

WK92

Part I - Subregion C

ASSESSING THE CONSERVATION STATUS OF THE WORLD'S TROPICAL FOREST

A contribution to the FAO Forest
Resources Assessment 1990



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1 INTRODUCTION AND METHODS

MANAGING INFORMATION ON THE WORLD'S BIOLOGICAL DIVERSITY AT WCMC

The Earth's biological and other natural resources provide many economic, social and aesthetic benefits to mankind. This is particularly true of tropical forests which support over half the world's biological diversity, as well as provide much needed foreign exchange, and contribute to the livelihood of rural human populations in many developing countries. It is essential, therefore, that effective programmes for sustainable human development are based on conservation objectives. Responsible institutions and individuals need access to a service that provides factual information on the conservation status of the world's biological resources in a timely, focused and professional way.

This service is provided by the **World Conservation Monitoring Centre**, Cambridge, UK. Established in 1988 as a company limited by guarantee with charitable status, WCMC is managed as a joint-venture between the three partners in the *World Conservation Strategy* and its successor *Caring for the Earth*: IUCN - The World Conservation Union, UNEP - United Nations Environment Programme, and WWF - World Wide Fund for Nature. Its mission is to provide information on the status, security, management and utilisation of the world's biological diversity to support conservation and sustainable development.

To implement its mission, WCMC maintains substantial databases on the status and distribution of plant and animal species of conservation and development interest; habitats of conservation concern, particularly tropical forests, coral reefs and wetlands; the global network of conservation areas; and the international trade in wildlife species and their derivative products. Much of this information is managed using Geographic Information Systems, and is supported by an extensive bibliography of published and 'grey' literature. WCMC is also involved in providing support for the expansion of national data management capabilities in developing countries, and in developing communication networks for the flow of information.

WCMC contributes its data to GEMS - the Global Environment Monitoring System, coordinated by UNEP. GEMS is a collective programme of the world community to acquire, through global monitoring and assessment, the data that are needed for the rational management of the environment. GEMS is an element of the United Nations Earthwatch Programme.

Working closely with the IUCN Commission on National Parks and Protected areas since its inception in 1981, the WCMC Protected Areas Data Unit has compiled an extensive database of the world's conservation areas currently in excess of 30,000 records. Each record includes information on size, date of establishment, national designation, geographical coordinates, biogeographic province and, in the case of forest reserves, function. Boundaries of many of these conservation areas have been digitised from maps using a Geographic Information System, enabling them to be plotted and overlaid onto other georeferenced datasets for analytical and presentation purposes. In cases where maps of conservation areas are not available for digitising, the geographical coordinates can be used to plot their locations. This database, and associated digital files, has been expanded under the *WCMC Tropical Managed Areas Assessment 1990* and forms the basis to the present report.

The *WCMC Tropical Managed Areas Assessment 1990* is the first attempt to assess the contribution of the forestry sector to nature conservation. This assessment is therefore in many respects prototypical and in time could be significantly improved. This will require major improvements in the management of information on forestry sector data relating to protection and conservation, at the national level, and thus subsequently at the sub-regional, regional and global levels. In many instances this assessment has had to be carried out at two levels, based either on information that is derived from the site-specific level, or information that is only available at the aggregated system level. In the latter case, therefore, it is not possible to provide information on mean size and size distribution, location information, overlap with wildlife sector conservation areas, or precise numbers and areas of sites assigned to production, protection or conservation uses.

Future assessments could be made more comprehensive and more reliable if this detailed, site-specific information becomes available for both wildlife and forestry sectors.

HOW TO USE THIS REPORT

Findings from the WCMC Assessment are presented in this final report to the Overseas Development Administration, UK, which has funded the project. The report represents WCMC's contribution to the *FAO Forest Resources Assessment 1990*. It has been planned in close consultation with FAO so that its contents can be readily incorporated within or supplement the FAO Assessment. It comprises three parts as follows:

- Part I** subregional reviews of managed areas in tropical countries for Asia & Pacific, Africa, and Latin America;
- Part II** regional and global overview of managed areas for each of the three tropical regions (Asia & Pacific, Africa, and Latin America), based on the subregional reviews in Part I; and
- Part III** maps and lists of managed areas for each tropical country.

The report is intended to be a source of information and analysis rather than to be read from cover to cover. The primary means of accessing this information is through the Contents list. Before dipping into the main body of the report, the reader is urged to browse Section 1.2 on Methods which not only explains how the information has been collected and compiled, but also draws attention to its limitations.

The subregional reviews in Part I, which include summary statistics for individual countries, have been compiled according to a standard format to enable comparisons to be made directly between countries and subregions. Each subregional section is self-contained, complete with bibliography and annexes in which summary data on the forest estate are presented and conservation areas are listed. The exceptions are the country maps of managed and conservation areas which, because of their larger A3-size, are presented separately in Part III. The conservation areas listed in Annexes X.1 of the subregional sections are cross-referenced to the maps in Part III, enabling the location of individual sites to be identified from the maps. Sources of maps with annotations are provided in Section 1 of Part III. Part II comprises regional and global reviews based on summary details extracted from each subregional section in Part I.

A number of terms have been used which have very specific meanings so far as this report is concerned. Examples include forest land, managed area, conservation area, forestry sector, wildlife sector and total area. These and others are defined in the Glossary at the end of Section 1.

Finally, this report is largely a review and analysis of information contained in the four-volume series *Protected areas of the world: a review of national systems* prepared by WCMC and published by IUCN for the IV World Parks Congress, Caracas, 10-21 February 1992 (IUCN, 1992). Referencing of the text in this report has been kept to a minimum, thereby avoiding repetition of the extensive bibliographies contained in the four-volume series. These should be consulted for much of the background information on national conservation area networks, with details of their legislative and administrative basis, and of their representativeness.

ACKNOWLEDGEMENTS

Production of this report has been based largely on the substantial conservation areas database and associated digital maps that WCMC manages, supplemented by a massive pantropical data gathering exercise. This information is drawn from an extensive network of conservation area professionals within forestry and wildlife authorities, as well as those within scientific institutions and conservation bodies. WCMC wishes to express its thanks to these individuals and their agencies, too numerous to mention individually, for their support without which it would be unable to operate. WCMC recognises with particular gratitude the fundamental contribution of the IUCN Commission on National Parks and Protected Areas, whose commitment to WCMC over the years has helped the Centre to develop its capability in managing information on the world's conservation areas. WCMC also acknowledges the support of the IUCN Forest Conservation Programme, which was instrumental in initiating this project, and the IUCN Environmental Law Centre for its help with information on conservation areas legislation.

Staff at WCMC involved in the *Tropical Managed Areas Assessment 1990* include Mike Adam, Clare Billington, Simon Blythe, Gillian Bunting, Daphne Clark, Graham Drucker, Harriet Gillett, Donald Gordon, Michael Green, Thomas Moriarty, James Paine, Corinna Ravilious, Deborah Rothera, Joel Smith, Mark Spalding and Alison Suter. The project has been managed by Jeremy Harrison and coordinated by Michael Green with assistance from Clare Billington and James Paine.

The *WCMC Tropical Managed Areas Assessment 1990* has been funded entirely by the Overseas Development Administration of the UK under Research Scheme No. 4544. Particular thanks are due to staff within the Natural Resources and Environment Department who have supported this initiative through its various stages.

WCMC has welcomed the opportunity to integrate this project with the *FAO Forest Resources Assessment 1990*. The support of Dr K D Singh, its coordinator, and his colleagues is greatly appreciated.

1 INTRODUCTION AND METHODS

1.1 INTRODUCING THE WCMC TROPICAL MANAGED AREAS ASSESSMENT

1.1.1 Background

The clearance of tropical forests, both rain forests and dry forests is an issue at the top of the environmental agenda. Most tropical forest occurs within developing nations where pressures are greatest from burgeoning populations to exploit this resource for its products and convert forest land to agriculture. Meanwhile, developed nations are concerned that such forests contain half the world's species, as well as playing an important role in maintaining global climatic stability.

In order to assess the status of tropical forests (and woodlands) and identify trends in deforestation and afforestation, FAO and UNEP conducted a survey of tropical forest resources in 76 tropical countries in 1978-1981 (FAO, 1981). It was concluded from the *Tropical Forest Resources Assessment 1980* that human population growth and agricultural expansion are the main causes of deforestation in the tropics. The 1980 Assessment was instrumental in mobilising global support for the *Tropical Forestry Action Plan* which aims to stem, and eventually reverse, the process of deforestation and forest degradation in the tropics.

Much of this deforestation and degradation is unmanaged, uncontrolled and unsustainable, providing no long-term benefits to the local people involved. An integrated approach to land-use is needed whereby: forests are converted to agriculture only where soils are rich; they are managed for minor forest products for the benefit of local people as well as for timber production; and they are selectively protected in order to maintain ecological services, genetic resources and biological diversity. Such protection forests are a vital resource for local people, and are being managed increasingly for the direct benefit of local communities on whom ultimately depends the future integrity and maintenance of conservation area systems.

1.1.2 FAO Forest Resources Assessment 1990

Aware of the need to improve and update the baseline information gathered under the 1980 Assessment in order to keep governments and the international community informed of the state of tropical forest resources, FAO is carrying out an assessment for 1990 (FAO, 1990). The *FAO Forest Resources Assessment 1990* complements the new round of assessments of forest resources in temperate countries conducted under the auspices of the FAO/ECE Timber Committee in Geneva for the reference year 1990. It was also intended that the scope of the 1990 Assessment would be expanded to include non-tropical developing countries, where trends in deforestation and degradation are linked with processes of desertification as well as with pressure from agriculture and inadequate management. However, this part of the 1990 Assessment has not yet been funded.

It was generally recognised that the 1980 Assessment was over-concerned with commodity production, notably timber, and that more emphasis should be given to the service functions of forest, including environmental protection and nature conservation. This is being addressed by the *WCMC Tropical Managed Areas Assessment 1990* which is designed to quantify the environmental services of tropical forests (particularly with respect to conservation areas) and form an integral part of the *FAO Forest Resources Assessment 1990*. Efficient integrated land-use is essential to ensuring that local people benefit from available forest resources. Hence the importance of the WCMC Assessment in helping to ensure that conservation areas are considered by resource-use planners to be efficient forms of land-use.

1.1.3 WCMC Tropical Managed Areas Assessment 1990

Tropical forests have long been valued for their timber, on account of which governments of many countries have either nationalised them or developed extensive networks of forest reserves to safeguard them from over-exploitation and conversion to other forms of use. Such provisions have often proved inadequate due to a lack of proper management practices and enforcement measures in the face of ever mounting pressures on forests for their timber and potential agricultural land. While attention within the forestry sector has been focused primarily on their timber production value, with exploitation all too frequently occurring at unsustainable levels, there has been a growing awareness of the ecological values of tropical forests as centres of biological diversity

and endemism, and for watershed management. Increasingly, countries in Latin America, Africa and Asia have been allocating forest reserves or parts thereof to protect watersheds and conserve biological resources. But quite how much tropical forest is reserved for such protection and conservation purposes within the forestry sector is not known.

The *WCMC Tropical Managed Areas Assessment 1990* is a three-year project (July 1989-June 1992) funded by the Overseas Development Administration, UK under Research Scheme No. R4544. It is being carried out in collaboration with IUCN - The World Conservation Union, in particular its Forest Conservation Programme and Commission on National Parks and Protected Areas, and in cooperation with the Food and Agricultural Organization of the United Nations to compliment its *Forest Resources Assessment 1990*.

Its overall objective is to complement the *FAO Forest Resources Assessment 1990* by quantifying the contribution of forestry, wildlife and other sectors to nature conservation in the tropics. This will help to identify gaps in existing managed and conservation area networks and, particularly with respect to the forestry sector, highlight the need for increased allocation of tropical forests for protection and conservation purposes.

Under the terms of the ODA Memorandum, the specific objectives of the *WCMC Tropical Managed Areas Assessment 1990* with respect to "each of the countries covered by the [FAO] Tropical Forest Resources Assessment Project" are as follows:

- to update information held by WCMC on conservation area systems, and to expand its information on managed areas other than those established primarily for nature conservation, particularly with respect to forest reserves managed for sustainable resource use;
- to present this information in short accounts of the state of national managed and conservation area systems, drawing the main conclusions into regional summaries;
- to map managed and conservation area systems on a Geographic Information System;
- to use this GIS facility to analyse the coverage of different vegetation types or bioclimatic units by managed and conservation areas, and to examine the coverage afforded to different regions by those systems;
- to prepare analyses of managed area coverage by forest type and management category, and present this in a form that is compatible with the *FAO Forest Resources Assessment 1990* tables and reports; and
- to prepare further analyses and reports as time permits.

These objectives have been met, with the exception of the analysis of vegetation/bioclimatic types, and findings are presented in this report and in the four-volume series *Protected Areas of the World: A Review of National Systems* (IUCN, 1992), compiled by WCMC. The latter country-by-country review of the world's conservation areas was produced for the IV World Parks Congress, Caracas, 10-21 February 1992 under a separate but related project funded by British Petroleum. It comprises descriptions, lists and maps of national conservation area networks. A considerable amount of information on national conservation area networks generated from the WCMC Assessment has been incorporated within this series, which provides the basis of the present report.

It has not been possible to examine coverage of the different vegetation/bioclimatic types by managed and conservation areas within the available time. It has been WCMC's intention throughout the project to base this analysis on the ecofloristic zone maps of the tropics produced for FAO by the Institut de la Carte Internationale de la Végétation, Université Paul Sabatier, Toulouse. Such maps have been available for tropical Asia (Sharma, 1986a) and Africa (Sharma, 1986b) for some time, but those for parts of Latin America have still to be completed. WCMC did not acquire the digital datasets of ecofloristic zones for Asia, Africa and Latin America (excluding Central America and Mexico) from FAO until the penultimate month of the project. Subsequent technical problems with the geo-referencing of the digital ecofloristic zone data sets precluded an analysis based on protected areas data sets.

It is still planned to assess the representativeness of the managed and conservation area networks with respect to ecofloristic zones, but in the months immediately following completion of this report. This study will be carried out in close cooperation with FAO and the results presented in a separate report.

1.1.4 Status of the FAO Assessment and its implications on the WCMC Assessment

The FAO Assessment has changed in several respects from those originally specified in the *Guidelines for Assessment* (FAO, 1990), due to inadequate information and a lack of additional funding. Changes which have directly affected the scope of the WCMC Assessment are as follows:

- it will cover only tropical countries, with the exception of those in Insular Africa (other than Madagascar) and Oceania which have been dropped due to paucity of data. Thus, the FAO Assessment currently covers only 100 out of the 130 tropical countries originally identified for inclusion. These are listed in Annex 1.1;
- it is not being extended to an additional 30 non-tropical developing countries as originally anticipated because of a lack of further funding; and
- it is no longer planned to produce a series of country briefs due to the lack of a comprehensive response from tropical countries.

In view of these constraints and developments, the WCMC Assessment has necessarily been modified in order to maintain its consistency with the FAO Assessment. It includes 100 of the 101 geopolitical units covered by the FAO Assessment (Saint Pierre and Miquelon, listed by FAO under the Caribbean subregion is excluded from the WCMC Assessment), *plus* those five countries in Oceania which have a significant amount of forest (i.e. Fiji, Papua New Guinea, New Caledonia, Solomon Islands and Vanuatu), and Bermuda as listed in Annex 1.1.

The FAO Assessment will officially end in October 1992 with the completion of a series of regional reports covering Asia, Africa and Latin America. It is anticipated that this report will supplement the FAO regional reports, or be incorporated within them. A preliminary, summary version of Part II of this report has already been presented to FAO for inclusion within its report to the United Nations Conference on the Environment and Development (FAO, 1992).

1.2 METHODS

1.2.1 Scope

The *WCMC Tropical Managed Areas Assessment 1990* covers 106 tropical geopolitical units. These are split into 12 subregions and three tropical regions (Latin America, Africa and Asia & Pacific), as shown in Annex 1.1.

The scope of the WCMC Assessment was initially wider, covering a total of 163 geopolitical units in line with the *FAO Forest Resources Assessment 1990*. It included all those in Insular Africa and Oceanian subregions and extended to non-tropical developing countries. Government agencies within 158 of these geopolitical units were approached for information during the early stages of the project. But it was subsequently trimmed in line with changes within the FAO Assessment, as explained above (Section 1.1.4).

The study is focused on *managed areas*, particularly those having a protection or conservation role which are referred to as *conservation areas* in this report. These terms are defined in the Glossary. It is directed primarily at the forestry and wildlife sectors, within which occur the majority of managed areas. Additional sectors are covered where appropriate.

No attempt has been made to exclude managed areas notified after 1990 from the WCMC Assessment because this would not affect the analysis significantly. The number of records of sites established post-1990 is only 119, which is less than 0.5% of all the sites recorded on the WCMC database as having been established prior to 1990.

1.2.2 Data collection

Forestry sector Prior to this assessment, WCMC's information on managed areas in the forestry sector had been patchy, with good coverage of a few countries and scant or no data for the majority. Managed areas in the forestry sector are used predominantly for production purposes and, therefore, are of secondary interest to WCMC, as compared to those areas under protection and conservation management regimes.

For the purpose of this study, it was necessary for WCMC to contact forest administrations in every tropical country, often for the first time. Administrations were asked for statistics and maps of the forest estate, information relating to its management and copies of relevant legislation. A standard letter was drafted in consultation with colleagues in the IUCN Forest Conservation Programme and the FAO Assessment, translated into French and Spanish, and circulated to all forest administrations using the list of *Heads of National Forestry, Wildlife and Parks Administrations* maintained by the FAO. Attached to the letter were two tables which these authorities were requested to fill in. The English version of the standard letter and tables is shown in Annex 1.2.

Letters to forest administrations in 158 tropical and non-tropical developing countries (or geopolitical units) were sent out during the second quarter of 1990. Responses were received initially from 20% of countries, but, following reminder letters being sent in December, the response rate had increased to 40% by April 1991. As previously mentioned (Section 1.1.4), the scope of the project was reduced to 100 tropical countries following changes made to the FAO Assessment in mid-1991, and WCMC's efforts in the latter part of 1991 and early 1992 concentrated on soliciting responses outstanding from among these tropical countries. By the end of this project, 52% of tropical countries had responded (Table 1.1). The level of response was remarkably even, ranging from 48% in Tropical Latin America to 56% in Tropical Africa. A number of reasons may account for this relatively disappointing level of response. First, many of the countries in this assessment have extremely meagre financial resources dedicated to forestry and wildlife activities, and staff may not have been available to compile the information requested. Secondly, as a related issue, it is likely that the detailed information on individual sites, maps etc. may not be available, even within the countries themselves. This indicates the importance of supporting and building information gathering and management capacity within countries.

