN ETHIOPIA

Tadesse Gebre-Michael
Manager, Ethiopian Wildlife Conservation Organisation,
PO Box 386, Addis Ababa, Ethiopia

Tesfaye Hundessa
Head, Conservation Division, Ethiopian Wildlife,
Conservation Organisation, PO Box 386, Addis Ababa, Ethiopia

and

Jesse C. Hillman
Associate Research Ecologist, Wildlife Conservation
International, New York Zoological Society,
Bronx NY 10460, USA

Abstract

Northern Ethiopia has suffered the effects of war for the past 30 years. In May 1991 most of the country experienced further changes when a new government came into power. However, this paper outlines not only the effects of recent wars on Ethiopia's wildlife conservation areas but also those of past warfare on the country's wildlife. One of the main problems arising from the war which finally ended in May 1991 was the severe decline in the morale of wildlife staff due to drastic cutbacks in government funding and support for conservation. Crisis management became the norm and conservation became defensive, alienating local communities and preventing them from harvesting natural resources. It is therefore crucial that in Ethiopia a whole new era of active community conservation with and for people is initiated.

Introduction

Ethiopia has a magnificent and glorious past. One of the oldest states in the world, she has seen 3,000 years of statehood under 322 monarchs (Taye, 1972). The Holy Bible makes more than 40 references to Ethiopia (Yemesehaf

kidus Mezgebe Kalat, 1980) and Homer refers to her people in *The Iliad* (Hess, 1970). For 15th Century Christians, Ethiopia was the land of "Prester John", the mythical Christian priest-king. He was discovered in the form of Emperor Lebne Dengel in 1493 by the Portuguese, Pedro de Covilham, when he arrived in Shewa as the first European Ambassador to Ethiopia (Doresse, 1959), just one year after Christopher Columbus had 'discovered' America.

The natural heritage of Ethiopia is equally impressive. Land formations range from 120m below sea level in the Dallol Depression, to 4,620m above sea level at Ras Dashen, and its abundant wildlife was well-documented by early travellers. In 525 AD, Cosmos Indicopleustes of Byzantium witnessed tame giraffes and elephants in Axum (Doresse, 1959) and in 533 AD, Nonnosus, another Byzantine writer and traveller, saw 5,000 elephants in one herd near Adowa. At around 246 BC, the live elephant trade with Egypt was at its peak (Sergew, 1972). Endemism is fairly high. To date, 268 mammal species (Yalden *et al.*, 1980) (including 30 endemics), and 845 bird species (Urban and Brown, 1971) (including 28 endemics), have been recorded.

The peoples of Ethiopia are similarly diverse. There are 80 eighty ethnic groups which can be divided into four major categories, namely, Semitic, Cushitic, Omotic and Nilo-Saharan.

Conservation in Ethiopia

Initial conservation attempts in Ethiopia, in common with many other countries, took the form of wildlife hunting regulations. Earliest of these were the elephant hunting regulations passed in 1909 by Emperor Menelik II (Mahatem-Selassie, 1950). In 1944 the Ministry of Agriculture passed the relatively comprehensive Wildlife Conservation Proclamation (Negarit Gazetta, 1944) which sought, among other things, to curb the dramatic decline in wildlife populations. This type of wildlife conservation continued to operate for some time and was the responsibility of a division of the Ministry of Agriculture.

In 1965 the present Ethiopian Wildlife Conservation Organisation (EWCO) was set up and given the responsibility of managing the country's game and National Parks. Ethiopia currently has 10 national parks, 4 sanctuaries, 11 wildlife reserves, and 18 controlled hunting areas. These serve as its principal mechanism of wildlife conservation (Figure 1).

Early conservation efforts in Ethiopia made good progress. Achievements included most infrastructural development, major wildlife area surveys, gazetting of national parks, and the passing of wildlife laws and regulations. EWCO enjoyed autonomy under the trusteeship of its board of governors

which comprised the Ministries of Agriculture, Education and Fine Arts, Finance, Interior, Commerce, Industry and Tourism, and the Haile Selassie I University. But the 1974 revolution replaced the monarchy with the autocratic Marxist government of the military junta and ushered in a 17-year period of stagnation.

Conservation efforts have remained loyal to the 1933 London Convention for the African States. 'Fortress conservation' which attempted to conserve wildlife in isolation from local populations, remained the favoured approach. It is now recognized as inappropriate, and policies and strategies are being drawn up which attempt to reconcile conservation aims with the long-term needs of local populations.

Warfare and Wildlife in Past History

Wars and famines appear to characterize modern day Ethiopia, but they may in fact be as old as the country itself. Records of famine in Ethiopia go as far back as 253 BC (Hutchison, 1991). War has been waged for numerous reasons including territorial expansion, to suppress movements for ethnic freedom and to defend the country against foreign powers who have perceived Ethiopia as a potential 'annex'. During the course of these wars, increasing numbers of firearms entered the country and gradually became the most significant factor in the devastation of its wildlife. Iman Ahmed Ibn Ibrahim al-Ghazi, an Ethiopian from the east, popularly known as "Gran" and described by European writers as the "Attila of Ethiopia" (Sergew, 1972), is attributed with introducing the firearm to Ethiopia. In 1429, assisted by 90 Arab, Turkish and Albanian musketeers, he fought against Emperor Lebne Dengel (Greenfield, 1965) in a war which started at Hararghe and ended 14 years later at Lake Tana, where Gran himself was killed.

Traditionally, Ethiopian armies were of considerable size. For example, Emperor Lebne Dengel fought Gran with 216,000 soldiers (Lapisso, 1990), while much later, Menelik II fought an Italian army at Adowa with 900,000 (Swayne, 1903). Poor logistic support, however, meant that armies were partly dependent on bush meat. This, combined with the burning of forest that acted as a sanctuary for bandits, took a heavy toll on Ethiopia's wildlife resources.

By the early 17th Century, when the Portuguese Jesuit Manuel de Almeida visited the northern and central parts of the country, over-exploitation of the natural environment was already evident (Pankhurst, 1989) and spreading to the south, southwest and southeast with the settlements of armed garrison keepers. Wildlife hunting formerly carried out by indigenous peo-

ple solely for food, with spears, snares, traps, bows and arrows, had degenerated into wanton killing by the armed settlers.

A major influx of firearms to Ethiopia occurred with the arrival of the Napier expedition to Makdalla in 1868 which brought with it 44 elephant-loads of heavy guns for the use of 32,000 men (Moorehead, 1962). Twelve cannons and 900 rifles were presented to Degazmatch Kassa Mircha, the future Emperor Yohannes IV, for his generous collaboration against Emperor Tewodros (Tekle Tsadik, 1990).

At around the same time (1865) and until 1900, Ethiopia experienced a period of imperial rebuilding and unification under Emperor Menelik II. The northern Shewa army, aided by modern firearms purchased from Italy and France, subjugated the lands from Shewa to Lake Turkana, previously controlled by Oromos and other Sidama groups. Much of Ethiopia's civil unrest can be traced back to this era.

When Arnold Hodson visited the Arssi-Bale area in 1916, about twenty years after armed garrison settlers had settled there, the mountain nyala was already threatened with extinction since the Abyssinians were inclined to shoot everything in sight (Hodson, 1927). The situation worsened during the Italian aggression of 1936 when yet more firearms flooded the country. At this time Ethiopia possessed 900,000 rifles of all kinds and 1,700 machine guns (Perham, 1969). Bush meat, often procured with the aid of these rifles, formed the basis of food supplies for the partriots. When the war ended in 1941, an immense quantity of firearms remained and contributed to the slaughter of wildlife. Much more recently, the Dergue regime (which ended in May 1991), had the largest army in black Africa. It comprised 320,000 men and was well equipped with modern weaponry (Hutchison, 1991).

It is perhaps not surprising that the late Dr Leslie Brown, a distinguished conservationist and authority on Ethiopian conservation, often stated that in all Africa, no country has been more brutally ravaged by man than Ethiopia (Nicol, 1972).

Effects of Recent Warfare on Ethiopia's Protected Areas

Although for the time being, war appears to have ceased, Ethiopia's natural environment and economy will bear its scars for many years to come.

The Simen Mountains World Heritage Site, for instance, was particularly badly affected. Because of their rugged nature, the Simen Mountains provided a safe haven for not only the Walia ibex, but also for the Tigre Peoples Liberation front (TPLF). The park, which was inscribed as a World Heritage site in 1978, was totally closed down when the TPLF occupied it and

the surrounding area in 1984, and not reopened until 1991. In the intervening seven years, no wildlife management was possible. Of the 63 administrative and residential buildings that the park contained, only four in one outpost survived the bombardments and looting inflicted on it. The serpentine 45-kilometre track which ran to and across the high plateau disintegrated completely due to lack of maintenance.

Simen Mountains World Heritage Site is now Ethiopia's most peaceful protected area, but obviously severely restricted in terms of the conservation activities that can be undertaken within it. Wildlife is still present, but its status remains unclear. Fortunately the rest of the country's conservation areas are mostly in the south and southwest where no actual fighting took place and so escaped the sort of damage inflicted on Simen Mountains.

However, before the war ended, other Ethiopian conservation areas were affected indirectly. Lack of financial resources was a serious problem. War efforts absorbed over 60% of the meagre national budget, siphoning off money that was previously allocated to such activities as environmental conservation. In fact, during the 17 years that war raged, development progress was negligible. Conservation activities declined and eventually ceased and in the absence of incentives and support for wildlife conservation, a hopeless and lethargic attitude prevailed. This, coupled with the relative lack of education in the lowlands where most wildlife conservation is concentrated, and falling academic standards generally, meant that wildlife conservation management in the field became considerably weakened.

Protected areas also fell victim to the aftermath of war. Lawlessness and disorder reigned in May 1991 and retreating military forces and local populaces looted and demolished development infrastructure. In the main this was mob action, with people attacking not only the property of resented bodies such as parks authorities, but also clinics and schools.

Bale Mountains National Park was actually reoccupied. People resettled elsewhere under the government villagization programme in 1986, simply moved back into an area which had been annexed to the park as a habitat corridor for local wildlife (Hillman, 1986). Similar occupation of Nechisar National Park has also occurred.

Meanwhile, frequent massacre of wild animals, especially of those considered 'clean' under Mosaic law, continues to be a problem in the Senkelle Swayne Hartebeest Sanctuary and particularly in the Bale Mountains National Park. This is partly because the number of firearms in the hands of civilians, originally very high anyway, has increased as a result of the looting of military camps and cheap purchase from retreating military forces. Populations of Swayne's hartebeest, an endemic race, and the mountain

nyala and Simen jackal, which are both endangered endemic species, are the most affected. It is difficult, however, to determine the numbers being killed.