Information obtained directly from forest administrations was supplemented with data gathered under the FAO Assessment, particularly in the case of those which did not respond to WCMC's requests. In the absence of any recent data, and as a last resort, statistics were used from the *Tropical Forest Resources Assessment 1980* (FAO, 1981) with respect to quantifying the extent of natural forest under production. Additional information on the forestry sector was obtained from the libraries of the FAO Forest Department, Rome and the Oxford Forestry Institute. Copies of much of the forest legislation relevant to managed areas were obtained from the FAO Forest Resources Division.

Wildlife sector WCMC already holds an extensive body of information on conservation areas within the wildlife sector. This information has been gathered over many years as a result of direct contact with the appropriate government and other agencies responsible for their management. It is continuously being updated as existing areas are upgraded in their conservation status or enlarged, and as new ones are created.

Relevant agencies within all tropical countries were contacted at some stage during the WCMC Assessment for their latest lists and maps of conservation areas, or asked to check and update such material generated from the WCMC Protected Areas Database and Biodiversity Map Library. Much of this information-gathering exercise was conducted under the auspices of compiling *Protected areas of a world: a review of national systems* (IUCN, 1992), with relevant data feeding directly into the WCMC Assessment. As explained in Section 1.1.3, these two projects complement each other.

Table 1.1 Level of response from forest administrations in tropical countries to requests for information on managed areas initially made in March-June 1990. At least two reminders were sent over the subsequent two years to those administrations which did not respond.

REGION	No. countries	No. countries responding	Response level
TROPICAL ASIA & PACIFIC			
South Asia	7	3	43%
Continental South East Asia	5	2	40%
Insular South East Asia	5	4	80%
Oceania	5	2	40%
Subtotal	22	11	50%
TROPICAL AFRICA			
West Sahelian Africa	9	3	33%
East Sahelian Africa	6	4	67%
West Africa	8	6	75%
Central Africa	7	2	28%
Tropical Southern Africa (+ Madagascar)	11	8	73%
Subtotal	41	23	56%
TROPICAL LATIN AMERICA			
Central America (+ Mexico)	8	3	38%
Caribbean	25	14	56%
South America	10	21	40%
Subtotal	43	21	48%
TOTAL	106	55	52%

Maps Where possible, maps of managed areas were obtained from the relevant government authorities within the forestry, wildlife and any other sectors in order to digitise their boundaries using a Geographic Information System. In addition, the map libraries of the University of Cambridge and Oxford Forestry Institute were searched for maps of managed areas. Maps were also obtained from the Natural Resources Institute of the Overseas Development Administration (ODNRI) and Hunting Technical Services, UK.

1.2.3 Data management

WCMC manages its information on conservation areas in the following ways:

- hard copies of bibliographic material (books, papers, reports, legislation etc), correspondence with raw data, and maps are filed on a geographic basis;
- relevant data are extracted from this raw material and stored electronically in the WCMC Protected Areas Database or, in the case of maps, digitised using a Geographic Information System and stored within the WCMC Biodiversity Map Library; and
- texts describing national conservation area networks, their legal and administrative basis, are compiled using a standard format and stored electronically. (Texts describing individual conservation areas are also compiled, and stored in the same way, but these are not relevant to this study.)

For purposes of the WCMC Assessment, the WCMC Protected Areas Database was expanded to include other managed areas, notably forest reserves. A number of modifications were made to the database to enable the function of forest reserves to be recorded as production, protection or conservation, in line with the classification used by FAO (1990). This database currently comprises some 31,000 records, of which some 9,136 are relevant to the WCMC Assessment.. An example of the type of output which can be generated from the Protected Areas Database are the lists of conservation areas presented in Annex X.2 of respective subregional chapters within Part I of this report.

Summary statistics of the forest estate provided by respective forest administrations in Table 1 of Annex 1.2 at the request of WCMC were entered into a series of worksheets within a Lotus 1-2-3 spreadsheet. Output from this database appears as Annex X.1 of respective subregional chapters.

Maps of managed areas were digitised using mainly ARC.INFO but also ATLAS*GIS software, in the latter stages of the project. Digital files are stored within the WCMC Biodiversity Map Library.

1.2.4 Analysis and review of information

This is described below for each part of the report. Limitations with the data are discussed in italics as appropriate.

PART I

The way in which data are generated, analysed and presented is described below for each section of the subregional chapters.

X.1 Historical Perspective Reviews the way in which nature conservation has evolved through legal and administrative regimes, based on information contained in *Protected areas of the world: a review of national systems* (IUCN, 1992).

X.2 Nature Conservation Policy and Legislation Reviews current nature conservation policy and legislation within forestry, wildlife and other sectors, based on information contained in *Protected areas of the world: a review of national systems* (IUCN, 1992). Table X.1 has been compiled by extracting the relevant data from the Annex of legal designations in IUCN (1992). The sector to which individual pieces of legislation apply (i.e. forestry, wildlife or additional) is indicated, together with management objectives for each designation as legislated or laid down in policies.

X.3 Managed Areas Administration Reviews current administration within forest, wildlife and other additional sectors based on information in *Protected areas of the world: a review of national systems* (IUCN, 1992).

X.4 Managed Areas Status Data on managed areas originates from two databases, namely the WCMC Protected Areas Database (Annex X.1), and the Lotus 1-2-3 spreadsheet with the responses from forest administrations (Annex X.2).

Data in Table X.2, showing the extent of natural forest land under production, protection and conservation, are derived directly from Annex X.2. It should be noted that, whereas statistics for individual protection and conservation forests were collected as part of the WCMC Assessment, this was not extended to production forests. *Data presented in Annex X.2 are often subject to a number of limitations, due to the way in which statistics are compiled nationally, as follows:*

- *It is not always possible to distinguish between the different forest origins. For example, data for natural forest may occasionally include plantation forest.*
- *It is frequently difficult to differentiate between protection and conservation forest as countries do not necessarily follow the classification system drawn up by FAO (1990). In the final analysis, this does not affect the WCMC Assessment as both protection and conservation forest are treated similarly as conservation areas.*
- *It is not always known whether or not raw data for protection and conservation forest, as supplied by forest administrations, include conservation areas managed by the wildlife sector. Where this is known to be the case, the raw data have been modified by subtracting the contribution of the wildlife sector.*

These and other deficiencies reflect the availability of national statistics, or the way in which they are compiled, and are noted at the foot of the tables in Annex X.2.

Coverage The WCMC Protected Areas Database was used to generate statistics for analysing the coverage of national conservation area networks in terms of total and partial protection, and assessing the relative contribution of the forestry, wildlife and additional sectors. These statistics are presented in Table X.3. The analysis extends to all existing and proposed conservation areas, irrespective of their size, but managed areas under productive regimes are excluded. It does not extend to privately-owned and managed reserves. Coverage by national conservation area networks is expressed as a percentage of the total area of a country, and examined in relation to the widely-accepted target of 10%. This is considered to be a realistic goal for many countries, taking into account other demands on land for economic development and subsistence needs. Coverage expressed as a percentage of total area can be misleading, however, in the case of the countries with widely scattered islands and having a marine component that is well represented within the conservation area network. This discrepancy arises because total area accounts for land and inland water bodies only, and not territorial waters.

The **representativeness** of conservation area networks is examined with respect to major habitats, and gaps identified from other studies are highlighted. Particular attention is given to whether or not plans based on systematic surveys have been formulated to ensure that the full range of a country's biological diversity is represented within its conservation area network.

Integrity Mean size and the frequency distribution of conservation area sizes are used as a measure of the integrity of conservation area networks (Table X.4). This, by necessity, is based only on data where the extent of individual conservation areas is known. Thus, aggregated data that may be included in Table X.2, Table X.3 or Annex X.2 will not appear. Given that, in effect, conservation areas have been increasingly established as islands in a sea of humanity, they should be theoretically as large as possible to maximise the degree to which their contents retain their integrity (Soulé, 1983). Thus, the effectiveness of a conservation areas network in maintaining biological diversity will partly be a function of the size of its constituent units. For example, conservation areas need to be large enough to support minimum viable populations of key species. These should consist of at least 500 genetically effective individuals, or a total population of about 1,000 individuals including juveniles and other non-breeders (Soulé, 1986). The optimal size of a conservation area will vary with respect to the key species under protection, but the many sites that contain populations of threatened large mammals need to extend over several tens or hundreds of thousands of hectares, respectively, for ungulates or carnivores at the top of their food chains.

The effectiveness with which conservation areas are managed is assessed qualitatively, based largely upon information from *Protected areas of the world: a review of national systems* (IUCN, 1992).

X.5 Future Prospects Official proposals to expand conservation area networks are reviewed, based on statistics presented in Table X.3. The many new conservation areas recommended by authorities other than the responsible management agencies, such as consultants representing non-governmental organisations and aid agencies, are excluded from the analysis. Other national initiatives to strengthen networks through specific projects and programmes, to overcome economic constraints through funding mechanisms, and to improve management through new approaches are reviewed. Participation in international and regional conventions and programmes, particularly with respect to the Convention concerning the World Cultural and Natural Heritage (World Heritage Convention), the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention) and the Unesco Man and the Biosphere Programme is reviewed (Table X.5), together with attempts between adjacent countries to manage conservation areas under cooperative agreements.

X.6 Priorities for Action These are necessarily broad and may not be comprehensive, but the priorities identified in this report are summarised in Table X.6.

PART II

The analyses in Part II are essentially similar to those described above for Part I, but carried out at the regional and global level, rather than subregional level. This is intended to summarise the major trends across each of the three continental regions, and at a global level. It is by necessity a summary document dealing with generalisations, and should be read in conjunction with appropriate sub-regional reports, where much greater detail and elaboration is provided.

PART III

This part of the report consists entirely of maps of managed areas of each country generated from the WCMC Biodiversity Map Library. Maps show the boundaries of existing managed areas, where known, or their centre points if only their geographic coordinates are known. Proposed managed areas are not mapped. Different hatching patterns are used to distinguish between the following:

- managed areas under production and conservation areas within the forestry sector.
- conservation areas within the forestry sector and those within the wildlife and any other additional sectors.

Conservation areas are numbered on the maps; these numbers correspond to the numbers in the respective lists for each country in Annex X.2 of the subregional reports. Not all conservation areas are mapped because the

locations of some sites are not known. This is evident by comparing the numbers in Annex X.2 with those in the maps.

Managed areas under production are mapped, if the information is available, but they are not individually named by cross-referencing to the list in Annex X.2 as in the case of conservation areas.

The source material from which the maps are derived is given at the beginning of Part III on a country-by-country basis.

Maps are based on the best available information. Sometimes this may be ten or more years old, as in the case of Atlas of Forest Resources of India published by the Government of India in 1976. This was used as the source for digitising India's forest reserves. In this particular case, there has been relatively little change (4%) in the total area of reserved forests, from 39.8 million ha in 1976 (Government of India, 1984) to 41.5 million ha in 1991 (Forest Survey of India, 1992), and boundaries of many forest reserves may not have changed significantly. Sometimes it has been possible to obtain copies of digital files, for example, most South American countries. In the case of Indonesia, a full set of film positives of Map 9 Land Cover and Suggested Forest Zoning, The Land Resources of Indonesia - A National Overview - Atlas was obtained from the Natural Resources Institute of the Overseas Development Administration, but unfortunately these could not be digitised for technical reasons. Sources used in the production of maps are given at the beginning of Part III.

REFERENCES

- FAO (1981). *Forest resources of Tropical Africa, Tropical America and Tropical Asia: regional synthesis and country briefs*. 4 volumes. FAO/UNEP Tropical Forest Resources Assessment Project, Rome.
- FAO (1990). Guidelines for assessment. July 1990. Forest Resources Assessment 1990. FAO, Rome.
- FAO (1992). *The forest resources of the tropical zone by main ecological regions. Forest Resources Assessment 1990 Project*. Report presented at the United Nations Conference on the Environment and Development, Rio de Janeiro, June 1992.
- Forest Survey of India (1992). *The state of forest report 1991*. Forest Survey of India, Dehra Dun. 89 pp.
- Government of India (1984). *India's forests 1984*. Forest Research Institute, Dehra Dun. 114 pp.
- IUCN (1992). *Protected areas of the world: a review of national systems*. 4 volumes. Prepared by the World Conservation Monitoring Centre. IUCN, Gland, Switzerland and Cambridge, UK.
- Sharma, M.K. (1986a). Eco-floristic zone and vegetation maps of tropical continental Asia. Institut de la Carte Internationale de la Végétation, Université Paul Sabatier, Toulouse, France.
- Sharma, M.K. (1986b). Eco-floristic zones of Africa. Institut de la Carte Internationale de la Végétation, Université Paul Sabatier, Toulouse, France.
- Soulé, M.E. (1983). Applications of genetics and population biology: the what, where and how of nature reserves. In: *Conservation, Science and Society*. Unesco-UNEP. Pp. 252-264.
- Soulé, M.E. (Ed.) (1986). *Viable populations for conservation*. Cambridge University Press, Cambridge, UK. P. 189.

Annex 1.1 List of countries included within the *WCMC Tropical Managed Areas Assessment 1990*

AFRICA (TROPICAL)

West Sahelian Africa

Burkina
Cape Verde
Chad
Gambia
Guinea-Bissau
Mali
Mauritania
Niger
Senegal

East Sahelian Africa

Djibouti
Ethiopia
Kenya
Somalia
Sudan
Uganda

West Africa

Benin
Côte d'Ivoire
Ghana
Guinea
Liberia
Nigeria
Sierra Leone
Togo

Central Africa

Cameroon
Central African Republic
Congo
Equatorial Guinea
Gabon
Sao Tome & Principe
Zaire

Tropical Southern Africa

Angola
Botswana
Burundi
Malawi
Mozambique
Namibia
Rwanda
Tanzania
Zambia
Zimbabwe

Insular Africa

Madagascar

LATIN AMERICA (TROPICAL)

Central America and Mexico

Belize
Costa Rica
El Salvador
Guatemala
Honduras
Mexico
Nicaragua
Panama

Caribbean

Anguilla
Antigua and Barbuda
Aruba
Bahamas
Barbados
Bermuda
British Virgin Islands
Cayman Islands
Cuba
Dominica
Dominican Republic
Grenada

Guadeloupe

Haiti
Jamaica
Martinique
Montserrat
Netherlands Antilles
Puerto Rico
Saint Lucia
Saint Vincent & the
Grenadines
Saint Christopher &
Nevis
Trinidad & Tobago
Turks & Caicos Islands
US Virgin Islands

Tropical South America

Bolivia
Brazil
Colombia
Ecuador
French Guiana
Guyana
Paraguay
Peru
Suriname
Venezuela

ASIA & PACIFIC (TROPICAL)

South Asia

Bangladesh
Bhutan
India
Maldives
Nepal
Pakistan
Sri Lanka

Myanmar

Thailand
Viet Nam

Insular South East Asia

Brunei Darussalam
Indonesia
Malaysia
Philippines
Singapore

Oceania

Fiji*
New Caledonia*
Papua New Guinea*
Solomon Islands*
Vanuatu*

*Excluded from *FAO Forest Resources Assessment 1990*.

Continental South East Asia

Cambodia
Lao PDR

Annex 1.2 Letter to heads of all forest administrations in developing countries

Dear

FAO Forest Resources Assessment 1990

The World Conservation Monitoring Centre, in cooperation with the IUCN Tropical Forest Programme, is currently gathering information on protected and managed forests in tropical/developing countries for incorporation into the Forest Resources Assessment 1990 being implemented by FAO under the framework of the Tropical Forestry Action Plan.

The last such survey undertaken by FAO was in 1980, in response to concern about the depletion and degradation of tropical forests and woodlands throughout the world. That assessment covered 76 tropical countries and provided a set of quantitative estimates on forest resources and deforestation rates. The findings were instrumental in mobilising global support for the Tropical Forestry Action Plan, the aim of which is to reverse the process of deforestation and forest degradation in the tropics.

As you are aware, FAO is carrying out a further assessment, working to a baseline of 1990. In the new assessment explicit emphasis will be given to reviewing the service functions of forests, **including environmental protection and nature conservation**. It is necessary, therefore, to examine the extent to which tropical forests and woodlands have been assigned a conservation role through their protection as national parks, wildlife sanctuaries and the like, or as certain categories of forest reserve. WCMC is working closely with FAO in preparing this part of the Assessment, with the support of the Overseas Development Administration of the UK.

Information is needed on the forest reserve system within your country. It would be very much appreciated if the following details could be provided by the end of May 1990:

1. statistical data summarising the extent of the forest reserve network as shown in Table 1.
2. a map (Scale 1:1 million is preferred, complete with projection - e.g. Mercator - and latitude and longitude registration marks) showing the distribution of the forest reserve network, with all forests reserved for protection or conservation purposes (e.g. protection of watersheds and water catchments, nature conservation) named and their boundaries marked;
3. a register of protection and conservation forests to be cross-referenced to the above map (2), with details of size, date of notification etc. as shown in Table 2.

In addition, it would be helpful if you could also provide the following:

4. copies of forestry legislation and policy relevant to the general establishment of forest reserves (but copies of legislation dealing with the notification of individual reserves is not needed);
5. precise definitions of the different categories of forest reserves, if not covered by the above (4);
6. details of recently introduced or proposed conservation measures within the forestry sector (e.g. bans on logging above specified altitudes or gradients, total bans on logging or raw log exports); and
7. a copy of the forest department annual report. **It would be most helpful if WCMC could be put on your department's mailing list for future issues.**

Your help is greatly appreciated and if there is any way in which we might be able to reciprocate with information, please do not hesitate to contact us.

Yours sincerely

WCMC Tropical Managed Areas Assessment 1990

Table 1 National forest reserve network - summary information

Please complete the table below in the manner illustrated by the example, or supply an official listing annotated as appropriate with the information requested. Any policies relevant to the protection of forests should be entered as a footnote to the table as shown below.

For the purposes of the FAO Forest Resources Assessment 1990, forest function is classified according to the following definitions:

Production forests - areas which support sustained production of wood.

Protection forests - areas, other than conservation forests, which in practice cannot support sustained wood production because the terrain is unsuitable (eg too steep or rugged, subject to flooding).

Conservation forests - areas designated for conservation.

NAME OF COUNTRY/STATE: e.g. Gondwanaland

MONTH/YEAR OF REFERENCE:

e.g. December 1989

National designation - Class	Forest Function			No. reserves	Area (ha)
	Prod.	Prot.	Cons.		
Forest Reserves				126	3,783,417
- Protection Forests		+		28	999,777
- Commercial Forests ^{1/2}	+			38	2,674,576
- Amenity Forests			+	11	20,767
- Virgin Jungle Reserves			+	49	88,306

¹ No logging permitted above 2,000m: this amounts to an area of c.198,000 ha.