The Future of Wildlife Conservation Areas in Ethiopia

Wildlife conservation, especially in a developing country such as Ethiopia, is never easy. Communicating conservation needs is extremely difficult when poverty renders consideration of the future health of the environment an unaffordable luxury. (Ethiopia is the poorest nation in the world with a per capita annual income of just US$300. The per capita income of the next poorest nation is 25% greater (Munro and Holdgate, 1991).)

It is obvious that neither any law or amount of manpower development can, of its own accord, protect and conserve wildlife. What is needed is the cooperation of people generally. To secure this, Ethiopian conservation must pay sufficient attention to development needs. Unfortunately, this has not occurred in the past. The organization mandated with conservation of wildlife resources has been trying its best over the past 27 years to discharge its responsibilities, but it adopted an approach which completely ignored the customary user rights of indigenous people. Instead, it appeared to conserve wildlife solely for the enjoyment of the affluent (in particular, foreign tourists). Wildlife conservation areas have therefore been perceived as 'liabilities' and not always respected.

The experience of the past three decades has accordingly led to the revision of Ethiopia's protected area policy and wildlife laws. These now clearly state that the rights of indigenous peoples will be respected and that benefits obtained from protected areas will be shared with them. They also state that wildlife conservation will be integrated with all other land uses.

Conclusion

Together with Spain, Byzantium and Persia, Ethiopia was one of the four mighty countries of the ancient world (Doresse, 1959). Today it is the poorest. It is also the most populous state in Africa.

It is generally hoped that peace will be achieved in Ethiopia through realization of the rights to self-determination bestowed on the nations and peoples of Ethiopia by the charter of the Transitional Government. This is not to deny that some groups might rebel out of self interest, thereby creating further conflict.

If peace continues, some local funds may be channelled to conservation works

so that rehabilitation of the Ethiopian environment can start. However, to achieve genuine wildlife conservation it will be necessary to ensure that the rights of local populations to sustainably use and benefit from wildlife resources are respected. Conservation areas must be seen to provide tangible material benefits to the people living around them. Only then will their integrity during future periods of turmoil be assured.

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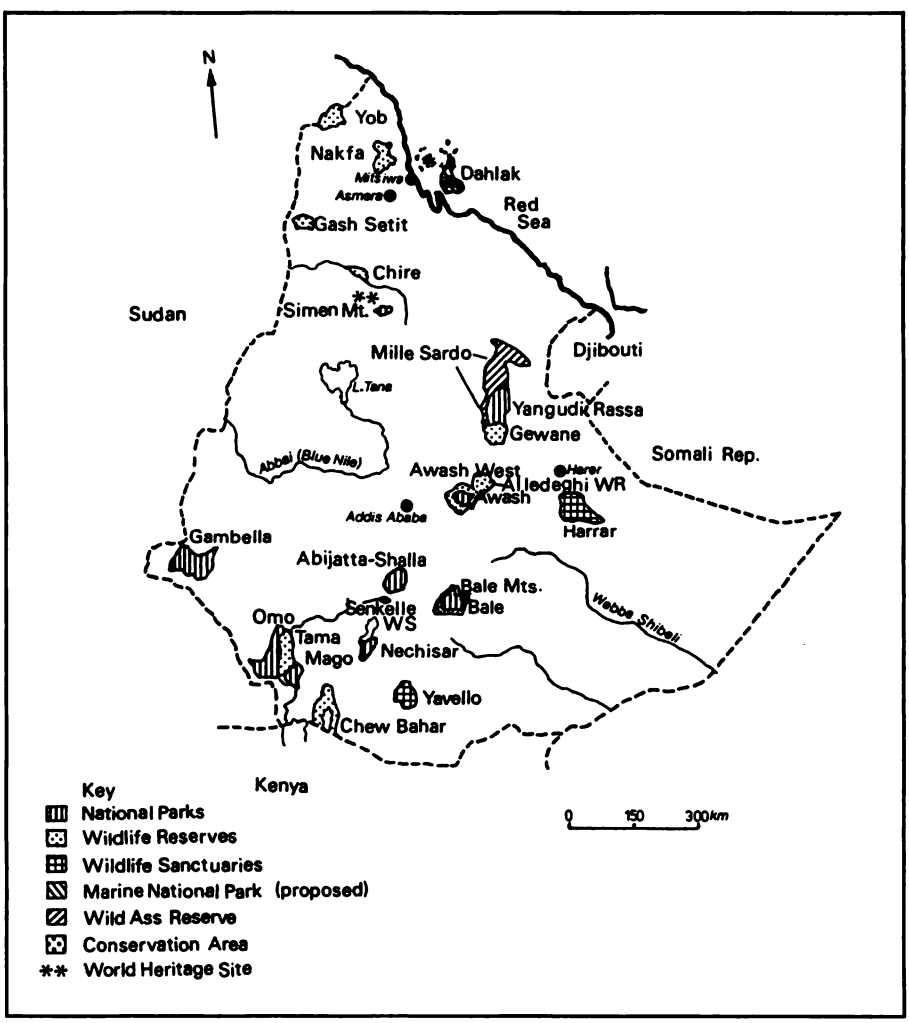
Figure 1 Ethiopia's protected areas



THE INTERNATIONAL FOUNDATION OF THE BANC D'ARGUIN

Luc Hoffman
President, Fondation internationale du Banc d'Arguin,
World Conservation Centre, CH-1196 Gland, Switzerland

and

Pierre Campredon
Secretary, Fondation internationale du Banc d'Arguin,
World Conservation Centre, CH-1196 Gland, Switzerland

Abstract

The National Park of the Banc d'Arguin (PNBA) was created by the President of the Islamic Republic of Mauritania (RIM) in 1976 and listed under the Ramsar Convention in 1982. In 1986, it was designated a World Heritage site. Totalling over 1.2 million ha, PNBA is Africa's largest coastal and marine park. However, despite support from the RIM Government, the French Government and WWF, the park was unable, during its first ten years, to acquire the necessary means for developing the infrastructure and activities essential to establishing it as one of Mauritania's key economic, social and cultural areas. The Fondation Internationale du Banc d'Arguin (International Foundation of the Banc d'Arguin) (FIBA) was therefore created – in 1986 – to assist the park's conservation and sustainable development activities. This paper describes some of the work that PNBA and FIBA have undertaken.

Introduction

The Banc d'Arguin, located on the Atlantic Coast of Mauritania, consists of shallows, mudflats and extensive seagrass beds, as well as islands and islets. Its pristine beauty is outstanding. But only during the past 30 years has the conservation importance of the area become appreciated. A large proportion of the wading birds of Europe, Asia and even North America, converge on the Banc in the autumn, forming the greatest known concentration of wintering waders in the world. It also has some of the richest

populations of nesting waterbirds in Africa, and represents a last haven for the monk seal.

The National Park of the Banc d'Arguin (PNBA) was created by the President of the Islamic Republic of Mauritania (RIM) in 1976 and listed under the Ramsar Convention in 1982. Lying across the Tropic of Cancer, and extending along the Mauritanian coast for more than 180km, it totals over 1.2 million ha, and is Africa's largest coastal and marine park. It was designated a World Heritage site in 1986. The park is also important for economic reasons since its shallows play an essential role in maintaining valuable fish and crustacean stocks. Coastal fisheries yielded catches totalling 77,100 tons in 1980, worth an estimated US$34.3 million. The park is inhabited by 200 families of Imraguen fishermen in seven villages.

However, despite support from the RIM Government, the French Government and WWF, the park was unable, during its first ten years, to acquire the necessary means for developing the infrastructure and activities essential to establishing it as one of Mauritania's key economic, social and cultural areas. Fortunately, international recognition of the need to enhance conservation of this site led to the creation of the Fondation Internationale du Banc d'Arguin (FIBA) in 1986. FIBA's main objectives are to disseminate information about the park, to secure financial, technical and moral support for its conservation actvities, and to ensure that development of its multiple resources is sustainable.

The honorary president of FIBA is the Mauritanian Chief of State. The organization also benefits from the sponsorship of numerous organizations renowned for their international activities in conserving natural resources.

Action Plan

Since its creation, and in close collaboration with the President and the Director of the PNBA, FIBA has investigated opportunities and problems concerning the park, as well as identified actions to enhance its international and national functions. An action plan was developed in 1987, comprising five parts:

1. Institutional strengthening of the park through staff training, efficient management and wardening, and acquisition of equipment.
2. Collaboration with the Imraguen fishermen to help them maintain their sustainable fishing practices and assist their integration within the park.
3. Development and promotion of a research programme on coastal ecosystems to enhance scientifically based rational management of the park's natural resources.

4. Feasibility studies on developing ecological tourism in the park.
5. International promotion of the park, its resources and technical and financial requirements.

Evidently, this action plan cannot cover all the park's needs, but it should nevertheless help secure its future in the medium term.

Achievements

As a result of the close collaboration between FIBA and PNBA, and financial support from numerous partners, significant progress has been made in implementing the action plan.

Staff training and the introduction of computers have strengthened the park's administrative capacity, as has the assignment by the RIM government of a section of meharistes (patrollers on camel) – trained and equipped by FIBA – to serve as park wardens. Marking out of the park's boundaries has been carried out in priority areas and three jeeps, several zodiacs and VHF equipment acquired. Iwik station has become a permanent guard post (and can once again provide accommodation for staff and visitors) and a new guard post has been established at Nouamghar. An in-depth study to design a surveillance/research catamaran has been carried out. Plans have now been submitted to shipbuilders and funding is being sought for its construction.

Several pilot projects involving collaboration with the Imraguen fishermen have been started. For example, three worn-out lanches have been repaired, and five new ones built. A project to assist the Imraguen in valuing their fish products has been set up, and in fact contributed to an agreement between the fishermen and the RIM Government to establish cooperatives. Some products, for example 'poutargue' (dried mullet eggs), have been improved. Given the high market value of poutargue and international demand for it, the fishermen's income from this product may increase. Additionally, a lorry for the Imraguen villages, for transporting goods and water, has been purchased.

FIBA has also organized several meetings on the promotion and coordination of research. Although research on the park's avifauna, seagrass beds and marine biology have been carried out, studies have not been integrated with each other. FIBA has therefore requested international specialists to draw up a comprehensive and structured ecosystems research plan, aimed at increasing understanding of the mechanisms of the area's immense fishery resources. The research will hopefully make a significant contribution to their rational management. A scientific committee has now been created

to draft and promote research projects and identify scientific and financial partners.

Developing tourism, provided it is compatible with long-term resource conservation, could contribute to both the Mauritanian economy and the park's future. At PNBA's request, a study on ecological tourism was conducted at the end of 1991 and its results should be available soon.

FIBA has helped stimulate awareness of PNBA in general, but also in terms of selected target groups. A booklet describing the park was published in French, English and Arabic and widely distributed, and two films made and shown on several television channels. Two newsletters have also been distributed to organizations which might consider assisting the park. Additionally, FIBA and PNBA have supported the production of a lavishly illustrated book.

Since the beginning of its activities in 1986, FIBA has secured funds and signed contracts with an array of government agencies, NGOs and private donors for around US$800,000. Other monies have also been released for support of the park's activities as a result of approaches on the part of FIBA and PNBA. Several governmental and intergovernmental agencies have expressed interest in participating in the action plan in coming years.

Continuing and Future Projects

Various projects identified in the FIBA/PNBA action plan are still awaiting development, as well as technical and financial support.

In particular, a further increase in park staff and additional training are needed. The RIM Government's austerity measures limit the possibilities here, but FIBA has decided to launch a solidarity fund to recruit qualified staff, who will then assist in administering the park. Training of current park staff will continue. A conference to discuss the park's problems and future will take place in Nouakchott. A monthly or bimonthly newsletter will also be widely distributed to increase and maintain interest in nature protection and this World Heritage site.

The park's equipment – including vehicles and boats – will be renewed as necessary. Marking out of park boundaries will be completed and information signs posted at strategic locations. The RIM Government has agreed to grant FIBA permanent representation in Mauritania. The representative will coordinate interventions, supervise project leaders and oversee project execution, in addition to keeping the Mauritanian authorities informed and liaising with ministries, administrations and national representatives.

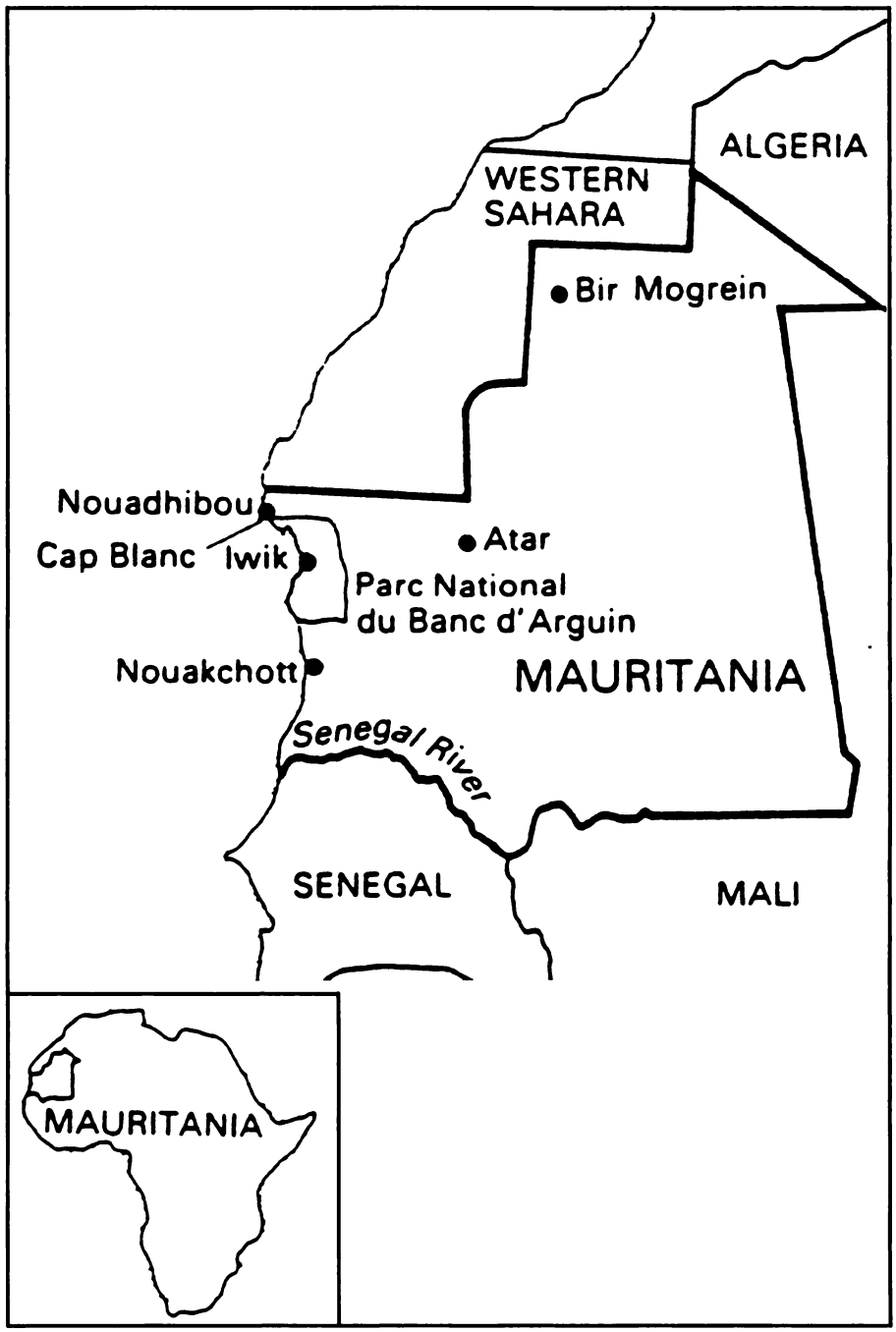
Imraguen cooperatives will be formally constituted, which will allow not only valuation and marketing of fish products, but also the purchase of necessary materials and management of community equipment. Work on improving marketing of 'poutargue' and 'tichtar' will continue, and other products are being studied to see if their sales can also be increased. Pilot projects for refurbishing old lanches and building new ones will be followed by larger projects if funding can be secured. A documentary video, soon to be completed, will contribute to greater understanding of the Imraguen and hopefully encourage sponsors and agencies to support Imraguen projects. A socioeconomic survey will assess the impact on Imraguen populations of the Imraguen support programme and other developments.

Meanwhile, FIBA's scientific committee will continue to review integrated research plans, identify priorities, seek sponsorship and locate scientific institutions as potential partners.

As far as ecotourism is concerned, once the results of the relevant study have been evaluated, FIBA and PNBA will decide on future activities. The reintroduction of herbivores such as the Dama gazelle, oryx and ostrich, may be considered, provided it is certain that poaching can be kept well under control. The presence of these animals may increase the park's touristic potential, but the carrying capacity of its pastures must be assessed carefully first, since the area has suffered several years of drought.

Finally, international promotion of the park will be improved by boosting public relations activities.

Figure 1 Mauritania, showing the location of the Banc d'Arguin; the boundaries with Algeria and Western Sahara are not officially recognized



NGORONGORO: STRIKING A BALANCE BETWEEN CONSERVATION AND DEVELOPMENT

Scott L. Perkin
Ph.D candidate, School of Development Studies,
University of East Anglia, Norwich NR4 7TJ, UK

and

Paul J. Mshanga
Ag. Conservator, Ngorongoro Conservation
Area Authority, PO Box 1,
Ngorongoro Crater, Tanzania

Abstract

For over 30 years, Tanzania's Ngorongoro Conservation Area (NCA) has been attempting to balance conservation interests with the development requirements of resident pastoralists and their livestock. Based on the results of a recent three-year review carried out by IUCN and the Government of Tanzania, this paper examines the extent to which the NCA has succeeded in meeting its dual mandate. A number of important lessons are drawn from the NCA's experiences to date, and guidelines offered for the establishment and management of other multiple use areas in which local people reside.

Introduction

The Ngorongoro Conservation Area (NCA) spans nearly 8,300 sq km of northern Tanzania. Established in 1959, it is administered and managed by the Ngorongoro Conservation Area Authority, a semi-independent, governmental body which receives the majority of its funding from tourist entrance fees. The NCA's conservation values are manifold and include:

- critical wet season grazing and calving grounds for the Serengeti wildlife migration, which now numbers some 1.7 million wildebeest, 260,000 zebra and 470,000 gazelle (Campbell, 1989);

- Ngorongoro Crater, a 250 sq km caldera, which supports a large and diverse assemblage of mammals, including a population of the endangered black rhinoceros; the Crater is one of the region's most popular tourist destinations;
- some of the world's most important archeological and paleontological sites, including Olduvai Gorge and Laetoli which have produced a fossil record of human evolution spanning nearly four million years.

Owing to these values, the NCA was one of the first natural sites to be inscribed upon the World Heritage List. But the NCA is much more than an area of biological and archeological interest. It is also home to some 25,000 Masai pastoralists, as well as nearly 286,000 head of livestock (Bureau of Statistics, 1989; Perkin, 1987). The presence of these pastoral communities is specifically recognized by the NCA's multiple land use management system which has been designed to fulfil a dual conservation and human development mandate. Under the terms of the Game Parks Laws, the major functions of the NCA Authority are to "conserve and develop the natural resources of the Conservation Area" and to "safeguard and promote the interests of Masai citizens of the United Republic engaged in cattle ranching and dairy industry within the Conservation Area".

Since this pioneering management experiment was initiated, land use pressures have increased considerably. The human population has grown from around 8,700 people in 1966 (Dirschl, 1966) to nearly 25,000 in 1988 (with simultaneous demands for development inputs) and the wildebeest population has expanded nearly seven-fold since the early 1960s (Campbell, 1989). As a result, conflicts between the interests of conservation and archeology, and the development needs of the Masai people, have escalated.

The Ngorongoro Conservation and Development Project

In 1987, in response to mounting concern about the long-term future of the NCA, the Ngorongoro Conservation and Development Project was launched as a three-year collaborative venture between IUCN and the Tanzanian Government. The project was designed to ask two fundamental questions:

- how well has the NCA succeeded in meeting its dual conservation and development mandate?

and

- if shortcomings are apparent, should the NCA's multiple land use system be changed fundamentally or could the existing system be modified so that both conservation and development objectives can be fulfilled?

In order to address these issues, the project embarked upon a wide-ranging series of activities, including: aerial and ground surveys of the human, livestock and wildlife populations; commissioning of technical studies by national and international specialists; and initiation of a consultation process among local communities, NCA staff, and district, regional and national authorities. In total, 14 different technical studies were carried out, covering such topics as livestock production, water development, wildlife ecology, forest management, fuelwood requirements, legislation, and food security. The results of these formed the basis of a major workshop, at which a consensus view on the future of the NCA was developed by the many parties (government, local communities, conservationists and paleontologists) with a stake in the NCA.