² No logging permitted in the coastal zone: this amounts to an area of c.143,000 ha .

Table 2 Register of protection/conservation forests

Please complete the table below in the manner illustrated by the example, or supply an official listing annotated as appropriate with the information requested. Please ensure that all protection and conservation reserves listed in the table are cross-referenced with the map, but if this is not possible please include their geographic coordinates in the table.

NAME OF COUNTRY/STATE: e.g. Gondwanaland
 MONTH/YEAR OF REFERENCE: e.g. December 1989

Nat. designation - Class - Name of site	Geog. coord.	Size (ha)	Date notified	Notification No.	Forest type ¹	Has logging ever occurred in the past? If so, give last date.
Forest Reserves						
- Protection Forests						
1. Baldan Hill	see map	52	14.3.84	Forests (Amendment) Enactment No. 4	F	Yes-last logged in 1952
2. Balembang	"	371	"	"	F	No
- Amenity Forests						
1. Babang	"	31	"	"	N	No
2. Barada	"	22	"	"	P	Yes-last logged in 1978
- Virgin Jungle Reserves						
1. Basiora	"	213	"	"	F	No
2. Batutum	"	261	"	"	F	No

¹Forest types: F = natural forest / N = non forest / P = plantation forest

GLOSSARY

This highly selective glossary provides definitions of some of the less familiar or more technical terms used in this report.

Alienable forest land Forest land available for transfer to other forms of land use (FAO, 1990).

Conservation forest Areas within the forestry sector designated for conservation by law or other regulations (FAO, 1990).

Conservation area Defined as for protected area. [The term conservation area is used instead of protected area with which it is synonymous.]

Forest land An area of land proclaimed to be forest under a Forest Act or Ordinance (FAO, 1990).

Forest reserve Generally well-defined, surveyed, demarcated and legally constituted forest under the control of a forest department. All acts of felling, collection of forest produce, grazing and even trespassing are usually prohibited unless expressly permitted by law (FAO, 1981).

Forestry sector That part of government responsible for the protection and management of forest land.

Land area Refers to total area excluding the area under inland water bodies, these being major rivers and lakes. [Data are taken from the FAO Production Yearbook.]

Managed area A legally designated natural area managed for production on a sustainable basis or for conservation purposes. The term includes conservation area and is frequently used generically when referring to reserves within the forestry sector that may have a production and/or conservation function.

Natural forest Forest composed of tree species known to be indigenous to the area. Included in this definition are primary forest (undisturbed), disturbed primary forest associated with various intensities of selective logging, secondary forest resulting from logging of primary forest, logged over forest with under-planting of exotics, and managed forest regenerated artificially or naturally so long as this involves the renewal of essentially the same crop as before (FAO, 1990).

Notified forest Forest land that is notified as reserved. N.B notified forests are usually demarcated, the boundaries being given in the notification.

Plantation forest refers to forest established artificially by afforestation on lands which previously did not carry forest within living memory, or by reforestation of previously forested land involving the replacement of indigenous species by new and essentially different species or genetic varieties (FAO, 1990).

Production forest Forest having terrain and soil conditions suitable for the production of wood and other products on a sustainable basis. The distance to consumption or export centres is not taken into account, which means that economically inaccessible forests are included in this class (FAO, 1990).

Protected area An area of land and/or sea managed through legal or customary regimes so as to protect and maintain biological diversity and natural and associated cultural resources. [This definition was agreed at the IV World Parks Congress on National Parks and Protected areas, Caracas, 10-12 February 1992. The term protected area is not used in this report, conservation area being preferred.]

Protected forest Similar to forest reserve in so far as being notified, demarcated and under the control of a forest department. However, the degree of control exercised is generally of a low order and nearby villagers usually have rights to grazing and collection of forest produce for their own consumption (FAO, 1981).

Protection forest Areas within the forestry sector located on terrain that is too steep or rough, or subject to periodic or permanent inundation, which makes forest management impractical due to physical non-productivity (FAO, 1990).

Total area Refers to the total area of a country, including the area under inland water bodies. [Data are taken from the FAO Production Yearbook.]

Unclassed forest Forest land which is publicly owned but lacks any well-defined legal status (FAO, 1981).

Unclassified forest Forest land other than that legally reserved or that which is alienable, i.e. the rest (FAO, 1990).

Wildlife sector That part of government responsible for nature conservation.

Glossary of French terms

Domaine de chasse	Hunting reserve
Domaine forestier permanent de l'Etat	Permanent state forest
Domaine forestier rural de l'Etat	Rural state forest
Forêt de développement communautaire	Community development forest
Forêt classée	Classified forest
Forêt communale	Community forest
Forêt de production	Production forest
Forêt de protection	Protection forest
Forêt protégée	Protected forest
Forêt récréative	Recreation forest
Forêt rurale	Rural forest
Parc international	International park
Parc national	National park
Parc présidentiel	Presidential park
Parc régional	Regional park
Périmètre de protection	Protection area
Périmètre de reboisement	Reforestation area
Périmètre de restauration	Restoration area
Réserve de chasse	Hunting area
Réserve forestière	Forest reserve
Réserve de faune	Faunal reserve
Réserve de faune et de flore	Faunal and floral reserve
Réserve forestière	Forest reserve
Réserve intégrale	Strict reserve
Réserve naturelle gérée	Managed nature reserve
Réserve naturelle intégrale	Strict nature reserve
Réserve naturelle nationale	National nature reserve
Réserve naturelle partielle	Partial nature reserve
Réserve naturelle	Nature reserve
Réserve spéciale	Special reserve
Réserve partielle de faune	Partial faunal reserve
Réserve totale de faune	Total faunal reserve
Sanctuaire	Sanctuary
Zone protégée d'exploitation de la faune	Protected zone for faunal exploitation
Zone cynégétique	Sport hunting zone
Zone de chasse	Hunting zone
Zone d'intérêt cynégétique	Sport hunting zone
Zone tampon	Buffer zone

Glossary of Spanish terms

Area boscosa baja protección	Wooded area under protection
Area crítica	Critical area
Area de caza y pesca	Hunting and fishing area
Area de manejo integral de recursos naturales	Area of integrated natural resource management
Area de protección y recuperación ambiental	Environmental protection and recuperation area
Area de protección	Protection area
Area de protección de flora y fauna silvestre y acuática	Wild and aquatic flora and fauna protection area
Area de protección de recursos naturales	Natural resource protection area
Area de uso múltiple	Multiple use area
Area nacional de recreación	National recreation area
Area natural única	Unique natural area
Area recreativa	Recreation area
Area recreativa natural	Natural recreation area
Area silvestre	Wildland area
Biotopo natural y típico	Natural and typical biotope
Biotopo protegido	Protected biotope
Bosque de libre disponibilidad	Freely disposable forest
Bosque de producción	Production forest
Bosque de protección	Protection forest
Bosque de uso múltiple	Multiple-use forest
Bosque especial	Special forest
Bosque nacional	National forest
Bosque permanente de producción	Permanent production forest
Bosque permanente de protección	Permanent protection forest
Bosque productivo	Production forest
Bosque protector	Protection forest
Bosque protector	Protection forest
Campo experimental forestal	Experimental forest
Coto de caza	Hunting reserve
Estación biológica	Biological station
Lote boscosa	Forest plot
Manantial	Water source
Monumento cultural	Cultural monument
Monumento nacional	National monument
Monumento natural	Natural monument
Parque	Park
Parque forestal	Forest park
Parque histórico	Historic park
Parque litoral	Littoral park
Parque marino nacional	Marine national park
Parque municipal	Municipal park
Parque nacional	National park
Parque nacional marino	National marine park
Parque natural	Natural park
Parque regional	Regional park
Parque urbano	Urban park
Refugio	Refuge
Refugio de fauna silvestre	Wildlife refuge
Refugio de vida silvestre	Wildlife refuge

Reserva	Reserve
Reserva antropológica	Anthropological reserve
Reserva biológica	Biological reserve
Reserva communal	Communal reserve
Reserva de fauna	Faunal reserve
Reserva de fauna silvestre	Wildlife reserve
Reserva de la biosfera	Biosphere reserve
Reserva de producción de agua	Water production reserve
Reserva de producción faunística	Faunal production reserve
Reserva de recursos marinos	Marine resource reserve
Reserva ecológica	Ecological reserve
Reserva equivalente	Equivalent reserve
Reserva especial de la biosfera	Special biosphere reserve
Reserva fiscal	Fiscal reserve
Reserva forestal	Forest reserve
Reserva forestal de asentamiento comunal	Communal forest reserve
Reserva forestal de inmovilización	Closed forest reserve
Reserva geobotánica	Geobotanical reserve
Reserva indígena	Indigenous reserve
Reserva marina	Marine reserve
Reserva nacional	National reserve
Reserva nacional de recursos naturales	National natural resource reserve
Reserva nacional de vida silvestre	National wildlife reserve
Reserva nacional hidráulica	National hydrological reserve
Reserva nacional natural	National natural reserve
Reserva natural	Natural reserve
Reserva natural de vida silvestre	Natural wildlife reserve
Reserva natural privada	Private natural reserve
Reserva científica	Scientific reserve
Rutas y vías escénicas	Scenic routes and roads
Santuario de fauna silvestre	Wildlife sanctuary
Santuario de fauna	Faunal sanctuary
Santuario de flora	Floral sanctuary
Santuario de vida silvestre	Wildlife sanctuary
Santuario histórico	Historic sanctuary
Santuario nacional	National sanctuary
Sitio de patrimonio histórico-cultural o arqueológico	Historic-cultural heritage or archaeological site
Vía parque	Parkway
Zona de interés turístico	Zone of touristic interest
Zona de repoblación	Reforestation zone
Zona de reserva para la protección de tortuga marina	Reserve zone for sea turtle protection
Zona de reserva para fauna migratoria	Reserve zone for migratory fauna
Zona protectora	Protection zone
Zona protectora forestal	Protection forest zone
Zona reservada	Reserved zone
Zona sujeta a conservación ecológica	Zone subject to ecological conservation

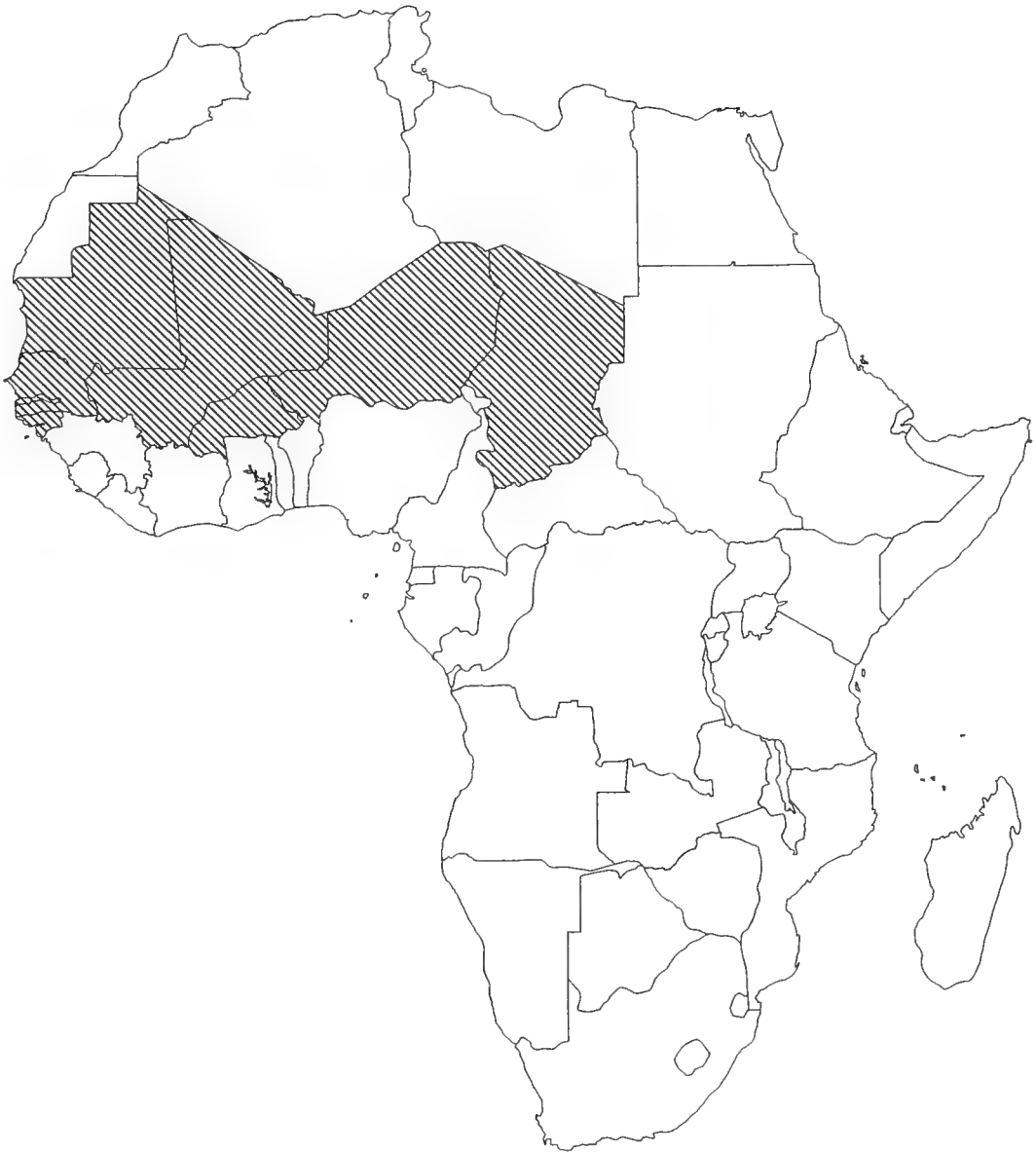
Glossary of Portuguese terms

Area especial de interesse turístico	Area of special tourist interest
Area de proteção ambiental	Environmental protection area
Area indigena	Indigenous area
Estação ecológica	Ecological station
Foresta nacional	National forest
Foresta estadual	State forest
Foresta municipal	Municipal forest
Local de interesse turístico	Locality of touristic interest
Monumento arqueológico o pre-histórico	Archaeological or prehistoric monument
Monumento natural	Natural monument
Parque de caça federal	Federal hunting park
Parque de caça estadual	State hunting park
Parque de caça municipal	Municipal hunting park
Parque nacional	National park
Parque estadual	State park
Parque indigena	Indigenous park
Parque municipal	Municipal park
Reserva biológica	Biological reserve
Reserva biológica nacional	National biological reserve
Reserva biológica estadual	State biological reserve
Reserva biológica municipal	Municipal biological reserve
Reserva ecológica	Ecological reserve
Reserva indigena	Indigenous reserve
Reserva particular do patrimonio natural	Natural heritage private reserve

PART I

SUBREGIONAL REVIEWS

6 WEST SAHELIAN AFRICA



Km



6 WEST SAHELIAN AFRICA

Burkina Faso, Cape Verde, Chad, Gambia, Guinea-Bissau, Mali, Mauritania, Niger, Senegal

6.1 HISTORICAL PERSPECTIVE

Archaeological records indicate that from about 8000 BC until about 2,500 BC the subregion enjoyed a much more humid climate than exists today. The first evidence of agriculture occurs around 8000 BC. From about 4000 BC pastoralists established the main elements of existing pastoral production. By the standards of the time, the Sahel was both populous and prosperous. Until the 1890s Sahelian agriculture and pastoralism remained virtually unchanged; its historical impact on the environment is immeasurable, but the negative effects of shifting cultivation, bush fires, charcoal production and grazing of the pre-colonial era seem insignificant when set against the environmental degradation of the last 100 years (Cross, 1990).

Protection of nature in the West Sahel has a long history. Before the colonial period land rights were essentially self-determining. Individual communities allocated land, under the guidance of village elders, according to family needs and the land's agricultural or pastoral potential, rather than being appropriated by individuals.

Over-exploitation was limited due to various factors. Low levels of population enabled fallow periods to extend to 10 years or more. Sanctuaries of sacred woods were respected and fruit trees (karité, néré, baobab) were protected. Relatively secret magic-fetish sects imposed regulations concerning hunting. Although hunting permits did not exist, animals were not killed without permission having first been received from the village chief at a public ceremony. Contravention of these regulations could lead to heavy penalties, even to offenders being sold as slaves.

With the imposition of colonial rule, this traditional system of land tenure changed to a hierarchical one, with political and economic decision-making being invested in non-Africans, or their appointees (Cross, 1990).

Protection of nature within the subregion this century is still strongly influenced by the countries' colonial histories. The subregion comprises six francophone countries (Burkina Faso, Chad, Mali, Mauritania, Niger and Senegal), and the Gambia and Cape Verde (previously British and Portuguese colonies, respectively).

6.2 NATURE CONSERVATION POLICY AND LEGISLATION

Legal provisions for the establishment of protected areas have been passed in all countries within the region since their independence, with the exception of Cape Verde. These legal provisions are summarised in Table 6.1 and reviewed below.

6.2.1 Forestry Sector

Forest policy and forest law in colonial Africa were based on experience from continental Europe. In the francophone countries within the subregion, forest policy and law were derived directly from France and France's long experience of temperate forestry. In the British colony of the Gambia, the early administrators adopted the pattern of reservation of forest lands applied in British India, with the legal establishment of a permanent forest estate, the boundaries and use of which could only be amended by the highest authority in the land.

Policy Information concerning current forest policy is only available for the Gambia and Chad. In the Gambia, main objectives of forest policy are: to reserve and maintain a national forest resource capable of protecting natural ecosystems and providing an adequate supply of wood and other forest products for the rural population; to maintain a Forestry Service staffed with trained personnel; to administer the forest resources; and to foster conservation awareness amongst the Gambian people. In Chad, conservation and management of classified forests is included in the 1976 Manifesto of N'Djamena.

Legislation passed during the colonial period, relating to countries within the subregion, includes two decrees relevant to managed areas. These comprise a decree establishing the forestry regime in French Equatorial Africa (which included Chad, Cameroon, Central African Republic and Gabon), and a decree of 4 July 1935 established the forestry regime in French West Africa (which comprised Benin, Cote d'Ivoire, Guinea, Mali and Senegal).

The original French forestry legislation was based on the principle of Roman legislation. According to this, unoccupied land, where existence of written ownership documents could not be proved, belonged to the state. All forest lands were thus declared state property, although local populations exercised many rights of use. Contradiction between the oral customary law and these written regulations led to a general reluctance of local people to accept the delineation of reserved forests.

Categories established in common throughout francophone countries in the subregion were classified forest and protected forest. Since independence, all these countries have promulgated new forestry law, based on the earlier French legislation. Forest land is still considered to be state property, and the terms of classified forest (gazetted areas in which customary rights of use are permitted) and protected forest (areas not gazetted in which, generally, all felling is prohibited) continue to be used.