At the end of its three-year assessment, the project reached the following conclusions:

Conservation: Taking into consideration the financial, material and personnel constraints experienced in the 1970s and early 1980s, conservation values have been reasonably well maintained. Although there are problems in respect of forest management and the protection of elephant and rhino, most wildlife species appear to be secure, and the NCA's landscape and scenic values are essentially unmarred (see, for example, Boshe, 1988; Chamshama *et al.*, 1989; Machange, 1988, and NEMP, 1989). There is no doubt that the NCA remains one of East Africa's premier conservation areas.

Human development: In contrast to the conservation of natural resources, little progress has been made in achieving human development objectives. The water network has fallen into disrepair, livestock services have declined, and food security has become increasingly tenuous (see, for example, Aikman and Cobb, 1989; Field *et al.*, 1988, and McCabe *et al.*, 1989). There is evidence of growing impoverishment and malnourishment among the resident pastoral population. The overall picture is one of increasing marginalization of the Masai from Tanzanian society.

Management policy: The project found no evidence to suggest that there are irreconcilable conflicts between conservation and development in the NCA. On the contrary, the information gathered by the project's studies demonstrated that there is ample scope within the existing management system for meeting the objectives of both sectors within an integrated framework. The failure to meet human development objectives appears to have stemmed not from NCA's multiple use management system *per se,* but from lack of a clear management policy and subsequent lack of commitment to development activities on the part of the relevant authorities. In light of these

conclusions, the project strongly endorsed the continuation of a multiple land use system in the NCA, provided commitment to human development is significantly strengthened, and various planning and land use zoning measures implemented (Perkin, 1990).

Elements of Successful Management

The experiences of the NCA in attempting to balance the needs of conservation and development highlight a number of issues which are likely to be shared by multiple land use areas elsewhere in the world. The discussion below refers to those which must be tackled if management of a multiple use site with a resident human population is to be successful.

Policy

Because of their diverse and sometimes conflicting objectives, it is important that multiple use areas have a clearly defined management policy, backed up by unambiguous legislation. Throughout its history, the NCA has been bedevilled by the uncertainty surrounding the Tanzanian Government's long-term intentions concerning it and by conflicting interpretations of relevant legislation. This has led to insecurity on the part of resident local communities, and contributed to the under-investment in development activities. To counteract this uncertainty, the project recommended that a general statement of policy concerning the NCA should be promulgated and endorsed at the highest appropriate government level. The project also recommended that the legislation governing the NCA be amended so as to clarify management objectives and to incorporate a direct reference to the statement of policy (Forster and Malecela, 1989).

Management Plans

The NCA has not had an accepted management plan since 1962 and this has exacerbated the confusion and uncertainty over its long-term future. Once a policy statement has been issued, a detailed management plan should be prepared as a matter of priority, giving concrete conservation and development objectives for each sector as well as annual operational plans for each department (Taylor, 1988).

Land Use Zoning

The management of many multiple use areas requires the establishment of a land use zoning system complemented by subsidiary supporting legisla-

tion, if diverse objectives are to be met and conflict reduced. Three major types of zones are proposed for the NCA:

- **development zones:** in which the majority of socioeconomic activities would be located;
- **conservation zones:** which would protect important ecological areas and in which few development activites would be permitted;
- **integrated use zones:** which would be shared by wildlife and people, and in which activities such as livestock grazing, sustainable harvesting of forest products and beekeeping might be undertaken (Boshe, 1988; Perkin, 1990).

Socioeconomic Development

If multiple use areas with resident peoples are to be successful in the long term, it is critically important that equal attention be given to the promotion of conservation and development objectives. In the specific case of the NCA, this will require a genuine commitment from the Authority to implement projects which the pastoral population considers to be of high priority, including provision of livestock health services, grain storage facilities, water development, income generating schemes, and road rehabilitation. The following were suggested by the project as means of facilitating this process:

- the establishment of a discrete Community Development Department within the NCA Authority;
- increased employment of residents by the Authority, tourist companies, and hotels (IUCN, 1989);
- employment of senior level staff with expertise in community development and social sciences (including anthropology and sociology) (cf. Stocking and Perkin, 1992; WWF-US, 1988); to date, the majority of the NCA's staff has been drawn from traditional conservation fields, such as biology and resource management;
- transfer of funds from the Authority to local communities; this will require creation of a number of different mechanisms, and could include: providing the District Council with a fixed percentage of the Authority's annual revenue; establishing a Village Development Fund, which would consider development proposals put forward by the local community, and provision of funds to Village Development Committees.

Development Planning and Control

Within the NCA, the Ngorongoro Conservation Area Authority has been granted extensive powers under the principal legislation to control land use and development activities. There can be no doubt that this has been a major factor underlying the Authority's conservation achievements during the last three decades.

However, the joint IUCN/Tanazanian Government review noted that, in view of mounting land use pressures, there are a number of ways in which these planning functions should now be strengthened. Most importantly, it recommended that the Authority establish a separate Planning Department, which would be responsible for reviewing all construction and development projects against the provisions of the Area's management plan. It would also be responsible for: drawing up guidelines on the types of development that would be permitted in the three land use zones described above; instituting clear procedures for the review of development activities and ensuring that these are understood by all concerned parties, and producing design guidelines for public buildings as well as private, non-traditional homes.

Land Tenure

Both WWF-US (1988) and IUCN (1991) have recently commented on the important relationship between resource ownership rights and sustainable utilization. WWF, for example, states: "when there are no assurances of future benefits from careful stewardship, resources begin to show signs of deterioration. Assisting rural communities...in obtaining an ownership claim to resources...encourage[s] the investments necessary for sustainable management" (WWF-US, 1988).

Within the NCA, the villages' lack of land tenure has been a recurrent source of tension and conflict. In order to provide these villages with the long-term security which is required to achieve both conservation and development objectives, the project strongly recommended that the villages be demarcated and granted tenure under the terms of the Villages and Ujamaa Villages Registration, Designation and Administration Act of 1975 and the Local Government Act of 1982. The project stressed, however, that village land use activities and development projects would still be subject to review and require the approval of the Authority's Planning Department.

Community Involvement

The joint IUCN/Tanzanian Government review called for concrete steps to ensure greater representation of the Masai in all aspects of the NCA's

management. In particular, it strongly recommended that the NCA's legislation be amended so as to require the representation of local communities on the NCA's board of directors, and the establishment of a local liaison committee composed of senior NCA staff and elected residents. The project also urged that the Authority's fledgling extension team be strengthened substantially, as an informal means of enhancing dialogue with villagers (IUCN, 1991).

Indigenous Technical Knowledge

Closely related to the concept of community participation in resource management is that of indigenous technical knowledge (ITK). As previously noted by Chambers (1983), Dasmann (1984) and many others, local communities often possess a detailed knowledge of their natural environment which can be tapped to improve the management of protected areas. Multiple land use areas with resident peoples stand to gain the most from ITK. For example, the joint IUCN/Tanzanian Government review noted the way in which Masai communities had traditionally used fire as a simple but effective range management tool to improve pasture conditions, control bush expansion and reduce tick populations. It was subsequently recommended that the Authority seek the active collaboration of Masai elders in designing and implementing a grassland burning programme for the Area.

Collaboration with Other Agencies

Protected areas – particularly multiple land use areas – can rarely be managed as self-contained units. It is therefore important that they are integrated with neighbouring geographical areas, as well as with the wider administrative and political systems of the nation in which they are situated.

In the case of the NCA, confusion and disagreement over the respective development responsibilities of the Authority and the District Council have often hampered the provision of social services for the Area's residents. In order to increase dialogue between the two entities, the project recommended that the NCA's principal legislation be amended so as to make the Chairman of the District Council an obligatory member of the Area's board of directors. To ensure complementary two-way communication, it was also recommended that the Conservator of Ngorongoro serve as a member of the District Council. Lastly, the project urged that a clear, formal agreement on the division of development responsibilities between the Authority and the Council be reached as a matter of priority (IUCN, 1989).

Ecological Monitoring

In the NCA, lack of long-term monitoring data has made it difficult and sometimes impossible to determine the extent of ecological change, the role of people and livestock in these changes, and the required management interventions. The project commended the work of the recently revitalized Ngorongoro Ecological Monitoring Programme, and urged that additional work on human ecology, forest dynamics and fire management be initiated as soon as possible (IUCN, 1989).

Conclusions

As Stocking and Perkin (1992) have noted, balancing conservation with development is difficult. But it is becoming increasingly clear that, in many parts of the world, an integrated approach which attempts to combine conservation with the socioeconomic requirements of local communities is the only viable and morally acceptable option. Whilst the experiences of the NCA do nothing to suggest that such an approach is simple, they can be used to identify some important pitfalls, and to indicate a few practical directions in which to proceed.

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7. AUSTRALIA, NEW ZEALAND, ANTARCTICA

East Coast temperate and sub-tropical forests, Australia

MONITORING THE ENVIRONMENTAL IMPACTS OF TOURISM ON THE GREAT BARRIER REEF WORLD HERITAGE SITE

Simon Woodley
Great Barrier Reef Marine Park Authority,
PO Box 1379, Townsville Q 4810,
Australia

Abstract

The Great Barrier Reef World Heritage Site is a multiple use protected area. A zoning system partitions areas according to various uses and separates those which could conflict with one another. Permits are used to control specific activities such as tourist operations. Tourism is the most important industry permitted in the Great Barrier Reef Marine Park and is growing rapidly. Tourism operations with the potential for significant environmental impacts are subject to assessment so that impacts can be identified and actions taken to avoid or minimize them. Impacts typically include biophysical impacts on reef structures, water quality, corals and fish communities, as well as social impacts which affect the use made of the area by other groups. If a tourism operation is approved, the tourist operator is required to pay for an independent monitoring programme to measure impacts. The role of environmental impact assessment in determining monitoring requirements and principles, and guidelines and methods for developing and conducting monitoring programmes for tourism developments, are described.

Introduction

The Great Barrier Reef Marine Park Authority (GBRMPA) is responsible for managing the Great Barrier Reef Marine Park, which covers an area of approximately 350,000 sq km off the northeast coast of Australia. The Marine Park is not a national park but a mutliple use protected area which seeks to combine reasonable use with long-term conservation of the reef's resources.

The Marine Park fits Category VIII of IUCN's protected area classification system (1982). It also meets the criteria for selection and management

as a Biosphere Reserve (Category IX), although it has not been formally proposed or established as such. The Great Barrier Reef Region was inscribed on the World Heritage List in 1981.

Tourism, recreation and commercial fishing all occur within the park. The primary management tool is a zoning system which partitions areas according to use and separates those which could conflict with one another. Zones range from natural representative areas where human activity is not permitted, to those which allow recreation and tourism activies, to those which permit activities such as shipping and trawling. The latest zoning plan (GBRMPA, 1992) provides for the following categories of zone:

- **preservation zone:** for strictly controlled scientific research;
- **national park zone:** for recreation and tourism and scientific research;
- **buffer zone:** for trawling of pelagic fish species;
- **conservation park zone:** for recreation and tourism, scientific research, and limited fishing;
- **habitat protection zone:** for commercial and recreation fishing (with the exception of bottom trawling), recreation and tourism, and scientific research;
- **general use zone:** for commercial and recreation fishing (including bottom trawling), recreation and tourism, and scientific research.

Traditional hunting, fishing and gathering by Australian Aboriginals and Torres Strait Islanders is allowed in all zones except preservation zones, by permit.

Due to demand for sites that can cater for high-volume day trip tourism, an additional zone (no structures subzone) has been developed to ensure that a range of recreational opportunities remains available on reef sites close to major population centres. Certain zones which provide for tourism and recreation are nevertheless to remain largely unaltered by human activities.

Great Barrier Reef Tourist Industry

The contribution of Great Barrier Reef tourism to the economy is significant. In 1987/88, an estimated AUS$250 million (US$190 million) was spent at island resorts, on commercial boat trips and on private recreational boating. Growth since then has been 10% per annum. Additionally, income/expenditure for direct tourism and recreation is estimated at AUS$500 million (US$375 million) per annum. With multiplier effects, the direct and indirect economic value of tourism and recreation is estimated to be in

excess of AUS$1,000 million (US$750 million) per annum (Kelleher and Craik, 1991).

Tourism in North Queensland and on the Great Barrier Reef has grown rapidly in recent years due to the introduction of large, stable, high-speed, aluminium motor catamarans. These have greatly facilitated transport to reef destinations. Passengers disembark onto permanently moored pontoons from which they can snorkel or scuba dive. Coral can be viewed from 'semi-submersible' vessels.

Around 36,000 private motor boats are registered in locations adjacent to the Great Barrier Reef Region. The number of people who visit the Great Barrier Reef on tours and boat trips is estimated at 1.5 million/yr.

Environmental Impacts

Environmental impacts on coral reefs can be divided roughly into three types: structural damage, alteration of natural processes and loss of natural amenity value (Kenchington, 1991). Structural damage to marine ecosystems often occurs on coastal fringes as a result of dredging, port development, coastal stabilization, causeway construction, mariculture development or land reclamation. Alteration of natural processes refers to changes made to a physical, chemical or biological factor. Physical factors generally concern current patterns, levels of silt or flow of fresh water into the marine environment. Chemical factors may change as a result of the downstream effects of pesticide or fertilizer runoff. Biological damage to marine ecosystems thus occurs as a result of negative changes to processes which under normal circumstances maintain diverse or distinctive communities. The natural qualities of a site comprise an amenity value. But if the use of a site changes, for example from low-key recreation to mass tourism, this amenity value may decline.

Impacts from tourism activities include one-off effects arising from the construction or installation of jetties, moorings, marinas, underwater observatories and resorts, and supporting facilities such as sewerage systems, and power and water supply. (Once construction or installation has been carried out, there should be no further impact (Kenchington, 1991).)

Recurrent impacts include those from planned activities such as fishing or shell collecting. Accidental or unintentional impacts include, for example, those on seabed or benthic organisms such as corals, as a result of mooring chain movement. The monitoring of impacts from tourist activities is concerned primarily with unintentional effects, be these biophysical or social.

Environmental Impact Assessment

Tourism developments and operations in the Marine Park require a permit. Before a permit is issued, rigorous assessment is carried out to:

- identify potential impacts;
- elicit public comment on the likely effects on the reasonable use of the area;
- remove or prevent unacceptable impacts or reduce them to an acceptable level;
- identify the remaining risks, for which protective measures are then developed in case rehabilitation, restoration or removal will be required;
- identify potential impacts for which monitoring is required, and
- provide as far as possible adequate legal and financial protection for the Australian taxpayer in the event that GBRMPA has to complete a proposed project or rehabilitate a site in the event of catastrophe or default.

The detailed process by which GBRMPA assesses environmental impacts is described elsewhere (Woodley, 1989). Decisions on whether or not to issue a permit take into account:

- the objective of the zone (for example, is it intended for general or restricted use?);
- the quality of management;
- legality (for example, is the proposed activity illegal under other legislation?);
- future options for using the Marine Park;
- conservation of the Marine Park's natural resources;
- existing use and amenity value, and future and desirable use and amenity value of the relevant area and areas adjacent to it;
- adequacy of transport arrangements;
- health and safety provisions;
- provision for removal, and
- arrangements to make good any damage.

Monitoring

Phillips *et al.* (1991) suggest that in monitoring marine protected areas, particular attention should be paid to the levels and patterns of human use, impact of human activities, effectiveness of management regimes and biological and physical conditions over the medium and long term. Kenchington (1990) describes the monitoring of such areas in terms of activity monitoring (how people use an area), condition and impact monitoring (changes or effects due to human and other factors) and impact prediction and management (advance assessment of the likely impact of new or altered uses and establishment of management conditions for those uses).

In general, the following steps are used to decide what should be monitored:

- define the potential impacts arising from human activities (for example, habitat destruction due to construction or incidental damage from recreational activities);
- identify species or communities likely to be affected (this may be difficult if there is no particular target species, in which case, any decision should be based on the best advice available and/or species which the public perceives as important);
- conduct pilot studies to determine the variation between sites and an appropriate sampling procedure (where sampling is involved the key is the statistical power of the sampling, or, in other words, its ability to detect significant change);
- choose the biological or social variable to be measured, selecting those which give the greatest return for the sampling effort (where quantitative sampling is not likely to produce adequate results for a reasonable cost, more qualitative methods may be effective, at least to give indications of significant change); it is worth noting that some variables are very complex and may not show an impact – for example, species diversity may remain unchanged if there has been no signficant destruction of habitat;
- design the programme according to resources (for example, take into account the calibre of the people available to undertake the monitoring).

Rationale for Monitoring

As a result of the environmental impact assessment process, potential impacts are either avoided by alteration of the proposal or reduced through negotiation. The remaining potential impacts should be monitored through

operator-funded monitoring programmes. These impacts must by definition be within acceptable limits if they are to meet statutory requirements to provide for reasonable use and conservation. They are therefore assumed to be sustainable. However, they are predicted impacts. Actual outcomes may differ. Moreover, their effects may accumulate over time and become serious; for example, increased nutrient levels or gradual degradation of corals due to increased sedimentation.

Monitoring is therefore used to check whether predictions made during the assessment process were valid and to confirm that the effects of the operation are sustainable in both the short and long term. It also verifies that any observed effect is actually caused by the operation and not by some other factor (including natural changes).

Monitoring Tourism Impacts

This section focuses on the impacts of tourism operations at particular sites in the park. Usually, these have involved placement of floating structures (for example, a hotel or day trip pontoon) or construction of a marina. The impacts which typically concern GBRMPA are increased sediment on benthic organisms, particularly corals, which can cause smothering; increased stress from sediment load and reduced light penetration; increased nutrient levels; physical damage due to use of machinery and explosives; pollution from spillage of fuel and oil and other polluting liquids; shading of benthic communities; aggregation of fish communities under floating structures, and changes to the amenity value of an area from the point of view of both local communities and visitors. The aim of monitoring is to detect, through systematic observation, any changes over time which are directly attributable to the permitted activity. Environmental monitoring programmes in the Marine Park seek to:

- determine whether the installation and operation of a structure will interfere unacceptably with the Great Barrier Reef ecosystem;
- validate predictions made on the basis of limited data of the likely effect of the installation and operation of a structure;
- identify any potentially unacceptable impacts sufficiently early so that installations or operating procedures can be modified accordingly;
- determine appropriate environmental performance standards for the installation and operation of a structure.

Programmes for floating structures usually have several components: establishment of baseline conditions; monitoring of installation, with a reac-

tive capacity for responding rapidly to adverse changes during installation, and longer term monitoring throughout the operating period of the facility. Programmes for marina construction are similar but the reactive component is much more stringent and detailed.

Baseline surveys: Ideally, such surveys should be undertaken at least one year prior to installation so that an understanding of the temporal variability in natural conditions can be gained. This time frame also allows for other pre-impact studies to be carried out to calibrate the baseline studies. The baseline studies focus on benthic organisms, sediments and water quality parameters. Benthic studies typically focus on corals (percentage cover, condition, size and appearance), algae and sponges, and use either line or belt transects, or quadrats. The area of likely impact and the adjacent area are partitioned into control and impact stations. Within each station the area may be stratified for habitat (for example, reef slope, reef flat). Within each habitat, sites are randomly selected and replicate sampling units (for example, transects) placed randomly. Within each sampling unit the organisms are identified and recorded down to the lowest possible taxonomic group, and specific parameters, such as total cover of hard corals, are measured (Gillies and Craik, 1989).

Certain corals are photographed and 'tagged' at control and impact stations; they serve as stress indicators during construction or as indicators of changes in coral condition. Sediment traps, although an imperfect indicator of sedimentation of corals, are used to determine rates of sedimentation at impact, buffer and control sites. This will indicate the extent to which suspended sediment levels are increasing as a result of construction and confirm whether or not the predictions concerning the extent and level of sedimentation were accurate. Water quality parameters are very difficult and expensive to measure and analyse precisely. For some developments, the full range of water quality parameters is measured, including suspended solids, water quality, nutrient levels, pollutant levels, hydrocarbons, temperature, salinity and so on.

A key component of any marine environmental baseline survey is an understanding of the hydrodynamics of the area (namely, water movements under different wind and tide regimes over different times).

Pre-construction/installation survey: The purpose of the pre-construction/installation survey is to check assumptions underlying the methodology and analysis, for example that the selected control and impact sites will in fact reveal the anticipated changes in the parameters being measured (for example, change in percentage cover). The study also quantifies observer and measurement error, and includes reference to any other events,

such as a cyclone or hurricane, which may have occurred between the time of the baseline survey and the start of construction or installation.