In Chad, where separate wildlife law has not been promulgated, classified forests are subdivided into strict nature reserves, national parks and other designations, following those defined in the African Convention of 1968. In both Chad and Mauritania, protection forests include all areas on slopes greater than 35°.

In Guinea-Bissau, previously a Portuguese territory, current forest legislation is the 1963 Regulamento Florestal. Forestry law in the Gambia reflects previous British administration, which often recognised the claims of local populations to forest ownership.

6.2.2 Wildlife Sector

Policy Information on wildlife policy in Burkina Faso, Cape Verde, Mauritania, Niger and Senegal is not available.

In both the countries (Chad and the Gambia) for which information is available, recognition is given of the importance of the countries' flora and fauna, and the importance of conservation areas in helping to maintain these.

In Chad, the 1976 Manifesto of N'Djamena reflects the country's awareness of the cultural, scientific and economic importance of its natural resources and wildlife. Steps to be taken to ensure the preservation of its natural heritage are listed, including conservation and management of national parks, faunal reserves, classified forests and other natural reserves. It is also stated in the manifesto that the country relies on assistance from other countries and international organisations with nature conservation.

In the Gambia, the government's commitment to the conservation of flora and fauna, including the setting aside of protected natural habitats, is stated in the Banjul declaration of 1977. A national conservation strategy is under preparation in Guinea-Bissau, in collaboration with IUCN, with particular attention being paid to coastal zone management and the development of a protected areas network.

Legislation The first piece of wildlife legislation within the subregion was the Wild Animals (Birds and Fish) Preservation Act of 1916 in the Gambia. A decree of 18 November 1947 controlled hunting in all French overseas territories. Under French colonial law, the Decree of 10 March 1925 provided for the establishment of refuge parks in French West Africa. Wildlife legislation has been promulgated in Burkina Faso, the Gambia, Guinea-Bissau, Mali, Mauritania, Niger and Senegal. Present nature conservation legislation in the subregion provides for the establishment of national parks, strict nature reserves, wildlife sanctuaries, hunting reserves and sport hunting reserves. Definitions of these designations are similar for all countries in the subregion, and follow those given in the African Convention of 1968. The highest degree of protection is afforded to strict nature reserves, where access is permitted only for management purposes and scientific research. National parks are open to visitors, but residence is not permitted.

In Guinea-Bissau, there is as yet no comprehensive protected areas legislation.

6.2.3 Other Sectors

Not applicable

6.3 MANAGED AREAS ADMINISTRATION

The management authority for each category of protected area is listed in Table 6.1. Categories are listed according to the language used in the original legislation. A glossary of terms (French, Portuguese and Spanish) is given in Part I.

6.3.1 Forestry Sector

Administration of forestry is the responsibility of forest departments in the respective countries (Table 6.1). In general, management is the responsibility of respective administrative districts, each under a Divisional Forest Officer.

6.3.2 Wildlife Sector

Conservation areas have traditionally been managed under a single administrative organisation within the forest departments of the respective countries within the subregion (Table 6.1). Although information concerning this is limited, this situation still appears to hold true.

6.3.3 Additional Sectors

No information

6.3.4 Non-Governmental Organisations

In general, non-governmental organisations are not involved directly in protected areas administration. An exception is Takieta Forest Reserve in Niger, where management has been passed to SOS Sahel, an environmental charity which supports community action that focuses on the conservation of natural resources and sustainable agricultural production.

6.4 MANAGED AREAS STATUS

The managed areas system is mapped for each country within the subregion in Fig 6.1-9 (Part III). Details of individual conservation areas are given in Annex 6.1 which serves as a key to the maps.

6.4.1 Forestry Sector

Coverage Data for the subregion concerning the forestry sector are incomplete, hence available data underestimate the role played by the forestry sector. Information concerning the extent of legally constituted forest reserves by forest origin and forest function, for each country, is given in Annex 6.2. Managed areas within the forestry sector account for a minimum 4.3% of the total area of the West Sahel (Table 6.2).

6.4.2 Conservation Areas within Forestry and Wildlife Sectors

Coverage There are some 271 legally designated conservation areas in the region covering a total area of 39.8 million ha or 7.4% of the region (Table 6.3). Approximately 21 of these conservation areas are under total protection, covering 11.8 million ha or 2.2% of the subregion. The rest are partially protected. The forestry sector is directly responsible for some 212 conservation areas, covering a total area of 18,263,307ha or 3.4% of the region.

Representativeness of the protected areas system within the region varies widely. The extremes are Senegal, with an extensive, well-planned system of protected areas which is generally considered to be adequate, and Cape Verde, which still has no protected areas.

Burkina Faso, Niger and Chad are similar in that each country has one enormous reserve in the Sahel zone, covering at least 5% of the country, and a considerably greater percentage of each country's protected areas system. These systems are, therefore, relatively limited in the degree to which they represent each country's variety of habitats. Aïr et Ténéré National Nature Reserve in Niger is the largest protected area in Africa under active management, and covers over 6% of the country. Similarly, Chad has a huge reserve, Ouadi Rime-Ouadi Achim Faunal Reserve, which occupies over 6% of the country. In Burkina Faso, the Sahel Partial Faunal Reserve covers 5% of the extreme north of the country, a region of relatively little conservation interest. In the south of the country there are a few smaller reserves, but virtually none of the central part of the country is represented. In contrast, Mali and Mauritania, although having little area protected, do have well located protected areas of particular importance to migratory birds. Mali has three small Ramsar sites in the Inner Niger Delta, whilst in Mauritania, Ramsar sites are situated along the coast. Protected areas in Guinea-Bissau are distributed throughout the country, but in reality exist only on paper. The Gambia has only a small area protected for conservation.

Ecofloristic zone analysis [pending data from FAO]

Integrity Data in Table 6.4 indicate that, with the exception of the Gambia, conservation areas under the wildlife sector tend to be large. Mean size of totally protected areas is similar to that of partially protected areas. Mean size of conservation areas within the forestry sector tend to be far smaller throughout the subregion.

Effectiveness War or armed violence has seriously disrupted or destroyed protected areas management in Chad. In general, conservation areas within the region are largely ineffective. Apart from inadequate representation of the subregion's biological diversity within existing conservation area networks, conservation efforts are limited by: weaknesses in policy and legislation; inadequate institutional support and ineffective (or non-existent) management. Management plans for protected areas within the region, do not, in general, exist. Funds have not been sufficient to allow for effective management in any of the countries within the subregion apart from the Gambia and Senegal. Senegal has taken a very firm line on poaching, in spite of which it still remains a problem. Management of protected areas in the Gambia is, in general, good. In Chad, two decades of desertification and fighting have led both to serious degradation of the land, and to a virtual absence of any information concerning the status of the protected areas.

Enforcement is often handicapped by the absence of clearly-demarcated boundaries that are easily recognisable on the ground. Encroachment by people is ubiquitous, few conservation areas being free of this problem.

Desertification in the subregion has seriously hampered attempts to establish effective managed areas (Cross, 1990; IUCN, 1989).

6.4.3 Contribution of the Forestry Sector to Nature Conservation

Data in Table 6.2 suggest that the contribution of the forestry sector to nature conservation is negligible (1.1%) in terms of the total area of the subregion under protection and conservation forest. It should be noted that data is incomplete, and the contribution of the forestry sector to protection and conservation is presumably much higher than suggested by these statistics. Over 54 % of the conservation area network falls within the domain of the wildlife sector (Table 6.3).

Classified forests in francophone countries were originally established as conservation forests, mostly in the 1930s, 1940s and 1950s. However, comments from some administrative bodies imply that these classified forests now fulfil a productive function; hence, they appear in Table 6.2 under the heading of production rather than conservation or protection forests. In general, lists of forest reserves serving a conservation purpose within the subregion were not available; hence, the forestry sector appears to play a negligible role in conservation in the subregion.

The role played by protected forests in francophone countries should also be considered. They comprise virtually all state land lying outside individually gazetted areas, with regulations such that they serve a conservation purpose. Unfortunately, estimates of the area covered by these protected forests are in no instance available.

6.5 FUTURE PROSPECTS

6.5.1 Expanding the Conservation Area Network

Official proposals to expand the conservation area network are minimal. They total some 2.5 million ha or 0.5% of the total area of the subregion (Table 6.3). Proposals exist for the protected areas systems to be expanded in most countries in the region. Proposals exist for the establishment of a substantial protected areas system in Guinea-Bissau.

6.5.2 Other National Initiatives

Strengthening networks

No information

Overcoming Economic Constraints Funding is a major factor which limits the effective management of conservation areas throughout the subregion, although the situation is less severe in Senegal and the Gambia. In these countries, conservation areas are playing an increasingly important role in the developing tourism industries.

Improving Management

6.5.3 International Initiatives

Conventions and Programmes All countries within the subregion participate in one or more international conventions and programmes concerned with conservation areas (Table 6.5). All countries except Chad and Burkina Faso have ratified or accepted the Convention Concerning the World Cultural and Natural Heritage (World Heritage Convention). Mali, Mauritania, Niger and Senegal have properties inscribed on the World Heritage list. All countries except Cape Verde and the Gambia have acceded to or ratified the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention). All countries except Cape Verde are party to the African Convention 1968. Biosphere reserves have been designated in Burkina Faso, Mali and Senegal.

Senegal and Burkina Faso are the only two African countries to have signed the Convention on the Conservation of Wildlife and Natural Habitats (Bern Convention) which is of particular importance to migratory birds.

Cooperative Agreements The Lake Chad Basin Commission, uniting representatives of four countries (Chad, Cameroon, Niger, Nigeria) bordering the lake, was established in 1964, although no information is available concerning its relevance to conservation areas. Chad has undertaken bilateral negotiations with the Central African Republic (Central Africa sub-region) and the Sudan (East Sahelian sub-region). Again, information is not available as to whether these negotiations concern conservation areas.

A Conseil d'Entente with Niger, Burkina Faso, Côte d'Ivoire and Togo provides an administrative structure for cooperation between neighbouring countries. A proposal to set up a single authority to manage the three contiguous "W" national parks in Burkina Faso, Benin and Niger, totalling over 1 million ha, and to raise funds for its operation, is being considered.

6.6 PRIORITIES FOR ACTION

Priorities for conservation action in the subregion were identified in the now dated IUCN *Systems review of the Afrotropical Realm* (MacKinnon and MacKinnon, 1986), the subsequent Action Strategy (IUCN, 1987), and in *The IUCN Sahel Studies 1989*.

Priorities have been reviewed more recently (IUCN, 1992) for the IVth World Congress on National Parks and Protected Areas. These are generalised, recognising that translation of priorities into action will vary according to national conservation objectives, history and political will. They provide a foundation to the more specific priorities identified in this report and summarised in Table 6.6. The *Sudano-Sahelian PLATFORM for Action on UNCED Negotiations and Beyond: A Contribution to the African Position* (Anon, 1991), concerning environmental degradation within the Sahel, was drawn up for UNCED 1992, following two consultative meetings of 22 Sudano-Sahelian countries, which included participants from all countries within the subregion. The report highlights the link between poverty and mismanagement of natural resources, particularly exploitation of marginal lands and deforestation. Recommendations include action to be taken at both the international and African level.

In conclusion, progress in the subregion has been seriously hampered by environmental conditions (i.e. drought), civil unrest, and the demand on resources by rapidly growing human populations. Although mostly aware of the need for conservation area networks, well-funded institutions and up-to-date policy and legislation, governments in the subregion have generally not been able to ensure these are established.

REFERENCES

- Anon. (1991). *Sudano-Sahelian PLATFORM for Action on UNCED negotiations and Beyond: A Contribution to the African Position*. Prepared by the 22 Sudano-Sahelian Countries. CILSS, UNSO, IGADD. 22 pp.
- Cross, N. (1990). *The Sahel: The People's Right to Development*. Minority Rights Group Report, London, UK. 28 pp.
- IUCN (1986). *The IUCN Sahel Report*. IUCN, Gland, Switzerland. 80 pp.
- IUCN (1987). *Action strategy for protected areas in the Afrotropical Realm*. IUCN, Gland, Switzerland and Cambridge, UK. 56 pp.
- IUCN (1989). *The IUCN Sahel Studies*. IUCN, Gland, Switzerland. 152 pp.
- MacKinnon, J. and MacKinnon, K. (1986). *Review of the protected areas system in the Afrotropical Realm*. IUCN, Gland, Switzerland and Cambridge, UK/UNEP, Nairobi, Kenya. 259 pp.

Table 6.1 Legal provisions for protected areas, with year of enactment and responsible administrative authority. Protected areas are classified according to management objective (T = total protection, P = partial protection, L = local extractive use, C = commercial extractive use).

Country	Legislation Year	Title [Sector]	Administrative authority	Managed areas Man. Designation
Burkina Faso	1970	Décret No. 70/302 portant classement de forêt, réserve sylvo-pastorale et partielle de la faune du Sahel [F]	Service de la Protection et de l'Aménagement des Forêts	P L ?
	1968	Ordonnance No. 68-059 sur la conservation de la faune et l'exercice de la chasse [W]	Direction des forêts et de la faune	T T P P P T
Cape Verde		?	?	?
Chad	1989	Code forestier [F]	Ministère du Tourisme, des Eaux, et Forêts	C P P P P
				Forêt de production Forêt de protection Forêt récréative Périmètre de reboisement Périmètre de restauration
Gambia	1977	Forest Act [F] Wildlife Conservation Act [W]	Forestry Department Department of Wildlife Conservation	T P T P
				Parc national Réserve de faune Réserve naturelle intégrale Réserve spéciale
				P T T T
				Forest park Local sanctuary National park National reserve

Country	Legislation Year	Title [Sector]	Administrative authority	Managed areas Man.	Designation
Guinea-Bissau	1980	Decree No. 21-80 [W]	Directorate of the Forestry and Hunting Service	P	Hunting reserve
Mali	1986	Loi No. 86-42/AN-RM portant Code Forestier [F]	Service des Eaux et Forêts, de l'Élevage et de l'Agriculture	P P P	Forêt classée Périmètre de protection Périmètre de reboisement
	1986	Loi No. 86-43/AN-RM portant code de chasse et de conservation de la faune et de son habitat [W]	Direction Nationale des Eaux et Forêts	T P T P P P	Parc national Réserve de faune Réserve naturelle intégrale Réserve spéciale ou sanctuaire Zone d'intérêt cynégétique
	?	? [W]	?	P	Sanctuaire
Mauritania	1982	Ordonnance No. 82/171 portant Code Forestier [F]	Ministère du développement rural	P P P	Forêt classée Périmètre de protection Périmètre de reboisement
	1975	Loi No. 75-603 portant Code de la chasse et de la protection de la faune [W]	Direction de la Protection de la Nature	P P P P	Parc national Parc régional Réserve de chasse Réserve de faune
		Legislation unknown [W]	Direction de la Protection de la Nature	T	Réserve intégrale

Country	Legislation Year	Title [Sector]	Administrative authority	Managed areas Man. Designation
Niger	1974	Loi No. 74-7 fixant le régime forestier [F]	Service des Eaux et Forêts	P Forêt classée
	1962	Loi No. 62-28 fixant le régime de la chasse [W]	Direction de la Faune, Pêches et Pisciculture	P Forêt protégée P Périètre de restauration
	1988	Decrees [W]	Direction de la Faune, Pêches et Pisciculture	P P Réserve partielle de faune Réserve totale de faune
	?	Legislation unknown [W]	Direction de la Faune, Pêches et Pisciculture	T T Réserve naturelle nationale Réserve naturelle intégrale
				T Parc national
Senegal	1965	Décret No. 65-078 portant Code Forestier (partie réglementaire) [F]	Service des Eaux et Forêts	P Forêt classée P Périètre de reboisement ou de restauration
	1965	Décret No. 65-078 portant Code Forestier (partie réglementaire) [W]	Service des Parcs Nationaux	T Parc national P Réserve naturelle intégrale P Réserve spéciale
	1986	Décret No. 86-844 portant code de la chasse et de la protection de la faune (partie réglementaire) [W]	Direction des Eaux, Forêt et Chasses	P Zone d'intérêt cynégétique P Parc international

Table 6.2 Extent of notified natural forests, classified by forest function. Units are in sq. km, followed by % total area. Full data, with sources, are given in Annex 6.2.

Country SUBREGION	Total Area	F O R E S T F U N C T I O N			T o t a l
		Production	Protection	Conservation	
Burkina Faso	274,200	9,764 (3.6)	-	192 (<0.1)	9,956 (3.6)
Cape Verde	4,030	?	?	?	0
Chad	1,284,000	146,300 (11.4)	50,960 (4.0)	0	197,260 (15.4)
Gambia	11,300	107 (0.9)	0	280 (2.5)	387 (3.4)
Guinea-Bissau	36,120	?	?	?	0
Mali	1,240,190	9,600 (0.8)	?	1,348 (0.1)	10,948 (0.9)
Mauritania	1,025,520	?	?	?	0
Niger	1,267,000	1,442 (0.1)	?	?	1,442 (0.1)
Senegal	196,720	1,900 (1.0)	?	10,810 (5.5)	12,710 (6.5)
WEST SAHELIAN AFRICA	5,339,080	169,113 (3.2)	50,960 (0.9)	126,300 (0.2)	232,703 (4.3)

? = No information

Table 6.3 Extent of notified and proposed conservation areas, classified by sector and national designation. Management categories are assigned to designations based on national legislation (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses). Totals for proposed sites may include areas of properties already protected but proposed for upgrading to higher conservation status. Details of individual properties are given in Annex 2. N is the total number of conservation areas.