Reactive monitoring programme: This programme is designed to give managers immediate feedback during construction or installation so that reactive management action can be taken before an adverse effect becomes serious. All too often, monitoring programmes supply managers with information well after the impact has occurred and sometimes even when it is too late to redress the problem. The responsibility for this programme rests with an environmental site supervisor who has the power to suspend or stop works if certain pre-determined limits are exceeded. These limits (for example, the permitted level of suspended sediment at buffer or control sites) are specified and agreed to by the developer before construction starts. Other possible indicators include observation of tagged corals to check for visible signs of stress (mucus production, bleaching or death) at control or buffer sites. For details of application of this technique to a marina development in the Great Barrier Reef Marine Park, see Gillies and Craik (1989 and 1990).

Long-term monitoring and development: The purposes of continuing long-term monitoring are: to validate the impact predictions made during the assessment process; to monitor for potentially more subtle effects which do not show up immediately, and to monitor the recovery of organisms damaged during the construction/installation phase. Periodic surveys (half-yearly or annual) of benthic sites, tagged corals and water quality parameters, are usually undertaken together with monitoring of the effects of the structure, for example, movement of moorings.

Limits of Acceptable Change

Decisions about the level of acceptable change arising from anthropogenic causes are problematic. What constitutes an 'adverse effect'? What are the limits or thresholds which should not be exceeded? Are those limits a realistic reflection of the tolerance of the organism, community or ecosystem? It is not easy to provide objective and scientifically based criteria for specifiying limits to human induced changes. GBRMPA has accepted that some changes will inevitably occur as a result of tourist developments in the park. General guidelines have been adopted in the absence of specific indicators, as follows:

- none of the common organisms or groups of organisms surveyed should change in terms of the measured variable (proportional change in relative abundance) by more than 15-20%;

- endangered species should not show any significant decrease in abundance or cover;
- parameters such as water quality should not change to the extent that the measured variable of one of the target organisms changes by more than 15-20% (Oliver, 1989).

The 15-20% limit of change is somewhat arbitrary. It represents the level at which people would notice a difference in the abundance of a common organism and the level at which secondary effects on the rest of the community might intuitively be expected to occur. It is also close to the resolution limit of many benthic survey techniques. To survey for more precise percentage changes would require significant increases in replication of measurements. These are difficult to handle and prohibitively expensive. This percentage change is not a permanent standard, but one which requires constant review (Oliver, 1989).

Conclusion

The GBRMPA recognizes that tourism developments or activities might result in changes to the Marine Park environment. It therefore uses impact assessment methods and reactive and long-term monitoring programmes to help eliminate or control adverse impacts. Ultimately, the latter will enable standardized techniques for monitoring the impacts of tourism developments and operations to be produced. Hopefully, key indicators of stress to coral reef ecosystems arising from such impacts, will also be identified through them.

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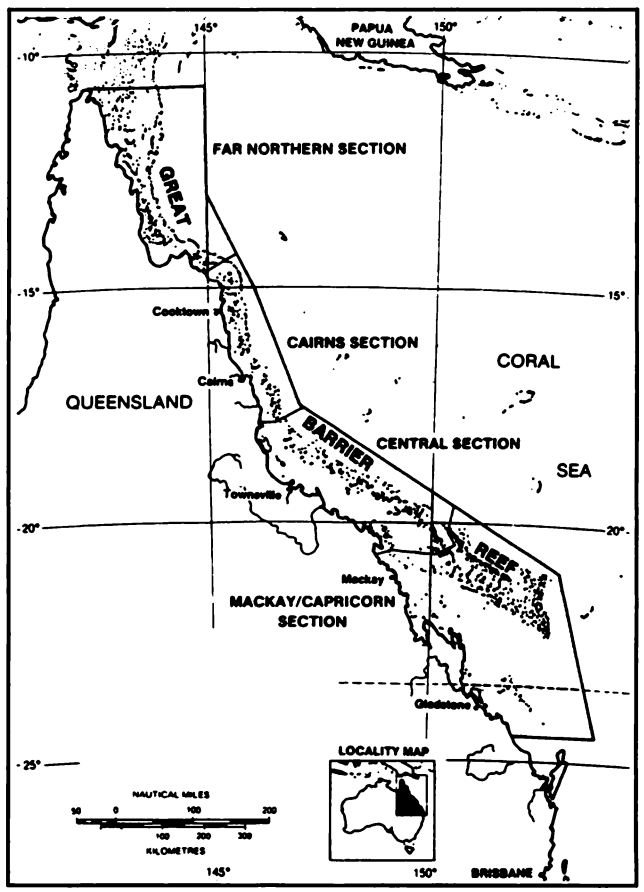
Figure 1 Location of the Great Barrier Reef Marine Park



TOURISM DEVELOPMENT AND TE WAHIPOUNAMU

Bruce Watson
Regional Conservator, Department of Conservation,
West Coast Conservancy, Sewell Street,
Hokitika, New Zealand

Abstract

Conservation interests have long promoted forest protection and nature tourism as alternatives to logging. The New Zealand Government has protected most of the country's South Westland rain forests, adding them to national park or conservation land. Indeed, these early additions were a factor in UNESCO's decision to create the Westland/Mount Cook World Heritage Site in 1986. However, a battle began in 1987 over the fate of rain forests lying between the Westland/Mount Cook and Fiordland World Heritage Sites. In 1989 the Government decided to protect these forests and to include them in the nomination for the huge South West New Zealand World Heritage Site. As part of its landmark decision, the Government announced a three-year nature tourism and recreation development package for South Westland, to provide an alternative economic future to logging. The Department of Conservation has managed the developments, in conjunction with tangata whenua (indigenous Maori people) and local communities, some of whom were previously opposed to the creation of a World Heritage site. World Heritage status has given South Westland a new profile. With the development of nature-based tourism and the creation of new jobs, attitudes hardened in the days when battles were waged over forest protection, are being relinquished. World Heritage status is now seen as an aid to promoting tourism in the area.

Introduction

Te Wahipounamu, the South West New Zealand World Heritage Site, is as precious as the greenstone or jade which gives this 2.6 million ha treasure its Maori name – "the place of Pounamu". What follows is an account of the battles fought by the conservation movement to secure protection and World Heritage status for Te Wahipounamu, and of the transition from an extractive economy to one based on nature tourism and the values of a World Heritage site.

The Setting

South Westland includes Westland National Park, part of Mount Aspiring National Park and extensive conservation lands. These represent some of New Zealand's largest unspoilt areas and feature spectacular coastlines, glaciers, mountains, rivers, gorges, lakes and forests. The forests in particular are important for their plant and animal species, many of which have been virtually wiped out elsewhere. There are ancient Gondwanaland links between this land and the magnificent World Heritage sites of Tasmania and South America.

Rain forests in the area are not suited to sustained forestry production. It was therefore necessary to seek an alternative means of supporting the region's economy.

Early Tourism

Separated from the eastern side of New Zealand by the towering Southern Alps, it was not until 1965 that a road was finally completed connecting the Maoris and Europeans in the settlements of Haast, Okuru and Jacksons Bay, with those living in the small settlements of Bruce Bay, Jacobs River, Fox Glacier, Franz Josef Glacier and Whataroa in the north, a little over 100km away.

So until 1965, South Westland's contact with the outside world was minimal. Its economy was primarily extractive and centred around logging, fishing, farming, whitebaiting, road construction and hunting. It meant a lot of taking and very little putting back. Tourism was virtually unknown, confined to one small pocket comprising the Franz Josef and Fox Glaciers in the north. 'Glacier guiding' started on the Franz Josef Glacier in 1898. The proud tradition continues unbroken to this day, both there and at Fox Glacier. Since the turn of the century the Franz Josef and Fox Glacier communities have each boasted an hotel; a limited example of tourism, perhaps, but one which shone brightly as a beacon for the future.

In 1960 when the Westland National Park was created, Peter McCormack, a Franz Josef Glacier guide and part-time farmer, became a member of the park board. This was at a time when farming and logging were at their peak. "We may be milking cows and logging now", said McCormack to his fellow farmers, "but in the future the cow we will be milking, will be tourism." McCormack was laughed at and ridiculed, but he was a man with vision. A glacier guide since 1940, he had taken parties of as many as 200 people up the glacier and heard overseas visitors say that the region was one of the most beautiful and unspoilt in the world, but that it lacked facilities and service was often poor.

Conservation Battles

In the space of fifteen years a battle was fought in South Westland, characterized by fiery debates in draughty public halls and noisy hotels, and a proliferation of pro-conservation and anti-conservation signs alike, the latter conveying messages such as "Green Hands Off South Westland" and more recently, "No More World Heritage Sites".

The battle reached its height in 1982 when the Government went with national sentiment and against dominant local opinion, and added the South Okarito and Waikukupa State Forests to Westland National Park. Many local people began to realize that the land they were born on, had loved, and worked on for generations, was of national and international significance. Their backyard had become the world's heritage.

The New Zealand Government signed the World Heritage Convention in 1984, and in 1986, the combined Westland/Mount Cook National Parks and Fiordland National Park were officially accepted as World Heritage sites. Local reaction to this new status was minimal, apart from one group who propagated the story that with World Heritage status, New Zealanders would lose sovereignty and that it formed part of a clandestine communist plot to take over the country.

In a sense, 1986 was the calm before the next battle – the battle for 311,000ha of State forests south of Westland National Park. In November 1986 the Government directed the Secretary for the Environment to convene a committee (working party) consisting of representatives from relevant government agencies, the West Coast United Council, and environmental, community and industry groups. Its brief was to secure an agreed package consistent with existing government policies for the allocation of state forests for reservation and production in South Westland. It was also instructed to take into account the impact of agriculture, extractive industries such as mining, timber harvesting and spagnum moss collection, and of activities such as nature conservation, tourism and recreation. It was also to consider the relation of all of these to community services and infrastructure. The working party reported back to the Government in late 1988.

The strength of the working party lay in its diversity and mobility. Its hallmarks were consultation, openness and honesty. Public meetings were held throughout the area being reviewed. These were scenes of intense debate. Even committee members almost came to blows and opposing factions had to agree to disagree.

But despite agreement on many issues, the working party remained fundamentally split over the issue of logging versus forest protection and na-

ture tourism. It was the Government's decision therefore, in February 1989, to nominate Te Wahipounamu for World Heritage status (Department of Conservation, 1989).

Tourism Package

As part of its decision, the Government announced a NZ$1.5 million (US$810,000), three-year tourism development package, to be managed by the Department of Conservation (DOC), and set up a committee to advise on expenditure priorities. The promotion package, together with tourism development grants, aimed at reducing the time needed to switch from an extractive economy to one based on nature tourism.

The committee established by the Government was named the South Westland Environmental and Community Advisory Group (SWECAG) and represented local people, tourism and conservation interests. The local people on the committee comprised farmers, a mother who was also a local MP, a road builder, a motel operator, a local Maori Upoko (chief), a glacier guide, local politicians and a shopkeeper. It was chaired by a fisherwoman and potter. The DOC on the West Coast further empowered the SWECAG committee by assigning it executive power for approval of projects.

Initial SWECAG meetings were often tense and hostile as the committee included members who had opposed forest protection and World Heritage status as well as those in favour of them. Nevertheless, a trusting relationship was quickly built up between DOC and SWECAG.

New Year's day 1991 brought good news to conservationists when it was announced that UNESCO's World Heritage Committee had accepted the South West New Zealand World Heritage nomination.

As tourism development work progressed, the importance of SWECAG and local acceptance of it became crucial for on-site decision making. At a later stage, choice of a site for the World Heritage Visitor Centre became a local issue and SWECAG committee members rallied to support DOC and defend and explain the site choice. Those against the proposed site were led by an adjacent hotel owner. He subsequently renamed his hotel "The World Heritage Hotel – Haast" and is now benefitting from unprecedented business.

New Zealand's Conservation Act (1987) requires DOC to give effect to the Treaty of Waitangi, the founding document signed in 1840 by the indigenous Maori people and the Crown. The South West New Zealand World Heritage Site nomination was made jointly by the Government and Ngai Tahu tribe. The local Maori Chief (the Upoko) represented his people on the SWECAG

committee. He and his people worked with DOC to find a format for presenting the tribe's story at the Visitor Centre and during track-side interpretation. A key feature of the World Heritage Visitor Centre is the Taonga (treasure) Room which protects and displays items previously assigned to dark recesses of museums elsewhere.

The development of tourism and recreational facilities in South Westland has been largely due to the NZ$1.5 million (US$810,000) provided by the Government. It was apportioned as follows: NZ$1.2 million (US$648,000) to DOC for the building of the World Heritage Visitor Centre, tracks and picnic areas, and interpretive effort; NZ$150,000 (US$81,000) to SWECAG for distribution as grants for researching and setting up tourism businesses, and NZ$150,000 (US$81,000) to the West Coast Tourism Council to promote the region nationally.

Central to the planning for all these developments was the blueprint – *A Design Framework for Nature Tourism in South Westland* – published by DOC (Challenger, 1989) and with the following objectives:

- to access and interpret the ecological and scenic attractions of South Westland for the purposes of tourism and recreation;
- to broaden the range of tourism and recreational opportunities available in the region in a manner compatible with the requirements of nature conservation;
- to further cooperation with the tourist industry in order to integrate conservation and tourism and enhance community viability, and
- to seek means through which nature tourism can contribute to the local economy and social infrastructure.

Setting up SWECAG and use of the design framework were crucial to the success of tourism development in South Westland. SWECAG provided the grass-roots momentum and motivation, and the design framework ensured that all development was carefully planned, integrated and implemented.

Progress to Date

A variety of nature tourism activities, often with the aid of SWECAG grants, are developing in the region, including fishing, canoe trips, nature walks, horse trekking, rafting, jet boat trips and noxious animal hunting. Businesses such as craft and souvenir shops, gas stations and those providing accommodation or food or scenic helicopter flights, have also benefitted. Tourism promotion, information and interpretation, have been improved. All DOC staff, and practically all staff working with nature tourism, have

participated in Kiwi Host courses. These trained participants in welcoming visitors and providing information and quality service.

Brochures, trade shows, videos, movies, displays and a carefully planned media strategy, have helped promote this World Heritage site both regionally and nationally. At the new Visitor Centre at Haast, quality displays, a movie, information services, booklets and retail conservation goods provide the visitor with up-to-date interpretation and information. Since opening in mid-December 1991, it has received an average 400 visitors per day, arriving by camper van, car, bus and bicycle. Logging vehicles are now seldom seen.

A World Heritage highway guide for South Westland and Haast Pass was published by DOC in 1991 (DOC, 1991), with help from Mobil Oil New Zealand. It is proving very popular and is a useful marketing tool. The guidebook enables visitors to plan in advance and is often the main factor in influencing people to stay an extra night.

Employment opportunities have increased significantly. Unlike the former logging industry, which employed mainly young and strong males, tourism offers employment opportunities for both sexes, regardless of age or physical strength.

A few years ago, the economy of the small gateway town of Whataroa, relied totally on farming and timber milling. In 1987, 33 men worked in the timber mill and about three women in the tourist industry. Today the number of mill workers has dropped slightly, but 26 jobs associated with tourism have been created in Whataroa and the neighbouring tourist resort of Franz Josef. Of those 26 jobs, 23 have been taken by women.

Success stories based on hard work abound. Four years ago, at Whataroa, Ken Arnold set up a nature tourism business in conjunction with DOC. Tourists are taken by jet boat to the only White Heron (kotuku) colony in New Zealand. A former farmer and logger, Arnold now employs four people during the four-month breeding season and is able to make a year-round living out of tourism.

Further south at Lake Moeraki, in the heartland of the World Heritage area, is the Lake Moeraki Wilderness Lodge. Former Royal Forest and Bird Protection Society Director Gerry McSweeney and his partner Anne Saunders are proving that a nature tourism business can generate jobs and revenue while preserving forests.

McSweeney was one of the central figures in the conservation battles of the 1980s. Three years ago he and Saunders purchased a run-down 40-bed motel with a turnover of NZ$60,000 (US$32,400). Since then they have increased

turnover and staff numbers eight-fold. In an interview in 1991 McSweeney said, "Last year we had 80 small tour groups from overseas, averaging about 15 each tour. This year we already have over 200 groups booked to stay. They want good quality accommodation and meals in a natural setting and they also want the special nature activities, the guided walks and canoe trips that we can offer. It's given us the confidence to press ahead with developments and take on more staff when the rest of the economy is in the doldrums" (Sage, 1991). More than half the tourists who come to the lodge are from overseas. However, New Zealanders are also frequent visitors to South Westland.

Recently the Whataroa community council erected a sign proudly announcing "Welcome to Whataroa – Gateway to World Heritage". A few days later a local anti-conservationist chopped down the World Heritage part of the sign, thinking that DOC had erected it. The locals wasted no time in catching the miscreant who has since paid for a new sign. Such a scenario would have been unimaginable five years ago in this logging town.

Conclusions

It's early days yet, but the signs are there. People today want to see nature treasures protected. They also want the chance to experience wilderness firsthand. These factors, together with the success of local nature tourism businesses, demonstrate the potential in South Westland for replacing logging with other economic activities.

This paper began by acknowledging the Maori, New Zealand's first human inhabitants. It seems appropriate then to finish with some words from Keri Hulme, who became internationally renowned when she won the Booker Prize in 1985 for her novel, *The Bone People.* Fifteen years ago she moved from her birthplace on the east coast of New Zealand's South Island, to part of her ancestral lands at Okarito, in South Westland, to help fight for the forests of Te Wahipounamu.

She says, "It is always there, the land...not unchanged: earthquakes happen, and there are avalanches of rock and mud, and the sea raids the shore...here people came, people flourished; people fail, other people come. But the land, and whatever riches it supports, are the constancy. People are, by comparison, ephemeral.

"One thing that is certain: our ancestors handed onto us a gift, a rich splendid land. The establishment of World Heritage status for the south western part of New Zealand means that other people can share our riches – the spiritual dimension of Te Maranui o Tane, the feast for the eyes, the balm for the

soul, the relaxation of body and mind contained here in the south. Other people can share our riches, for they are now more than ours, a heritage for all the world'' (Hutching and Potton, 1987).

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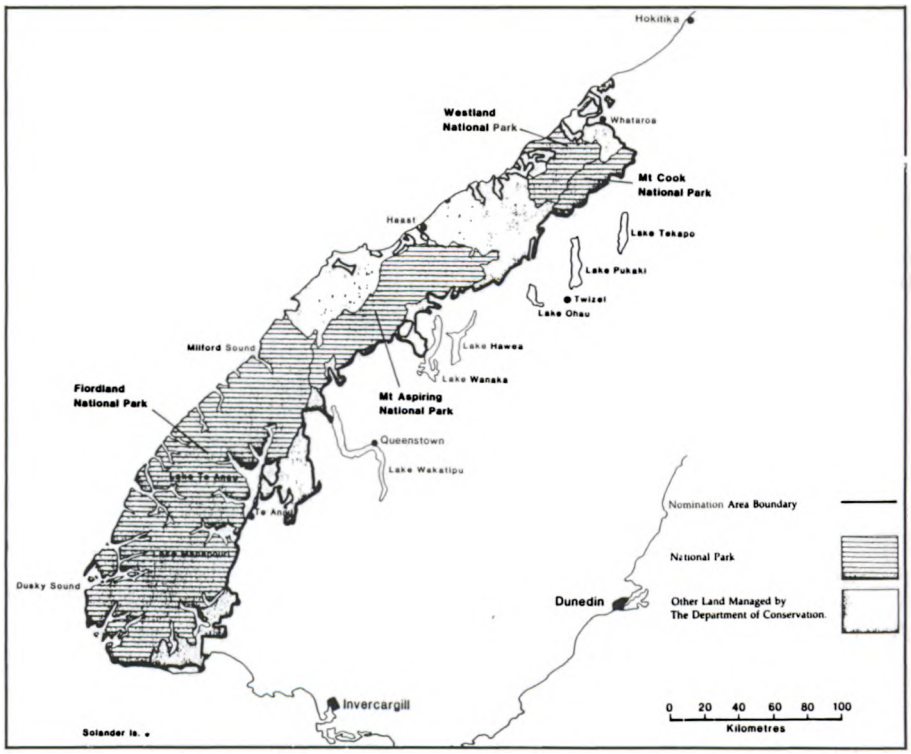
Figure 1 Protected areas in South Westland



APPLICATION OF THE WORLD HERITAGE CONVENTION TO ANTARCTICA AND THE ISLANDS OF THE SOUTHERN OCEAN

Paul Dingwall
Department of Conservation, Conservation Sciences Centre,
PO Box 10420, Wellington, New Zealand

Abstract

The question of whether or not the World Heritage Convention should be applied to all or part of the Antarctic continent has been raised on several occasions. This paper examines some of the problematic issues involved.

Introduction

The IUCN Antarctic Conservation Strategy (IUCN, 1991) notes that several parts of Antarctica, such as the Victoria Land Dry Valleys, Beardmore Glacier and Vinson Massif, are clearly outstanding in terms of their scientific importance, and landscape and wilderness qualities.