COUNTRY Sector National designation	Man. Cat.	Notified		Proposed	
		N	Area(ha)	N	Area(ha)
BURKINA FASO (274,200 sq. km)					
Forest Sector					
Classified Forest	P	1	19,200	0	0
Subtotals		1	19,200	0	0
(% total area)			(0.1)		(0.0)
Wildlife Sector					
National Park	T	3	489,300	1	280,000
Partial Faunal Reserve	P	4	1,855,700	0	0
Sanctuary	T	0	0	2	205,000
Total Faunal Reserve	P	4	297,700	0	0
Subtotals		11	2,642,700	3	485,000
(% total area)			(9.7)		(1.7)
Totals		12	2,661,900	3	485,000
(% total area)			(9.8)		(1.7)
CAPE VERDE (4,030 sq. km)					
Wildlife Sector					
Integral Reserve	T	0	0	1	0 *
Subtotals		0	0	1	0 *
(% total area)			(0.0)		(0.0)
Totals		0	0	1	0 *
(% total area)			(0.0)		(0.0)
CHAD (1,284,000 sq. km)					
Forest Sector					
Classified Forest	P	10	5,096,000 *	0	0
Faunal Reserve	P	8	11,030,000	2	164,700
National Park	T	2	414,000	2	1,040,000
Subtotals		20	16,540,000 *	4	1,204,700
(% total area)			(12.9)		(0.9)
Totals		20	16,540,000 *	4	1,204,700
(% total area)			(12.9)		(0.9)
GAMBIA (11,300 sq. km)					
Forest Sector					
Forest Park	P	40	28,045	?	10,000 *
Subtotals		40	28,045	0	10,000 *
(% total area)			(2.5)		(0.9)
Wildlife Sector					
National Park	T	3	18,440	0	0

COUNTRY Sector National designation	Man. Cat.	Existing		Proposed	
		N	Area (ha)	N	Area (ha)
Nature Reserve	P	1	107	0	0
Reserve	P	0	0	1	1,000
Wetland Reserve	P	0	0	1	3,500
Subtotals		4	18,547	2	4,500
(% total area)			(1.6)		(0.4)
Totals		44	46,592	2	14,500 *
(% total area)			(4.1)		(1.3)
GUINEA-BISSAU (36,120 sq. km)					
Wildlife Sector					
Hunting Reserve	P	6	0 *	0	0
National Park	P	0	0	6	456,000 *
Protected Area	P	0	0	1	0 *
Subtotals		6	0 *	7	456,000 *
(% total area)			(0.0)		(12.6)
Totals		6	0 *	7	456,000 *
(% total area)			(0.0)		(12.6)
MALI (1,240,190 sq. km)					
Forest Sector					
Classified Forest	P	3	134,822	0	0
Subtotals		3	134,822	0	0
(% total area)			(0.1)		(0.0)
Wildlife Sector					
Faunal Reserve	P	9	1,911,989	0	0
National Park	T	1	350,000	1	316,000
Partial Faunal Reserve	P	2	2,950,000	0	0
Sanctuary	P	1	400,000	0	0
Subtotals		13	5,611,989	1	316,000
(% total area)			(4.5)		(0.3)
Totals		16	5,746,811	1	316,000
(% total area)			(4.6)		(0.3)
MAURITANIA (1,025,520 sq. km)					
Wildlife Sector					
Faunal Reserve	P	1	0 *	0	0
Integral Reserve	T	3	310,000 *	0	0
National Park	P	2	1,186,000	0	0
Partial Faunal Reserve	P	3	250,000 *	0	0
Subtotals		9	1,746,000 *	0	0
(% total area)			(1.7)		(0.0)
Totals		9	1,746,000 *	0	0
(% total area)			(1.7)		(0.0)
NIGER (1,267,000 sq. km)					
Wildlife Sector					
National Nature Reserve	T	1	7,736,000	0	0
National Park	T	1	220,000	0	0
Partial Faunal Reserve	P	1	306,500	0	0
Strict Nature Reserve	T	1	1,280,500	0	0
Total Faunal Reserve	P	2	153,740	0	0
Subtotals		6	9,696,740	0	0
(% total area)			(7.6)		(0.0)

COUNTRY Sector National designation	Man. Cat.	Existing		Proposed	
		N	Area (ha)	N	Area (ha)
Totals (% total area)		6	9,696,740 (7.6)	0	0 (0.0)
SENEGAL (196,720 sq. km)					
Forest Sector					
Classified Forest	P	145	1,081,000	0	0
Subtotals (% total area)		145	1,081,000 (5.5)	0	0 (0.0)
Wildlife Sector					
Faunal Reserve	P	5	1,169,009	0	0
Hunting Reserve	P	1	60,000	0	0
International Park	T	0	0	2	0 *
National Park	T	6	1,012,450	0	0
Nature Reserve	T	0	0	2	201
Special Reserve	P	1	16	0	0
Subtotals (% total area)		13	2,241,475 (11.3)	4	201 * (0.0)
Totals (% total area)		158	3,322,475 (16.8)	4	201 * (0.0)
WEST SAHEL (5,339,080 sq. km) - summary by sector					
Forestry Sector (% total area)		209	17,803,067 * (3.3)	4	1,214,700 * (0.2)
Wildlife Sector (% total area)		62	21,957,451 * (4.1)	18	1,261,701 * (0.2)
Additional Sector or sector unknown (% total area)		0	0 (0.0)	0	0 (0.0)
WEST SAHEL (5,339,080 sq. km) - summary by management category					
Total protection (% total area)		21	11,830,690 * (2.2)	11	1,841,201 * (0.3)
Partial protection (% total area)		250	27,929,828 * (5.2)	11	635,200 * (0.1)
Degree of protection unknown (% total area)		0	0 (0.0)	0	0 (0.0)
Totals (% total area)		271	39,760,518 * (7.4)	22	2,476,401 * (0.5)

* Subtotal is incomplete because of missing data for either number of sites or area covered.

Table 6.4(a) Frequency distributions of conservation area sizes, with means, classified by management category (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses), for (a) Forestry, (b) Wildlife and (c) Additional sectors.

a) Forestry Sector		N	Mean size (ha)	Number in each size class (ha)			
				≤1000	1001-10,000	10001-100,000	>100,000
BURKINA FASO							
Notified sites	P	1	19,200	0	0	1	0
	Total	1	19,200	0	0	1	0
CHAD							
Notified sites	T	2	207,000	0	0	0	2
	P	17	668,934	3	2	4	8
	Total	19	620,309	3	2	4	10
Proposed sites	T	2	520,000	0	0	0	2
	P	2	82,350	0	0	2	0
	Total	4	301,175	0	0	2	2
GAMBIA							
Notified sites	P	40	701	31	9	0	0
	Total	40	701	31	9	0	0
MALI							
Notified sites	P	3	44,940	0	0	3	0
	Total	3	44,940	0	0	3	0
SENEGAL							
Notified sites	P	1	756	1	0	0	0
	Total	1	756	1	0	0	0
WEST SAHEL							
Notified sites	T	2	207,000	0	0	0	2
	P	62	186,366	35	11	8	8
	Total	64	187,011	35	11	8	10
Proposed sites	T	2	520,000	0	0	0	2
	P	2	82,350	0	0	2	0
	Total	4	301,175	0	0	2	2

Note that N (the total number of conservation areas) does not necessarily equate to N in Table 3, because the areas of some individual sites may be unknown.

Countries for which there are no relevant data are not included in the table.

Table 6.4(b) Frequency distributions of conservation area sizes, with means, classified by management category (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses), for (a) Forestry, (b) Wildlife and (c) Additional sectors.

		N	Mean size (ha)	Number in each size class (ha)			
				≤1000	1001-10,000	10001-100,000	>100,000
b) Wildlife Sector							
BURKINA FASO							
Notified sites	T	3	163,100	0	0	1	2
	P	8	269,175	0	0	5	3
	Total	11	240,245	0	0	6	5
Proposed sites	T	3	161,666	0	0	1	2
	Total	3	161,666	0	0	1	2
GAMBIA							
Notified sites	T	3	6,146	0	2	1	0
	P	1	107	1	0	0	0
	Total	4	4,636	1	2	1	0
Proposed sites	P	2	2,250	1	1	0	0
	Total	2	2,250	1	1	0	0
GUINEA-BISSAU							
Proposed sites	P	5	91,200	0	0	4	1
	Total	5	91,200	0	0	4	1
MALI							
Notified sites	T	1	350,000	0	0	0	1
	P	12	438,499	0	0	5	7
	Total	13	431,691	0	0	5	8
Proposed sites	T	1	316,000	0	0	0	1
	Total	1	316,000	0	0	0	1
MAURITANIA							
Notified sites	T	1	310,000	0	0	0	1
	P	3	478,666	0	0	1	2
	Total	4	436,500	0	0	1	3
NIGER							
Notified sites	T	3	3,078,833	0	0	0	3
	P	3	153,413	0	0	2	1
	Total	6	1,616,123	0	0	2	4
SENEGAL							
Notified sites	T	6	168,741	1	2	2	1
	P	7	175,575	2	1	2	2
	Total	13	172,421	3	3	4	3
Proposed sites	T	2	100	2	0	0	0
	Total	2	100	2	0	0	0

WEST SAHEL

Notified sites	T	17	671,570	1	4	4	8
	P	34	310,022	3	1	15	15
	Total	51	430,538	4	5	19	23
Proposed sites	T	6	133,533	2	0	1	3
	P	7	65,785	1	1	4	1
	Total	13	97,053	3	1	5	4

Note that N (the total number of conservation areas) does not necessarily equate to N in Table 3, because the areas of some individual sites may be unknown.

Countries for which there are no relevant data are not included in the table.

Table 6.5 State parties to international (and regional) conventions or programmes concerning the conservation of natural areas. The number of properties (natural or mixed natural/cultural in the case of the World Heritage Convention) recognised under respective conventions is given in brackets.

	World Heritage Convention	Biosphere Reserves ¹	Ramsar Convention	Africa Convention
Burkina Faso	1987 (0)	1986 (1)	1990 (3)	R
Cape Verde	1988 (0)	-	-	-
Chad	-	-	1990 (1)	S
Gambia	1987 (0)	-	-	R
Guinea-Bissau	-	-	1990 (1)	-
Mali	1977 (1)	1982 (1)	1987 (3)	R
Mauritania	1981 (1)	-	1982 (1)	S
Niger	1974 (1)	-	1987 (1)	R
Senegal	1976 (2)	1979 (3)	1977 (4)	R

¹Unesco MAB Project 8

R = ratified

S = signatory

Table 6.6 Summary of national priorities for action relating to conservation areas.

COUNTRY	Legislation	Completing the network	Managing the network
Burkina Faso		Expand protected area system to include example of remaining unmodified Sahel vegetation. Upgrade three reserves to national park status.	Improve management by promoting greater participation of local communities in wildlife protection
Cape Verde	Enact legislation	Establish a reserve on the island of Raso	Create an administration
Chad		Expand network to include examples of vegetation types that are currently inadequately represented, including <i>Isobertinia</i> -dominated woodland and swamps	Restore management when peace returns to the country
Gambia		Expand system to protect mangrove swamps	Improve management by training staff, providing equipment and adequate wages
Guinea-Bissau	Enact proposed Loi sur la conservation de la nature	Establish representative network	Implement management
Mali		Expand protected area system to include examples within the Saharan zone and its habitats	Improve management by increasing staff numbers and providing adequate finance
Mauritania		Expand protected area system to include a Ramsar site in the northern part of the Senegal River delta, and extend Banc d'Arguin NP to incorporate Cap Blanc	Implement Banc d'Arguin management plan. Improve management of Banc d'Arguin and Plateau d'El Aguer
Niger		Protect an area of swamp vegetation and extend protection within wooded grassland and Sudanian woodland	Improve management to control illegal grazing, mining and deforestation
Senegal		Network is adequate	Improve management

Annex 6.1 List of conservation areas. Locations of most notified conservation areas are shown in the accompanying maps in Part III.

BURKINA FASO

Classified Forest

1 Mare aux Hippototames		19,200	1937
Subtotal	1 site	19,200 ha	

National Parks

2 Deux Bales		56,600	1967
3 Kabore-Tambi		242,700	1976
4 W du Burkina Faso		190,000	1954
Subtotal	3 sites	489,300 ha	

Partial Faunal Reserves

5 Arly		130,000	1954
6 Kourtiagou		51,000	1957
7 Pama		74,700	1955
8 Sahel		1,600,000	1970
Subtotal	4 sites	1,855,700 ha	

Total Faunal Reserves

9 Arly		76,000	1954
10 Bontioli		12,700	1957
11 Madjoari		17,000	1955
12 Singou		192,000	1955
Subtotal	4 sites	297,700 ha	

Proposed (National Park)

Komoe-Leraba		280,000	
Subtotal	1 site	280,000 ha	

Proposed (Sanctuaries)

Beli Bird		160,000	
Mare d'Oursi Bird		45,000	
Subtotal	2 sites	205,000 ha	

Totals

Notified conservation areas	12 sites	2,661,900 ha	
Proposed conservation areas	3 sites	485,000 ha	

CAPE VERDE

Proposed (Integral Reserve)

Cova Tina
Subtotal

1 site

ha*

Totals

Notified conservation areas
Proposed conservation areas

0 sites
1 site

ha
ha*

* Subtotal is incomplete because of missing data.

CHAD

Classified Forests

1 Bebo		12,400	
2 Deli		2,340	
3 Djoli Kera			1955
4 Dora Kagui		521	
5 Haut Bragoto		214,000	
6 Helibongo		1,254	1956
7 Lac Ouei		350	
8 Siagon Yamodo		46,500	
9 Timberi		64,000	
10 Yamba Berete		521	
Subtotal	10 sites	341,886 ha*	

Faunal Reserves

11 Aboutelfan		110,000	1955
12 Bahr Salamat		2,060,000	1964
13 Binder Lere		135,000	1974
14 Fada Archai		211,000	1967
15 Mandelia		138,000	1969
16 Ouadi Rime-Ouadi Achim		8,000,000	1969
17 Reserve de la Biosphere de Lac Fitri		50,000	1989
18 Siniaka-Minia		326,000	1965
Subtotal	8 sites	11,030,000 ha	

National Parks

19 Manda		114,000	1969
20 Zakouma		300,000	1963
Subtotal	2 sites	414,000 ha	

Proposed (Faunal Reserves)

Beinamar		76,500	
Larmanaye		88,200	
Subtotal	2 sites	164,700 ha	

Proposed (National Parks)

Goz-Beida		300,000	
L'Aouk		740,000	
Subtotal	2 sites	1,040,000 ha	

Totals

Notified conservation areas	20 sites	11,785,886 ha*
Proposed conservation areas	4 sites	1,204,700 ha

* Subtotal is incomplete because of missing data.

GAMBIA

Forest Parks

1 Bankuba	850	1954
2 Belel	405	1954
3 Beri Kolon	1,052	1954
4 Brikama	356	1954
5 Dobo	704	1954
6 Gambisara	308	1954
7 Hamdulai	112	1954
8 Helakunda	101	1954
9 Jabisa	16	1954
10 Jamara	579	1954
11 Jambangkunda	356	1954
12 Jeloki	858	1954
13 Jollifin	439	1954
14 Jumbo Yaka	227	1954
15 Jundaia	437	1954
16 Kahi Badi	1,485	1954
17 Kaolong	2,379	1954
18 Kasaywa	202	1954
19 Kenowore	67	1954
20 Kiberi	389	1954
21 Kumadi	283	1954
22 Kusun	316	1954
23 Lohen	95	1954
24 Madina Demba	2,373	1954
25 Mamato Konko	431	1954
26 Marike	174	1954
27 Mutaro Kunda	809	1954
28 N'Jassang	2,347	1954
29 Ngeyen	612	1954
30 Ngongonding	1,250	1954
31 Niani Maru	607	1954
32 Njau	364	1954
33 Nyanaberi	1,198	1954
34 Pakala	1,161	1954
35 Sabbi	73	1954
36 Sakaru Dalla	261	1954
37 Sao Frest	728	1954
38 Se-Ulumbang	529	1954
39 Sikunda	445	1954
40 Tanu	2,667	1954
Subtotal	40 sites	28,045 ha

National Parks

41 Kiang West	11,000	1987
42 Niuni/Sine Saloum	4,940	1987
43 River Gambia	2,500	1978
Subtotal	3 sites	18,440 ha

Nature Reserve

44 Abuko	107	1968
Subtotal	1 site	107 ha

Proposed (Reserve)

Coastal	1,000	
Subtotal	1 site	1,000 ha

Proposed (Wetland Reserve)

Bau Bolon	3,500	
Subtotal	1 site	3,500 ha

Totals

Notified conservation areas	44 sites	46,592 ha
Proposed conservation areas	2 sites	4,500 ha

GUINEA-BISSAU

Hunting Reserves

1	Arquipelago dos Bijagos		1980
2	Boe		1980
3	Ilha de Cofara		1980
4	Lagoa de Cufada		1980
5	Mata de Cantanhez		1980
6	Rio Geba/Rio Mansoa		1980
	Subtotal	6 sites	ha*

Proposed (National Parks)

	Boe		
	Dulombi		177,000
	Ilhas de Orango		68,000
	Lagoa de Cufada		89,000
	Mangais do Rio Cacheu (Pelundo)		54,000
	Matas de Cantanhes		68,000
	Subtotal	6 sites	456,000 ha*

Proposed (Protected Area)

	Mata de Cantanhez		
	Subtotal	1 site	ha*

Totals

	Notified conservation areas	6 sites	ha*
	Proposed conservation areas	7 sites	456,000 ha*

* Subtotal is incomplete because of missing data.

MALI

Classified Forests

1 Bossofola		12,000	1944
2 Faya		79,822	1954
3 Nafadji		43,000	1952
Subtotal	3 sites	134,822 ha	

Faunal Reserves

4 Badinko		193,000	1951
5 Bafing Makana		158,989	1990
6 Banifing-Baoule		13,000	1954
7 Douentza		1,200,000	1960
8 Fina		136,000	1954
9 Kenie-Baoule		67,500	1952
10 Kongossambougou		92,000	1955
11 Sounsan		37,600	1954
12 Talikourou		13,900	1953
Subtotal	9 sites	1,911,989 ha	

National Park

13 Boucle du Baoule		350,000	1954
Subtotal	1 site	350,000 ha	

Partial Faunal Reserves

14 Ansongo-Menaka		1,750,000	1956
15 Gourma Elephant		1,200,000	1960
Subtotal	2 sites	2,950,000 ha	

Sanctuary

16 Palaise de Bandiagara natural and cultural		400,000	
Subtotal	1 site	400,000 ha	

Proposed (National Park)

Bafing		316,000	
Subtotal	1 site	316,000 ha	

Totals

Notified conservation areas	16 sites	5,746,811 ha	
Proposed conservation areas	1 site	316,000 ha	

MAURITANIA

Faunal Reserve			
1	Reserve de Moufflon		1982
	Subtotal	1 site	ha*
Integral Reserves			
2	Baie du Levrier (Cap Blanc)	310,000	1986
3	Iles Mauritanienes		1962
4	Las Cuevecillas		1986
	Subtotal	3 sites	310,000 ha*
National Parks			
5	Banc d'Arguin	1,173,000	1976
6	Diawling	13,000	1990
	Subtotal	2 sites	1,186,000 ha
Partial Faunal Reserves			
7	El Agher	250,000	1937
8	Elephant		
9	Tilemsi		
	Subtotal	3 sites	250,000 ha*
Totals			
	Notified conservation areas	9 sites	1,746,000 ha*
	Proposed conservation areas	0 sites	ha

* Subtotal is incomplete because of missing data.