Several problems would arise, however, if the World Heritage Convention was to be applied to the Antarctic Treaty Area (namely, south of latitude 60°S).

Sovereignty

The World Heritage Convention requires that nominations for World Heritage status are made by State Parties to the Convention in respect of sites within their sovereign territory. However, there is a unique legal accommodation in the Antarctic Treaty regarding sovereignty of the Antarctic continent which complicates matters.

Although seven nations claim territorial rights to part of the continent (Australia, New Zealand, France, Norway, United Kingdom, Chile and Argentina – the claims of the last three covering the same area), the Antarctic Treaty neither recognizes nor denies these claims. In other words, it sets the question of sovereignty aside. Under the Treaty, in the interests of in-

ternational accord, claimant nations agree not to undertake action which would advance their territorial claims. So despite the fact that all claimant nations are also members of the World Heritage Convention, unilateral nomination of an area for World Heritage status would be regarded as prejudicial to the accommodation concerning sovereignty under the Antarctic Treaty. Clearly, in its present form, the World Heritage Convention cannot be applied to the Antarctic Treaty Area, as it does not cover areas that are not under state sovereignty.

At its 15th Session in June 1991, the Bureau of the World Heritage Committee considered simply applying the concept of World Heritage to Antarctica. In other words, Antarctica could be declared to be of outstanding universal value, but not formally listed as a World Heritage site under the Convention. But although this might be valid in symbolic terms, it is hardly a realistic suggestion. The real value of the Convention is surely that, through World Heritage designation and addition to a global network, sites are accorded an international status. The Antarctic Treaty nations might justifiably adopt the attitude that designation of areas of the Antarctic, as Antarctic Specially Protected Areas, under the provisions of the Protocol on Environmental Protection to the Antarctic Treaty, would be a more substantial way of recognizing their value to international conservation, than any symbolic gesture made under a separate international protection instrument. Moreover, the Antarctic Treaty Parties, having recently concluded comprehensive reform of conservation measures under the Antarctic Treaty, need no further reminding of their obligation to protect a region of recognized importance to global conservation.

Membership of the Convention

World Heritage properties are nominated by State Parties to the Convention. Not all the Antarctic Treaty Consultative Parties have ratified the World Heritage Convention. For example, Belgium, Japan and South Africa have yet to do so; this may mean that they do not accept all the elements of the Convention and accordingly that they would be unlikely to agree to application of the Convention, either formally or conceptually, to areas in the Antarctic.

United Nations

The Antarctic Treaty is dedicated to furthering the purposes and principles embodied in the United Nations Charter. For the Treaty Parties, the Antarctic represents a valuable and successful instrument of international cooperation which has made an important contribution to international peace and

security and to protection of the global and regional environment. These achievements have been widely acknowledged in the Secretary-General's reports about Antarctica. There already exists a long-standing cooperative relationship between the United Nations and the Antarctic Treaty system. Several UN bodies, such as WMO, IOC and UNEP, enjoy expert observer status at Treaty consultative meetings. However, some UN members have argued that the UN should have an institutionalized role to play when decisions about Antarctica are being taken.

Future Developments

At its June 1991 meeting, the Bureau of the World Heritage Committee requested that, in the context of the 1992 evaluation of the Convention, the amendments that might be required to enable application of the Convention to Antarctica, be investigated. Efforts should be made to accomplish this and also to establish a consultative process between UNESCO and the Treaty parties, with a view to removing the impasse which exists in extending the benefits of the World Heritage Convention to the Antarctic region.

Islands of the Southern Ocean – Conservation Status and Values

The twenty major oceanic islands or island groups in the Southern Ocean that lie outside the Antarctic Treaty Area, are the sovereign territory of six nations – Australia, France, New Zealand, Norway, South Africa and the United Kingdom.

Most of these islands are protected, either in whole or in part, and the majority qualify as Category I strict nature reserves under IUCN's protected area classification system (IUCN, 1979). While some islands have been highly modified by humans and the introduction of exotic (alien) plants and animals, many remain in an essentially natural state; some are among the world's most pristine oceanic islands. Comprising the habitat of many endemic plants and animals and the breeding grounds of millions of seabirds and marine mammals that feed throughout the Southern Ocean, the islands are of great significance for science and conservation. They are also attracting growing numbers of seaborne tourism ventures. Consequently, there is growing interest in assessing their World Heritage potential.

Two Australian island groups have been nominated as World Heritage sites already, namely, Heard and McDonald Island (in 1991) and Macquarie Island (in 1992). On an informal basis, the World Heritage values of the

five New Zealand sub-Antarctic island groups have been rated highly. It has been suggested that these islands could be linked in a single nomination with neighbouring Macquarie Island which has many biological, historical and conservation affinities (Molloy and Dingwall, 1990).

Gough Island in the South Atlantic, along with some islands in the Tristan da Cunha Group, South Georgia, and the South African administered Prince Edward Island, are others that have been cited as potential World Heritage candidates.

In 1991 the World Heritage Bureau deferred the nomination of Heard and McDonald Islands on the basis of several technical questions, but principally on the grounds that the uniqueness of the islands among others in the Southern Ocean had not been established satisfactorily.

A Rationale for World Heritage Evaluation

This raises the vexatious question of what would be the most appropriate frame of reference for establishing the uniqueness of the southern islands. Each island has unique assemblages of species and its own particular wildlife and landscape attractions. One possible means of distinguishing among islands might be to compare islands lying within each of the three biogeographical zones that are recognized in the region (Clark and Dingwall, 1985). Another possibility would be to compare the relative qualities of islands according to specific or aggregated attributes such as degree of species endemism, floral and faunal diversity, numbers of introduced alien species, numbers of breeding species of birds and marine mammals, or geological composition and evolution. Interestingly, the Macquarie Island nomination rests heavily on its outstanding earth science values and unique geological history.

Above all, nomination of individual islands from among the many Southern Ocean island groups, has highlighted the pressing need for comprehensive and systematic comparative evaluation of all the islands in terms of World Heritage criteria, in order to ascertain the relative standing of individual islands and groups. This is important even if it leads to the conclusion that all groups are of such value to conservation that they should all be designated World Heritage sites. Certainly, interest in World Heritage nomination for the southern islands promises to contribute to redressing an imbalance in the current listing of natural properties under the Convention, whereby oceanic islands are conspicuously under-represented.

Conclusion

Clearly, a systematic review of the relative natural values of the Antarctic region would be a useful exercise. As a beginning, a workshop of scientists

and island managers, was convened jointly by SCAR and IUCN, in April 1992, and included consideration of a rational approach to World Heritage designation for islands of the Southern Ocean on its agenda.

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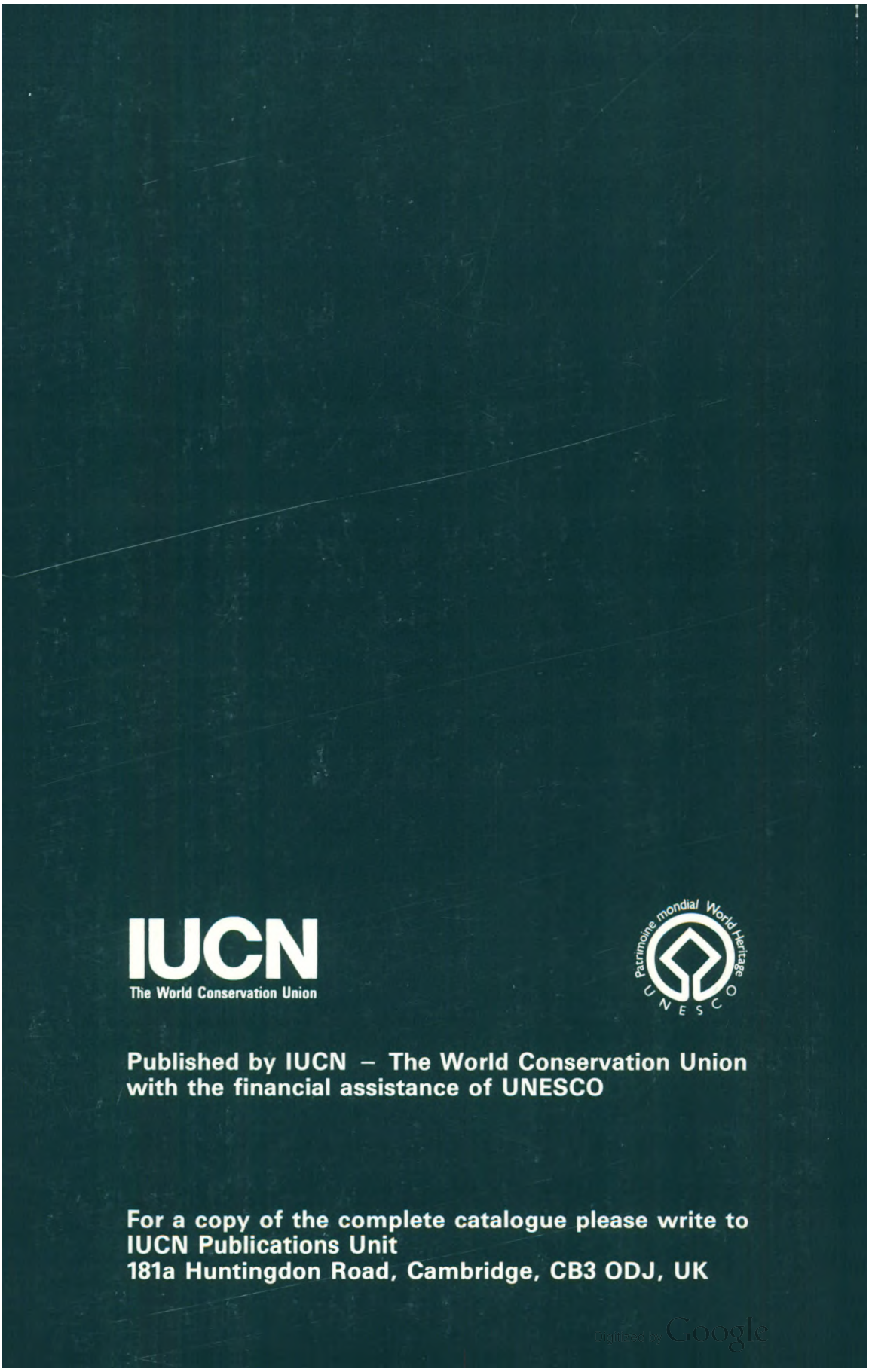

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