NIGER			
National Nature Reserve			
1 Air and Tenere		7,736,000	1988
Subtotal	1 site	7,736,000 ha	
National Park			
2 W du Niger		220,000	1954
Subtotal	1 site	220,000 ha	
Partial Faunal Reserve			
3 Dosso		306,500	1962
Subtotal	1 site	306,500 ha	
Strict Nature Reserve			
4 Addax Sanctuary		1,280,500	1988
Subtotal	1 site	1,280,500 ha	
Total Faunal Reserves			
5 Gadabedji		76,000	1955
6 Tamou		77,740	1962
Subtotal	2 sites	153,740 ha	
Totals			
Notified conservation areas	6 sites	9,696,740 ha	
Proposed conservation areas	0 sites	ha	

SENEGAL

Classified Forest			
1 Samba Dia		756	1936
Subtotal	1 site	756 ha	
Faunal Reserves			
2 Ferlo-Nord		487,000	1971
3 Ferlo-Sud		633,700	1972
4 Gueumbeul Special		750	1983
5 Ndiael		46,550	
6 Popenguine Special		1,009	1986
Subtotal	5 sites	1,169,009 ha	
Hunting Reserve			
7 Maka-Diama		60,000	
Subtotal	1 site	60,000 ha	
National Parks			
8 Basse-Casamance		5,000	1970
9 Delta du Saloum		76,000	1976
10 Djoudj		16,000	1971
11 Iles de la Madeleine		450	1949
12 Langue de Barbarie		2,000	1976
13 Niokolo-Koba		913,000	1954
Subtotal	6 sites	1,012,450 ha	
Special Reserve			
14 Kalissaye		16	1978
Subtotal	1 site	16 ha	
Proposed (International Parks)			
Reserve des Elephants du Fleuve Senegambien			
Subtotal	2 sites		ha*
Proposed (Nature Reserves)			
Dindefello Special Faunal and Floral Reserve		111	
Kassel Special Bird		90	
Subtotal	2 sites	201 ha	
Totals			
Notified conservation areas	14 sites	2,242,231 ha	
Proposed conservation areas	4 sites	201 ha*	

* Subtotal is incomplete because of missing data.

Annex 6.2 Extent of notified forests by forest origin and forest function. Non-forest includes both degraded forest and lands not forested at the time of their reservation.

Region: Africa

Sub-region: West Sahelian Africa

Name of country/state: Burkina Faso

Total area (sq.km): 274200

Land area (sq.km): 273800

Month/year of reference: 1983

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	976436					19200
Non-forest						
Plantation						
TOTAL	976436	0	0	0	0	19200

Notes: Data are taken from the Ministry of the Environment and Tourism (1991).

All classified forests (except Mare aux Hippopotames 19,200ha which is also a biosphere reserve) are subject to commercial exploitation and hence are listed as production forests.

Data were gathered in 1983.

Annex 6.2 (continued)

Region: Africa

Sub-region: West Sahelian Africa

Name of country/state: Cape Verde

Total area (sq.km): 4030

Land area (sq.km): 4030

Month/year of reference:

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural						
Non-forest						
Plantation						
TOTAL	0	0	0	0	0	0

Notes: No information available

Annex 6.2 (continued)

Region: Africa

Sub-region: West Sahelian Africa

Name of country/state: Chad

Total area (sq.km): 1284000

Land area (sq.km): 1259200

Month/year of reference: April 1990

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	14630000		5096000			
Non-forest	4936					
Plantation						
TOTAL	14634936	0	5096000	0	0	0

Notes: Data are taken from the Ministry of the Environment and Tourism (1990).

Reforestation areas are listed here as production forests of non-forest origin, although they serve both production and protection functions.

The figure 5,096,000 for protection forests represents 10 classified forests.

Annex 6.2 (continued)

Region: Africa

Sub-region: West Sahelian Africa

Name of country/state: Gambia

Total area (sq.km): 11300

Land area (sq.km): 10000

Month/year of reference: 1992

FOREST ORIGIN	F O R E S T		F U N C T I O N			
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	10700				28045	10000
Non-forest						
Plantation	2000					
TOTAL	12700	0	0	0	28045	10000

Notes: Data are taken from the Ministry of Natural Resources and the Environment (1992).

Plantations include rhun palm forests and bamboo forests.

The figures for production and conservation forests represent 60 forest parks.

Annex 6.2 (continued)

Region: Africa

Sub-region: West Sahelian Africa

Name of country/state: Guinea-Bissau

Total area (sq.km): 36120

Land area (sq.km): 2812

Month/year of reference: 1991

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural						
Non-forest						
Plantation						
TOTAL	0	0	0	0	0	0

Notes: Data are taken from the Plan de Conservation de l'elephant au Guinée-Bissau, 1991.

The protected area system is the responsibility of the Directorate of the Forestry & Hunting Service.

Proposals exist to establish 5 forest reserves (to cover 900sqkm), but no information is currently available on the legislation or management authority under which these would be established.

Annex 6.2 (continued)

Region: Africa

Sub-region: West Sahelian Africa

Name of country/state: Mali

Total area (sq.km): 1240190

Land area (sq.km): 1220190

Month/year of reference: 1980

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	960000				134822	
Non-forest	240000					
Plantation						
TOTAL	1200000	0	0	0	134822	0

Notes: Data are taken from FAO (1981) and WCMC database.

The 1.2 million ha are found in 102 classified forests.

The figure of 134,822ha represents three classified forests listed on WCMC database.

Annex 6.2 (continued)

Region: Africa

Sub-region: West Sahelian Africa

Name of country/state: Mauritania

Total area (sq.km): 1025520

Land area (sq.km): 1025520

Month/year of reference:

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural						
Non-forest						
Plantation						
TOTAL	0	0	0	0	0	0

Notes: No information available

Annex 6.2 (continued)

Region: Africa

Sub-region: West Sahelian Africa

Name of country/state: Niger

Total area (sq.km): 1267000

Land area (sq.km): 1266700

Month/year of reference: 1981

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	144200	163800				
Non-forest						
Plantation						
TOTAL	144200	163800	0	0	0	0

Notes: Data are taken from FAO (1981).

FAO state that 70% of the existing classified forest (144,200 ha of 206,000ha) and proposed classified forest (163,800ha of 234,000ha) corresponds to productive formations. It is not obvious which category the remaining 30% fits in to.

Annex 6.2 (continued)

Region: Africa

Sub-region: West Sahelian Africa

Name of country/state: Senegal

Total area (sq.km): 196720

Land area (sq.km): 192530

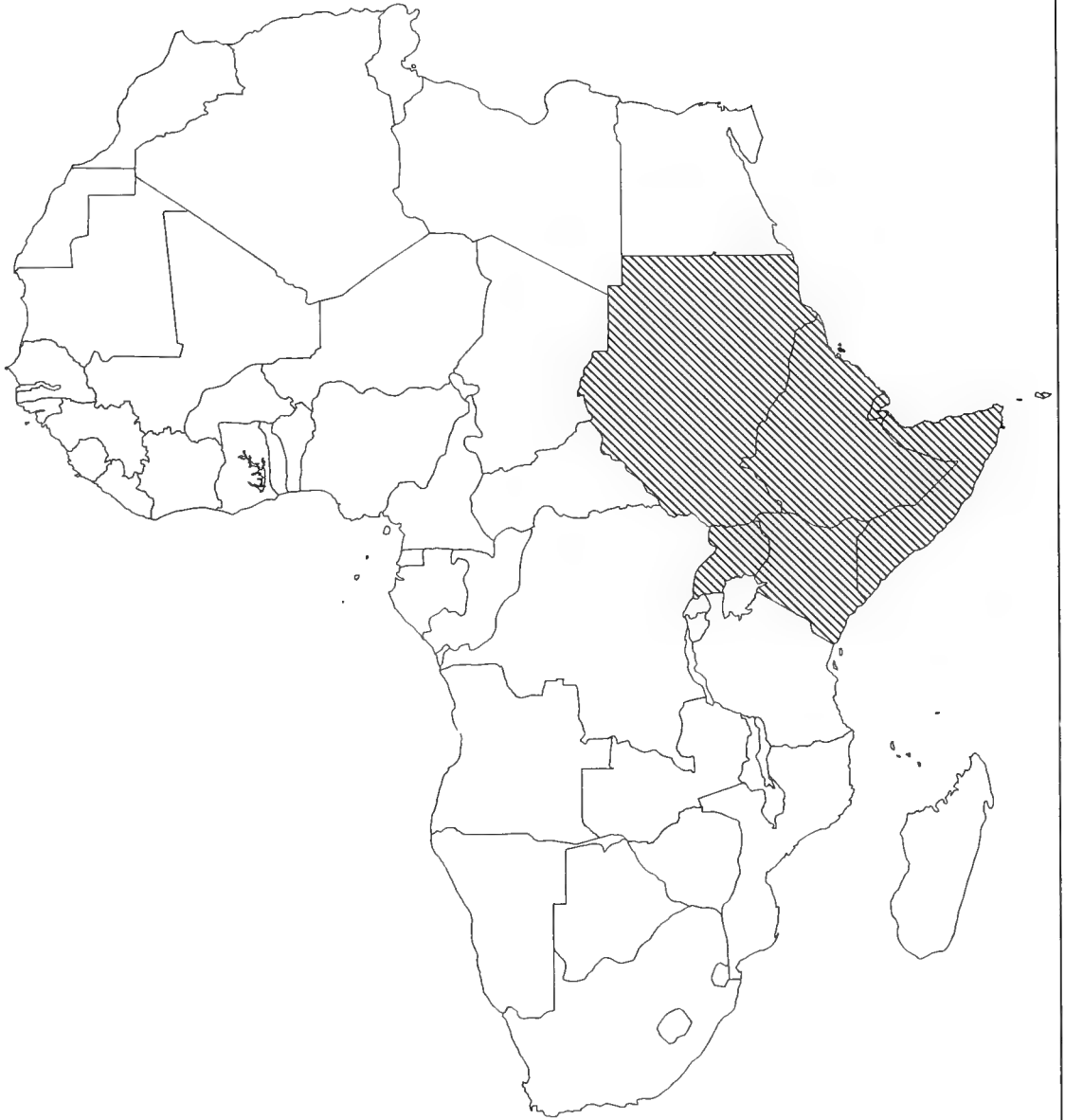
Month/year of reference: 1981

FOREST ORIGIN	F O R E S T		F U N C T I O N		Conservation forests	
	Production forests		Protection forests		Existing	Proposed
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	190000				1081000	
Non-forest	1502000					
Plantation						
TOTAL	1692000	0	0	0	1081000	0

Notes: Data are taken from FAO (1981).

145 classified forests cover 1,081,000ha.

7 EAST SAHELIAN AFRICA



Km



0 600 1200

7 EAST SAHELIAN AFRICA

Djibouti, Ethiopia, Kenya, Somalia, Sudan, Uganda

7.1 HISTORICAL PERSPECTIVE

Protection of nature in the form of local customs and laws is an old tradition throughout the subregion, one notable example being the protection of "kayas" or coastal forests as sacred groves in Kenya. More formally, the establishment of managed areas began with the reservation of forests at the turn of the century in Kenya and Uganda, although the majority were established in the 1930s in Uganda and Sudan, the 1940s in Kenya, the 1950s in Somalia, and the early 1980s in Ethiopia. There are currently no forest reserves in Djibouti. Within the forest reserve networks of Uganda and Kenya, nature reserves have been created which afford a high degree of protection to flora and fauna.

Following the early establishment of game reserves in Kenya in 1898, and the first national park, Forêt du Day in Djibouti, in 1939, all countries of the subregion currently have conservation areas within the wildlife sector. Further, all countries, with the exception of Uganda, have passed post-independence legislation providing for the creation of conservation areas, mostly during the late 1960s and 1970s.

In at least half the countries of the subregion the administration of forest reserves and conservation areas in the wildlife sector originally fell to the same organisation, and in Uganda game reserves were initially created from forest reserves. Today, all countries have distinct forestry and wildlife agencies, although within a number of countries these agencies are collaborating their efforts to ensure the effective management of conservation areas.

7.2 NATURE CONSERVATION POLICY AND LEGISLATION

Legal provisions for the creation and management of conservation areas exist in all East Sahelian countries. These are summarised in Table 7.1 and reviewed below.

7.2.1 Forestry Sector

Policy Current forestry policy throughout the subregion reflects the dual purposes of protection and management for sustainable use. For example, one aim of the forest policy of Kenya, as contained within sessional paper No. 1 of 1968, is to draw up management plans for all forests, based on the principle of sustained yield. Further, policy statements for Somalia emphasise the preservation of forestry and wildlife resources for the benefit of the Somalian people, the creation of protected areas, and the preparation of management plans combining production and conservation.

The need to increase the area under reservation is also reflected in a number of statements. In Uganda, emphasis is placed on the maintenance of enough forest land to ensure sufficient supplies of timber, to allow for amenity and recreation, and to ensure the conservation of plants and animals in natural ecosystems. The forest policy also specifies that 20% of the total reserved forest area is to be conserved in strict nature reserves, and a further 30% protected from intensive forms of forest management in buffer zones. Similarly, a forest law and policy was drafted for Sudan in 1989 which, together, are to provide for production and protection functions within forest reserves, and specify that 20% of the land area is to be protected eventually in the forest reserve network.

Legislation Current forestry legislation dates back to 1932 when the Central and Provincial Forest acts were passed in Sudan. A new forest law, drafted in 1989, is, however, likely to replace these early laws. The 1940s witnessed the enactment of modern-day forestry laws in Kenya and Uganda, which have subsequently been revised numerous times. Forestry laws in Somalia and Ethiopia were passed in 1969 and 1980, respectively. All of these laws generally provide for one or more categories of reserve, together with provisions for forest exploitation and management practices, establishment of a management authority, the creation and management

of forest reserves at the local level, and offences and accompanying penalties in connection with forest resources and reserves. Related and subsidiary legislation to the principal acts exists for most countries, notable among these being the Presidential Decree of 1986 which banned all logging in Kenya, and the Penal Code Proclamation of Ethiopia (1957) which has several provisions related to forest and wildlife conservation, and reserved lands.

Somalia and Ethiopia are unique in that provisions relating to the creation and management of forest reserves and conservation areas in the wildlife sector are contained within the same legislation. Other countries have distinct wildlife and forestry laws. The forestry laws of Kenya and Uganda, however, make provision for the establishment of more protective nature reserves within forest reserves. A number of forest reserves in Uganda have dual status as national parks, game reserves or sanctuaries.

In Uganda and Somalia, the need for revised and expanded legislation providing for protected areas has been recognised, while national forest priority areas are awaiting legal gazettelement in Ethiopia. Forestry legislation *per se* does not exist in Djibouti.

7.2.2 Wildlife Sector

Policy Most countries have formulated, or are in the process of developing nature conservation policies. For example, Kenya's commitment to conservation was stated in Sessional Paper No. 3, 1975: Statement on Future Wildlife Management Policy in Kenya, which made provision for optimising returns from the wildlife resource, coherent planning of projects and wildlife programmes, and defined the role of national parks. More encompassing is Somalia's Mogadishu Manifesto on the Conservation of Wildlife, 1989, which embodies current government policy, formulating the basis for all future development projects and activities in various fields pertaining to Somali wildlife. In contrast, the need for a new conservation policy with clear objectives for effective management of conservation areas has been recognised in both Uganda and Sudan.

Legislation Within the subregion, the majority of countries had pre-independence laws relating to the creation of conservation areas. Early examples include the Kenya National Parks Ordinance of 1945, the Sudan National Parks, Sanctuaries and Reserves Regulations of 1939, and legislation dealing with the establishment of game reserves in Uganda in 1902. These were subsequently amended or repealed, most recently in the 1970s (Somalia) or 1980s (Djibouti, Kenya, Ethiopia, Sudan). As of 1990, Somalia was considering new draft legislation, while Uganda has recognised the need for legislation to replace that passed in the 1950s and 1960s.

In the 1970s, Southern Sudan was given a measure of autonomy, and legislation passed in 1972 created the categories of national park, game reserve and controlled area for the Southern region. Legislation passed in 1986, however, provides for the establishment and management of conservation areas throughout the country and replaces the earlier laws.

Present nature conservation legislation in the subregion commonly provides for the establishment of national parks, game reserves, sanctuaries, and controlled hunting areas, while Somalia also has a grazing reserve designation. National parks tend to afford the highest degree of protection, and controlled hunting areas the least throughout the subregion. In Kenya, Somalia, and Uganda, laws were passed in the late 1970s which completely banned hunting.

7.2.3 Additional Sectors

Not applicable

7.3 MANAGED AREAS ADMINISTRATION

7.3.1 Forestry Sector

Administration of forestry is the responsibility of forest departments in the respective countries, with the exception of Sudan, where forestry matters fall under the mandate of the National Forestry Corporation (Table

7.1). Most have a long institutional history, for example, Sudan where the first Forest Department was created in 1901.

In Ethiopia, the State Forest Conservation and Development Department is responsible for the establishment and management of national forest priority areas, while peasant associations and urban dwellers associations are responsible for natural resources, including forests, within their areas of local jurisdiction. In Kenya, trust land forests are managed by the county councils, while other forest reserves are managed by the Forest Department. Management of forests under the National Forestry Corporation of Sudan is mostly confined to the north of the country due to the ongoing civil war.

Management of conservation areas, apart from forest reserves serving a protection or conservation function, falls outside the forestry sector, the exceptions being nature reserves in Kenya, and nature reserves and sites of special scientific interest in Uganda. In Kenya, nature reserves are managed jointly by the Forest Department and Kenya Wildlife Service, while the Game Department in Uganda has jurisdiction over wild animals in all forest reserves and maintains field staff in some of the larger reserves. Further, several forest reserves in Uganda have dual status as national parks or game reserves and are therein managed jointly by forestry and wildlife sectors.

7.3.2 Wildlife Sector

The management of conservation areas in the wildlife sector is the responsibility of one organisation in Ethiopia (Ethiopian Wildlife Conservation Organisation), and by two or more agencies in the other five countries of the subregion. In Sudan, for example, management jurisdiction lies with the Wildlife Conservation and National Park Forces in the Northern Region and with the Regional Ministry of Wildlife Conservation, Fisheries and Tourism in the Southern Region, while in Somalia three agencies are involved: the National Range Agency in the southern and northern regions; the Central Rangelands Development Project in the central region; and the Ministry for Jubba Valley Development, in conjunction with the National Range Agency, in the Middle Jubba. Although most conservation areas in the wildlife sector of Kenya are managed by the Kenya Wildlife Service, national reserves are administered by district councils. Djibouti is unique to the subregion in having a research institute assist with the management of conservation areas.

7.3.3 Additional Sectors

Not applicable

7.3.4 Non-Governmental Organisations

The Somali Ecological Society is currently managing Balcad Nature Reserve.

7.4 MANAGED AREAS STATUS

The managed areas system is mapped for each country within the subregion in Fig. 7.1. Details of individual conservation areas are given in Annex 7.1 which also serves as a key to the maps. The bulk (about 95% total area) of the conservation areas network falls within the domain of the wildlife sector.

7.4.1 Managed Areas within the Forestry Sector

Coverage Natural reserved forests account for about 0.8% of the total area of the subregion (Table 7.2). They are most extensive in Uganda (5.4%) and Kenya (2.5%), respectively. Currently, no natural forests are legally reserved in Djibouti, while the situation in Somalia is unclear.

Of the 0.8% of natural reserved forests in the subregion, more than half serves a conservation or protection function (Table 7.2). All forest reserves in Kenya are considered conservation forests by virtue of a country-wide ban on logging in 1986, while of the more than 700 notified reserves in Uganda, conservation forests constitute 63% of the forest estate, and a further 9% is protection forest. When legally established, the national

forest priority areas of Ethiopia will be zoned into management blocks for production, conservation and protection purposes.

7.4.2 Conservation Areas within Forestry, Wildlife and Additional Sectors

Coverage There are more than 800 notified conservation areas in the East Sahel, covering 43.3 million ha or 8.3% of total area (Fig. 7.1). The forestry sector is directly responsible for over 600 conservation areas, covering approximately 2.4 million ha or 0.4% of total area for the subregion. All of these lie in Kenya (>200 forest reserves) and Uganda (>460 forest reserves) (Table 7.3).

Approximately 9% of conservation areas are under total protection, covering 3.0% of area in the subregion (Table 7.3). Most of these fall within the wildlife sector. The rest are partially protected.

The target of 10% of total area under protection for conservation purposes has been reached by Uganda (23.7%), Ethiopia (15.9%), and Kenya (10.3%). The Sudan is half-way towards reaching the target. Least extensive are the networks of Djibouti (0.4%) and Somalia (0.8%). About 73% of the conservation area in Ethiopia, and over 50% of lands in Uganda, however, is tied up in game sanctuaries and controlled hunting areas which make minimal provision for habitat protection and are designated essentially for hunting purposes.

Representativeness Nature conservation areas have often been established haphazardly in the past, with little regard to ecological or other criteria for their selection. This is reflected in the existing networks of Djibouti, with dense forest habitats needing further protection (Welch & Welch, 1985), and Ethiopia where a number of important ecosystems are largely unprotected (Friis & Tadesse, 1990). A number of programmes and plans, however, have been formulated which recommend an expansion to the conservation areas network in Ethiopia.

In Kenya, national parks and conservation areas in the wildlife sector are found in the majority of habitat types for the country. The largest proportion of these, however, are found in arid and semi-arid regions (Pertet, n.d.). In response to this, the Kenya Wildlife Service is striving to create a national network of conservation areas and is developing a systems plan (KWS, 1990). Within the forestry sector, the establishment of a further 500,000ha in forest reserves is awaiting legal notification.

In Somalia there is an urgent need to establish a conservation areas system, made almost impossible by the current security problems and drought. The majority of conservation areas in Sudan are in savanna woodlands, found mainly in the inaccessible south, and no conservation areas occur in desert and Sahelian zones which make up half the country (Stuart & Adams, 1990).

Uganda is considered to have a good system of parks and reserves. Nevertheless, 25 out of 94 non-aquatic ecosystems are totally unprotected or only have small portions within forest or wildlife reserves. To afford a greater degree of protection, the Forestry Department has recently created a number of sites of special scientific interest, and is currently looking to expand nature reserves from 5% to 20% of total reserved forest area (Forest Department, pers. comm., 1990; Howard, 1988).

Integrity Using mean size as a measure of integrity, data in Table 7.4 indicate that forest reserves serving a conservation or protection function in Kenya tend to be small, the majority being less than 1,000ha in size. Similarly, the totally protected nature reserves of Kenya and Uganda have a mean size of less than 6,000ha. In the wildlife sector, established conservation areas in Sudan and Ethiopia tend to be large, with totally protected areas in Sudan having a mean size greater than one million ha. Partially protected areas in Uganda and Somalia have a mean in excess of 120,000ha, while those of Kenya are less than 60,000ha. Significantly, however, totally protected areas in Uganda and in particularly, Kenya, are a respectable size, having a mean larger than 100,000ha. Conservation areas in Djibouti tend to be on the small side.

The mean size of partially protected areas (7,050ha) in the forestry sector, made up exclusively of forest reserves, is almost twice that of totally protected areas (4,675ha). This reflects the relatively small size of nature reserves in the subregion. In the wildlife sector, the mean size of totally protected areas (282,395ha) is slightly larger than that for partially protected sites (239,242ha). National parks constitute the bulk of the former category, and by definition tend to be relatively large areas to provide a range of services. Partially

protected areas comprise mainly game reserves, controlled hunting areas, and sanctuaries. Significantly, conservation areas in the wildlife sector tend to be considerably larger than those in the forestry sector.

Effectiveness Apart from gaps in the representation of the subregion's biological diversity within existing conservation area networks, conservation efforts are limited by weaknesses in policy and legislation, inadequate institutional support and ineffective management.

As mentioned in Section 7.2, nature conservation policies in both the forestry and wildlife sectors have been formulated or are in the process of being drafted or amended for all countries of the subregion, the exception being Djibouti.

For a number of countries, legislation needs strengthening or updating. For example, existing forestry laws need to be reviewed in Kenya, and regulations enacted in Ethiopia to allow for the legal establishment of conservation areas and national forest priority areas. New definitions for the various types of conservation areas in the wildlife sector also need to be established in Ethiopia. In Somalia, the need for new legislation covering all aspects of forestry and wildlife has been recognised. As such, a wildlife law was drafted in 1990 which makes provision for a number of conservation area designations, and it has been recommended that complimentary forestry legislation be prepared. Security problems in a number of countries of the subregion have frequently hampered the enactment of conservation areas legislation.

Institutional resources for conservation area management are inadequate in all countries within the subregion. Constraints include a lack of adequately trained staff, funds, resources, and scientific information upon which to base sound management decisions. These problems are most acute in Ethiopia, Somalia and Sudan, while the situation in Uganda is gradually improving after years of political turmoil. Further hindrances to conservation areas management are poor communication and transportation networks in a number of countries. Conservation areas management is further complicated where forestry and wildlife agencies are both involved: the need for, and often lack of coordinated management in Kenya's nature reserves is a prime example.

Low priority and a general lack of commitment of resources for conservation areas is largely responsible for many of the deficiencies in their management. This situation is exacerbated by countries having an unclear programme or weak planning of their conservation area networks. Very few conservation areas in the subregion have management plans, and for those which do exist, they are largely out-of-date or difficult to implement. For example, the management plans for conservation areas in Uganda have been mostly forgotten and never acted upon, while all working plans for forest reserves in the country are out-of-date. The majority of conservation areas in Somalia, Sudan, and to a lesser extent Ethiopia, exist on paper only, while the boundaries of conservation areas in the wildlife sector of Uganda and protected forests in Somalia are ill-defined.

Common threats to the subregion's conservation areas include poaching, expansion of human settlements, illegal grazing, shifting cultivation, unauthorised extraction of timber, fuelwood and minor forest products, uncontrolled bushfires, and, in the cases of Sudan and Kenya, dams and irrigation schemes. These threats are compounded by a rapidly growing population in the subregion, civil unrest in a number of countries, and famine in drought-stricken areas.

7.4.3 Contribution of the Forestry Sector to Nature Conservation

Data in Table 7.2 indicate that the contribution of the forestry sector to nature conservation is minimal (0.5%) in terms of the total area of the subregion under protection and conservation forest. Although data for Somalia are missing, it is likely that the contribution of this country to the total would not be significant (<0.1%). In contrast, about 95% of the conservation area network falls within the domain of the wildlife sector, covering 7.9% of total area of the subregion (Table 7.3).

7.5 FUTURE PROSPECTS

7.5.1 Expanding the Conservation Area Network

Official proposals to expand the conservation area network total 9.3 million ha, or 1.8% of the total area of the subregion (Table 7.3). Two-thirds of this is proposed in the wildlife sector, with the majority of sites to be afforded partial protection. Improvements to the network affect 1.6 million ha in Sudan, 2.4 million ha in Ethiopia, and 4.6 million ha in Somalia. Proposed areas in Ethiopia already exist as *de facto* national forest priority areas which serve protection and production functions.

Other significant extensions to existing national networks are planned for Sudan and Kenya. Proposals for 20% of reserved forest lands to be designated as nature reserves in Uganda will afford protection to the entire variety of ecosystems within forest reserves, include medium altitude forest and critical sites of biological diversity (Howard, 1988; Pomeroy, 1990).

7.5.2 Other National Initiatives

Strengthening networks A variety of initiatives to strengthen conservation areas planning and management is being implemented or formulated. Following the National Programme for the Conservation and Management of Forests, Wildlife, Soils and Water and its Tropical Forestry Action Plan, Ethiopia has demarcated 58 national forest priority areas and is considering the establishment of a number of wildlife reserves and national parks. Under the Kenya Indigenous Forest Conservation Project, an additional 500,000ha of conservation forest have been earmarked for notification, forest inventories are being conducted, and management plans are being drawn up (World Bank, 1988). Under the World Bank's Environmental Action Plan for Somalia, the remnant riverine forests of the Jubba valley have been established as a priority concern, while a Tropical Forestry Action Plan has recently been initiated in the country (IUCN, 1990; Stuart & Adams, 1990). The Five-year Development Programme 1987-1991 for Sudan includes increasing the area of savanna forest reserves to be brought under protection and management (World Bank, 1986), while a government/ICBP conservation programme is assisting with managing reserves (Stuart & Adams, 1990). The European Commission has funded the Natural Forest Management and Conservation Project in Uganda which supports the Forestry Department in its goal to expand nature reserves in the country, while a conservation project has begun for the degraded forests of Mount Elgon, Kibale, and Semliki (Harcourt, in press).

Overcoming Economic Constraints Funding is a major factor which limits the effective management of conservation areas. In addition to the aid projects mentioned above, the Elephant Action Plans, prepared for most countries in the subregion, identify funding and project priority areas.

Since 1987, tourism has been the largest foreign exchange earner in Kenya, with the Kenya Wildlife Service receiving KSh 130 million in 1990. It has been suggested that a Wildlife Conservation Trust be established as a long-term strategy to strengthen the Uganda National Parks and Game Department (Pomeroy, 1990).

Improving Management Within the subregion, there are several initiatives which attempt to link conservation with development in and around conservation areas. Two examples are the management of wildlife outside conservation areas by local residents under the Kenya Wildlife Service's Community Wildlife Programme, and a collaborative government/FAO/UNDP project in Somalia which has been working towards applying the benefits of conservation to local communities (Stuart & Adams, 1990). Goals of forest management in Sudan include the need to increase the area and protection of forest reserves in woodland areas, and promote multiple-use management to benefit people living near forest reserves (ESMAP, 1986). The National Rehabilitation and Development Plan 1988/89-1991/92 of Uganda includes provision for the integration of wildlife management with rural development (Uganda National Parks, 1991), while the management of forest parks will involve an Advisory Committee composed of local authorities and community leaders.

7.5.3 International Initiatives

Conventions and Programmes Most countries within the subregion participate in one or more international conventions and programmes concerned with conservation areas (Table 7.5). All countries except Djibouti and

Somalia have accepted or ratified the Convention Concerning the World Cultural and Natural Heritage, but only Ethiopia has had a natural property inscribed on the World Heritage List.

Kenya and Uganda have acceded to or ratified the Ramsar Convention, while Kenya, Sudan and Uganda all participate in the Unesco Man and Biosphere Programme. To date, five biosphere reserves have been created in Kenya. All countries of the subregion have either ratified or are signatory to the African Convention, which defines several designations of conservation area.

Cooperative agreements Cooperation within the subregion is difficult due to civil unrest in a number of countries. Nevertheless, an action plan to conserve and strengthen the Mara-Serengeti ecosystem between Kenya and Tanzania, and an agreement between Sudan and Egypt to establish the Gebel Elba Conservation Area, are examples of cooperative arrangements being attempted. The existence of a number of transboundary conservation areas in the region provides a departure point for further advancements.

7.6 PRIORITIES FOR ACTION

Priorities for conservation action in the subregion were reviewed as part of the *IUCN Systems Review of the Afrotropical Realm* (Mackinnon and MacKinnon, 1986), and in the accompanying Action Strategy (IUCN, 1987), but these are somewhat dated.

Priorities have been reviewed more recently by IUCN (1992) in preparation for the IV World Parks Congress. These are generalised, recognising that translation of priorities into action will vary according to national conservation objectives, history and political will. They provide a foundation to the more specific priorities identified in this report and summarised in Table 7.6.

In conclusion, progress throughout the subregion has been hindered by civil unrest, environmental conditions (i.e. drought), and the demand on resources by rapidly growing human populations. Not surprisingly, the greatest progress has been made in those countries where these seemingly intractable problems have been minimal. Governments of the subregion are aware of the need for conservation area networks, well-funded institutions and up-to-date policy and legislation but have their hands tied by more immediate demands.

REFERENCES

- ESMAP (1986). Fuelwood/forestry project feasibility *aide mémoire*. Energy Sector Management Assistance Programme. 23 pp.
- Friis, I. and Tadesse, M. (1990). The evergreen forests of tropical N.E. Africa. In: *Mitt. Inst. Allg. Bot. Hamburg* 23a: 249-263.
- Harcourt, C.A. (1991). Chapter 31: Uganda. In: J.A. Sayer, C.A. Harcourt, N.M. Collins (Eds.) (In press), *The conservation atlas of tropical forests. Africa*. Prepared by IUCN, Gland, Switzerland and WCMC, Cambridge, UK. MacMillan Press, London.
- Howard, P.C. (1988). *Nature conservation in Uganda's tropical forest reserves*. Kampala, Uganda. Unpublished draft. 302 pp.
- IUCN (1987). *Action strategy for protected areas in the Afrotropical Realm*. IUCN, Gland, Switzerland and Cambridge, UK. 56 pp.
- IUCN (1990). *The IUCN Sahel Programme progress report: 1 December 1989 - 31 May 1990*. IUCN, Gland, Switzerland. 32 pp.
- IUCN (1992). *Regional Review - Eastern Africa*. In: *Regional reviews*. IUCN, Gland, Switzerland. Pp. 2.1-2.30.
- KWS (1990). *Kenya Wildlife Service - A policy framework and development programme 1991-96: Annex 6 - Community conservation and wildlife management outside parks and reserves*. Kenya Wildlife Service, Nairobi. 181 pp.
- MacKinnon, J. and Mackinnon, K. (1986). *Review of the protected areas system in the Afrotropical Realm*. IUCN, Gland, Switzerland and Cambridge, UK/UNEP, Nairobi, Kenya. 259 pp.
- Pertet, F. (n.d.). *Endangered and critical habitat areas in Kenya*. Nairobi, Kenya. 14 pp.
- Pomeroy, D.E. (Ed.) (1990). *Forum II - conservation of biodiversity in Uganda*. Proceedings of the Second Conservation Forum, 8-10 February, Kabarole District, Uganda. 63 pp.
- Stuart, S.N. and Adams, R.J. (1990). *Biodiversity in Sub-saharan Africa and its islands: conservation, management and sustainable use*. IUCN, Gland, Switzerland. 242 pp.
- Uganda National Parks (1991). *Elephant conservation plan - Uganda*. Uganda National Parks, Kampala. 52 pp.
- Welch, G.R. and Welch, H.J. (1985). *Djibouti II Autumn '85*. Privately published. 197 pp.
- World Bank (1986). *Sudan: Forestry Sector Review*. Report No. 5911-SU. The World Bank, Washington, DC. 183 pp.
- World Bank (1988). *Kenya - Forestry subsector review*. Report No. 6651-KE. Agricultural Operations Division, Eastern Africa Department. 41 pp.

Table 7.1 Legal provisions for managed areas, with year of enactment and responsible administrative authority. Designations are classified according to management objective (T = total protection, P = partial protection, L = forest land under local extractive use, C = forest land under commercial extractive use).

Country	Legislation		Administrative authority	Managed areas	
	Year	Title [Sector]		Man.	Designation
Djibouti	1972	Arrêté No. 72-1363 fixant les mesures de protection de la faune et des fonds sous-marins [W]	Institut Supérieur d'Etudes et de Recherches Scientifiques et Techniques/Service de la Protection des Sites et de l'Environnement	T	Parc territorial
	1980	Décret No. 80-062/PR/MCTT portant sur la protection de la faune et des fonds sous-marins [W]	Institut Supérieur d'Etudes et de Recherches Scientifiques et Techniques/Service de la Protection des Sites et de l'Environnement	T	Réserve intégrale
	?	Legislation unknown [W]	Institut Supérieur d'Etudes et de Recherches Scientifiques et Techniques/Service de la Protection des Sites et de l'Environnement	T	Parc national
Ethiopia	1980	Forest & Wildlife Conservation & Development Proclamation No. 192 [F]	State Forest Conservation and Development Department	L P P	Kebele forest Protective forest State forest
	-	Legislation proposed [F]	State Forest Conservation and Development Department	P	National forest priority area
	1980	Forest & Wildlife Conservation & Development Proclamation No. 192 [W]	Ethiopian Wildlife Conservation Organisation	P T T P	Controlled hunting area National park Sanctuary Wildlife reserve
	1972	Wildlife Conservation Regulations [W]	Ethiopian Wildlife Conservation Organisation	P P T T	Controlled hunting area Game reserve National park Sanctuary

Country	Legislation Year	Legislation Title [Sector]	Administrative authority	Managed areas Man. Designation
Kenya	1942	Forests Act [F]	Forest Department	P T Forest area/Central forest Nature reserve
	1976	Wildlife (Conservation & Management) Act No. 1 [W]	Kenya Wildlife Service	P T T P T P P P Local sanctuary Marine national park Marine national reserve National park National reserve Protection area
Somalia	1969	Law on Fauna (Hunting) and Forest Conservation No. 15 [F]	Forestry Department, National Range Agency	P Forest reserve
	1969	Law on Fauna (Hunting) and Forest Conservation No. 15 [W]	Wildlife Department, National Range Agency	P P P P Controlled area Game reserve Grazing reserve Partial game reserve
	?	Legislation unknown [W]	Wildlife Department, National Range Agency	P P Nature reserve Wildlife reserve
	1990	Wildlife Law and Regulations (proposed) [W]	Somalia Wildlife Service	T P P P P P National park National reserve National conservation area Provisional national reserve Provisional national park Transfrontier wildlife protection area

Country	Legislation		Administrative authority	Managed areas	
	Year	Title [Sector]		Man.	Designation
Sudan	1932	Central Forests Act [F]	National Forestry Corporation	C	Forest reserve
	1932	Provincial Forest Act [F]			
	?	Legislation unknown [W]	Wildlife Conservation and National Park Forces	P	Nature conservation area
	1935	Preservation of Wild Animals Ordinance ¹ [W]	Wildlife Conservation and National Park Forces	P	Reserve
				T	Sanctuary
Uganda	1975	Wildlife Conservation and National Parks Act ² [W]	Regional Ministry of Wildlife Conservation, Fisheries and Tourism	P	Controlled area
				P	Game reserve
				T	National park
	1947	Forest Act (Cap. 246) [F]	Forest Department	P	Central forest reserve
				P	Local forest reserve
Uganda	?	Legislation unknown [F]	Forest Department	T	Nature reserve
				C	Village forest
				P	Site of special scientific interest
	1959	Game Preservation and Control Act (Cap. 226) [W]	Game Department, Ministry of Tourism, Wildlife and Antiquities	P	Controlled hunting area
				P	Game reserve
Uganda	1952	National Parks Act [W]	Uganda National Parks	P	Game sanctuary
				T	National park

¹ These laws have been replaced by the "Wildlife Conservation and National Park Ordinance, Year 1406 Hegria", passed on 13 January 1986. Further details are not available.

² Legislation for southern Sudan

Table 7.2 Extent of notified natural forests, classified by forest function. Units are in sq. km, followed by % total area. Full data, with sources, are given in Annex 7.2.

Country SUBREGION	Total Area	F O R E S T F U N C T I O N			T o t a l
		Production	Protection	Conservation	
Djibouti	23,200	0	0	0	0 (0.0)
Ethiopia ¹	1,221,900	0	0	0	0 (0.0)
Kenya ²	580,370	0	0	14,741 (2.5)	14,741 (2.5)
Somalia ³	637,660	?	?	?	?
Sudan ⁴	2,505,810	12,700 (0.5)	0	0	12,700 (0.5)
Uganda	235,880	3,575 (1.5)	1,145 (0.5)	8,067 (3.4)	12,787 (5.4)
EAST SAHELIAN AFRICA					
	5,204,820	>16,275(>0.3)	>1,145 (+)	>22,808(>0.4)	>40,228 (>0.8)

? No information

¹ National forest priority areas await legal gazettelement. Although *de facto* protected areas, they are not included.

² All forest reserves (except plantations) are classified as conservation forest in view of the 1986 ban on felling of indigenous trees.

³ There are 27 'protected forests' in the country, but no data are available.

⁴ The total for natural production forest is inflated because it includes unknown amounts of protection forest, and may include some plantation forest.

Table 7.3 Extent of notified and proposed conservation areas, classified by sector and national designation. Management categories are assigned to designations based on national legislation (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses). Totals for proposed sites may be inflated because they may include areas of properties already protected but proposed for upgrading to higher conservation status. Details of individual properties are given in Annex 7.2. N is the total number of conservation areas.

COUNTRY Sector National designation	Man. Cat.	Notified		Proposed	
		N	Area(ha)	N	Area(ha)
DJIBOUTI (23,200 sq. km)					
Wildlife Sector					
Integral Reserve	T	1	0 *	0	0
National Park	T	1	10,000	0	0
Territorial Park	T	1	0 *	0	0
Subtotals		3	10,000 *	0	0
(% total area)			(0.4)		(0.0)
Totals		3	10,000 *	0	0
(% total area)			(0.4)		(0.0)
ETHIOPIA (1,221,900 sq. km)					
Forest Sector					
National Forest Priority Area ¹	P	0	0	?	2,443,107
Subtotals		0	0	0	2,443,107
(% total area)			(0.0)		(2.0)
Wildlife Sector					
Controlled Hunting Area	P	18	13,182,300 *	0	0
Marine National Park	T	1	200,000	0	0
National Park	T	9	2,082,900	0	0
Sanctuary	T	3	957,300	0	0
Wildlife Reserve	P	11	2,982,400	0	0
Subtotals		42	19,404,900 *	0	0
(% total area)			(15.9)		(0.0)
Totals		42	19,404,900 *	0	2,443,107
(% total area)			(15.9)		(2.0)
KENYA (580,370 sq. km)					
Forest Sector					
Forest Reserve	P	?	1,421,400 *	132	581,261*
Nature Reserve	T	11	52,679 *	0	0
Subtotals		11	1,474,079 *	132	581,261*
(% total area)			(2.5)		(1.0)
Wildlife Sector					
Game Sanctuary	P	1	500	0	0
Marine National Park	T	5	43,700	1	250
Marine National Reserve	P	5	70,609	0	0
National Park	T	22	2,905,261	3	115,032
National Reserve	P	23	1,527,333	0	0
Subtotals		56	4,547,403	4	115,282
(% total area)			(7.8)		(0.2)
Totals		67	6,021,482 *	136	696,543*
(% total area)			(10.3)		(1.2)

COUNTRY Sector National designation	Man. Cat.	Notified		Proposed	
		N	Area(ha)	N	Area(ha)
SOMALIA (637,660 sq. km)					
Wildlife Sector					
Controlled Hunting Area	P	3	0 *	0	0
Game Reserve	P	4	344,360 *	0	0
National Park	T	0	0	11	2,240,000*
Nature Reserve	P	2	180,190	0	0
Partial Game Reserve	P	4	0 *	0	0
Wildlife Reserve	P	0	0	10	2,350,000*
Subtotals		13	524,550 *	21	4,590,000*
(% total area)			(0.8)		(7.2)
Totals		13	524,550 *	21	4,590,000*
(% total area)			(0.8)		(7.2)
SUDAN (2,505,810 sq. km)					
Wildlife Sector					
Bird Sanctuary	P	0	0	8	14,200*
Game Reserve	P	14	3,130,000	5	600,000*
Managed Nature Reserve	P	0	0	1	12,000
Marine National Park	T	1	26,000	1	0*
National Park	T	7	8,473,000	2	76,000*
Nature Conservation Area	P	0	0	5	880,000*
Wildlife Sanctuary	P	3	95,500	0	0
Subtotals		25	11,724,500	22	1,582,200*
(% total area)			(4.6)		(0.6)
Totals		25	11,724,500	22	1,582,200*
(% total area)			(4.6)		(0.6)
UGANDA (235,880 sq. km)					
Forest Sector					
Forest Reserve	P	?	872,116	0	0
Nature Reserve	T	12	45,509	1	3,054
Site of Special Scientific	P	4	3,574	0	0
Subtotals		16	921,199	1	3,054
(% total area)			(3.9)		(0.0)
Wildlife Sector					
Controlled Hunting Area	P	14	2,828,501 *	0	0
Game Reserve	P	11	919,215	0	0
National Park	T	6	833,606	0	0
Sanctuary	P	8	98,816	0	0
Subtotals		39	4,680,138 *	0	0
(% total area)			(19.8)		(0.0)
Totals		55	5,601,337 *	1	3,054
(% total area)			(23.7)		(0.0)

COUNTRY Sector National designation	Man. Cat.	Notified		Proposed	
		N	Area(ha)	N	Area(ha)
EAST SAHELIAN AFRICA (5,204,820 sq. km) - summary by sector					
Forestry Sector (% total area)	27	2,395,278 *	(0.5)	133	3,027,422*
Wildlife Sector (% total area)	178	40,891,491 *	(7.9)	47	6,287,482*
Additional Sector or sector unknown (% total area)	0	0	(0.0)	0	0
EAST SAHELIAN AFRICA (5,204,820 sq. km) - summary by management category					
Total protection (% total area)	80	15,629,955 *	(3.0)	19	2,434,336*
Partial protection (% total area)	125	27,656,814 *	(5.3)	161	6,880,568*
Degree of protection unknown (% total area)	0	0	(0.0)	0	0
Totals (% total area)	205	43,286,769 *	(8.3)	180	9,314,904*

* Subtotal is incomplete because of missing data for either number of sites or area covered.

Table 7.4(a) Frequency distributions of notified and proposed conservation area sizes, with means, classified by management category (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses), for (a) Forestry, (b) Wildlife and (c) Additional sectors.

a) Forestry Sector		N	Mean size (ha)	Number in each size class (ha)			
				≤1000	1001-10,000	10001-100,000	>100,000
KENYA							
Notified sites	T	9	5,853	5	3	1	0
	P	229	7,157	132	60	36	1
	Total	238	7,108	137	63	37	1
Proposed sites	P	125	4,650	91	24	9	1
	Total	125	4,650	91	24	9	1
UGANDA							
Notified sites	T	12	3,792	3	8	1	0
	P	4	893	2	2	0	0
	Total	16	3,067	5	10	1	0
Proposed sites	T	1	3,054	0	1	0	0
	Total	1	3,054	0	1	0	0
EAST SAHELIAN AFRICA							
Notified sites	T	21	4,675	8	11	2	0
	P	233	7,050	134	62	36	1
	Total	254	6,853	142	73	38	1
Proposed sites	T	1	3,054	0	1	0	0
	P	125	4,650	91	24	9	1
	Total	126	4,637	91	25	9	1

Note that N (the total number of conservation areas) does not necessarily equate to N in Table 7.3, because the areas of some individual properties may be unknown.

Countries for which there are no relevant data are not included in the table.

Table 7.4(b) Frequency distributions of notified and proposed conservation area sizes, with means, classified by management category (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses), for (a) Forestry, (b) Wildlife and (c) Additional sectors.

		N	Mean size (ha)	Number in each size class (ha)			
				≤1000	1001-10,000	10001-100,000	>100,000
b) Wildlife Sector							
DJIBOUTI							
Notified sites	T	1	10,000	0	1	0	0
	Total	1	10,000	0	1	0	0
ETHIOPIA							
Notified sites	T	13	249,246	0	1	4	8
	P	25	646,588	0	0	2	23
	Total	38	510,655	0	1	6	31
KENYA							
Notified sites	T	27	109,220	6	6	11	4
	P	29	55,118	1	7	14	7
	Total	56	81,203	7	13	25	11
Proposed sites	T	4	28,820	1	0	3	0
	Total	4	28,820	1	0	3	0
SOMALIA							
Notified sites	P	4	131,137	1	0	1	2
	Total	4	131,137	1	0	1	2
Proposed sites	T	8	280,000	0	1	2	5
	P	7	335,714	0	0	0	7
	Total	15	306,000	0	1	2	12
SUDAN							
Notified sites	T	8	1,062,375	0	0	3	5
	P	17	189,735	2	2	6	7
	Total	25	468,980	2	2	9	12
Proposed sites	T	1	76,000	0	0	1	0
	P	10	150,620	0	3	2	5
	Total	11	143,836	0	3	3	5
UGANDA							
Notified sites	T	6	138,934	0	1	2	3
	P	31	124,081	1	5	17	8
	Total	37	126,490	1	6	19	11
EAST SAHELIAN AFRICA							
Notified sites	T	55	282,395	6	9	20	20
	P	106	239,242	5	14	40	47
	Total	161	253,984	11	23	60	67
Proposed sites	T	13	187,021	1	1	6	5
	P	17	226,835	0	3	2	12
	Total	30	209,582	1	4	8	17

Note that N (the total number of conservation areas) does not necessarily equate to N in Table 7.3, because the areas of some individual properties may be unknown.

Countries for which there are no relevant data are not included in the table.

Table 7.5

State parties to international (and regional) conventions or programmes concerning the conservation of natural areas, together with the number of properties (natural or mixed natural/cultural in the case of the World Heritage Convention) recognised under respective conventions in brackets.

	World Heritage Convention	Biosphere Reserves¹	Ramsar Convention	African Convention
Djibouti	-	-	-	R
Ethiopia	1977 (1)	-	-	S
Kenya	1991 (0)	1978 (5)	1990 (1)	R
Somalia	-	-	-	S
Sudan	1974 (0)	1979 (2)	-	R
Uganda	1987 (0)	1979 (1)	1988 (1)	R

¹Unesco MAB Project 8

R = ratified

S = signatory

Table 7.6 Summary of national priorities for action relating to conservation areas.

COUNTRY	Legislation	Completing the network	Managing the network
Djibouti	Strengthen and broaden legislation	Extend to Mabilia mountains	Develop management plans
Ethiopia	Enact legislation	Expand network by inclusion of national forest priority areas	Strengthen the Natural Resources Conservation and Development Main Department
Kenya	Update legislation	Implement systems plan and extend forest reserve network	Strengthen relationship between Kenya Wildlife Service and the Forest Department
Somalia	Update legislation	Establish representative network	Create Somali Wildlife Service
Sudan	Enact new forest legislation allowing for protection within forest reserves	Expand network to include desert and Sahelian zones	Strengthen wildlife and forestry organisations; coordination of activities throughout the country
Uganda	Update and broaden legislation	Extend ecosystem protection in the form of forest parks and nature reserves	Strengthen Uganda National Parks, and Game and Forest departments

Annex 7.1

List of conservation areas. Locations of most notified conservation areas are shown in the accompanying maps in Part III

DJIBOUTI

Integral Reserve			
1 Maskali Sud			1980
Subtotal	1 site	ha*	
National Park			
2 Foret du Day		10,000	1939
Subtotal	1 site	10,000 ha	
Territorial Park			
3 Musha			1972
Subtotal	1 site	ha*	
Totals			
Existing conservation areas	3 sites	10,000 ha*	
Proposed conservation areas	0 sites	ha	

* Subtotal is incomplete because of missing data.

ETHIOPIA

Controlled Hunting Areas

1 Afdem-Gewane		593,200	1973
2 Akobo		504,900	1973
3 Arsi		1,087,600	1973
4 Awash West		913,600	1973
5 Bale		966,300	1973
6 Borana		4,536,600	1973
7 Boyo Swamp			1983
8 Chercher & Arba Gugu		304,500	1973
9 Dabus Valley		212,700	1973
10 Eastern Hararghe (Harar-Wabi Shebelle)		2,378,800	1973
11 Erer-Gota		238,600	1973
12 Jikao		337,500	1973
13 Maze			1983
14 Mizan-Teferi			1985
15 Murle		417,200	1973
16 Omo West		456,100	1973
17 Segen Valley			1983
18 Tedo		234,700	1973
Subtotal	18 sites	13,182,300	ha*

Marine National Park

19 Dahlac		200,000	1969
Subtotal	1 site	200,000	ha

National Parks

20 Abijatta-Shalla Lakes		88,700	1970
21 Awash		75,600	1966
22 Bale Mountains		247,100	1969
23 Gambella		506,100	1974
24 Mago		216,200	1978
25 Nechisar		51,400	1973
26 Omo		406,800	1966
27 Simen Mountains		17,900	1966
28 Yangudi Rassa		473,100	1976
Subtotal	9 sites	2,082,900	ha

Sanctuaries

29 Babile Elephant		698,200	1970
30 Senkelle Swayne's Hartebeest		5,400	1972
31 Yabello		253,700	1985
Subtotal	3 sites	957,300	ha

Wildlife Reserves

32 Alledeghi		183,200	1973
33 Awash West		178,100	1973
34 Bale		176,600	1973
35 Chew Bahr		421,200	1973
36 Gash-Setit		70,900	1959
37 Gewane		243,900	1973
38 Mille-Sardo		876,600	1973
39 Nakfa		163,900	1959
40 Shire		75,300	1973
41 Tama		326,900	1973
42 Yob		265,800	1959
Subtotal	11 sites	2,982,400	ha

Totals

Existing conservation areas	42 sites	19,404,900	ha*
Proposed conservation areas	0 sites		ha

* Subtotal is incomplete because of missing data.

KENYA

Forest Reserves¹

1 Aberdares (Central Muranga)	21,811	1943
2 Aberdares (Central Nyandarua)	48,156	1943
3 Aberdares (Central Nyeri)	33,059	1943
4 Arabuko Sokoke	41,764	1943
5 Bahati	10,187	1932
6 Bojoge	2,150	1991
7 Buda	668	1932
8 Bunyala	826	1956
9 Cheboyit	2,489	1941
10 Chembartigon	103	1949
11 Chemorogok	1,347	1949
12 Chemurokoi	3,966	1941
13 Chepalungu	4,977	1956
14 Chepkuchumo	320	1962
15 Cherial	43	1949
16 Choke (Mnjonyi)	74	1991
17 Dagoretta	764	1938
18 East Ngamba	1,070	1978
19 Eastern Mau	64,966	1941
20 Eburu	8,715	1932
21 Eldoret I & II	148	1966
22 Embakasi	573	1941
23 Embobut	21,934	1954
24 Escarpment	74	1941
25 Fururu	14	1991
26 Gogoni	824	1932
27 Gonja	842	1961
28 Ikilisa	79	1960
29 Iveti	348	1933
30 Jombo	907	1941
31 Kabarok	1,392	1962
32 Kabiok	14	1949
33 Kaisungor	1,086	1941
34 Kakamega	19,792	1933
35 Kalimani	180	1960
36 Kamiti	170	1933
37 Kangure	188	1961
38 Kapchemutwa	8,954	1941
39 Kapchorua I	146	1941
40 Kapchorua IV	142	1941
41 Kapkanyar	6,037	1967
42 Kapolet	1,552	1941
43 Kapsaret	1,194	1932
44 Kaptagat	12,980	1941
45 Kaptaroi	328	1936
46 Kaptimom	89	1949
47 Karua A	28	1961
48 Karua B	137	1961
49 Karua C	45	1961
50 Karura	1,041	1932
51 Kasigau	202	1941
52 Katende	949	1960
53 Katimok	2,064	1949
54 Kemeto	210	1949
55 Kenze	188	1960
56 Kerrer	2,160	1954
57 Kessop	2,347	1941
58 Ketnwan	47	1949
59 Kiagu	1,366	1959
60 Kiambicho	376	1961
61 Kiambu	134	1932
62 Kiamuti	182	1961
63 Kibithewa	206	1959
64 Kibwezi	5,850	1936

65 Kieiga	546	1959
66 Kierera	793	1959
67 Kiganjo	302	1932
68 Kijabe Hill	706	1980
69 Kijegge	3,296	1959
70 Kikingo	1,234	1959
71 Kikuyu Escarpment	38,334	1943
72 Kilala	151	1960
73 Kilombe Hill	1,554	1936
74 Kilulunyi		1991
75 Kilungu	148	1933
76 Kimojoch	759	1949
77 Kinyesha Mvua	50	1991
78 Kinyo	324	1949
79 Kiongwani	34	1960
80 Kioo	45	1960
81 Kipipiri	5,019	1956
82 Kipkabus (Elg-Marak)	920	1961
83 Kipkabus (Uasin/Gishu)	5,827	1941
84 Kipkunurr	15,176	1941
85 Kiptaberr	12,886	1967
86 Kitalale	2,037	1977
87 Kitale Town	401	1932
88 Kiteta	22	1933
89 Kithendu	219	1960
90 Kitondu	1,085	1960
91 Kitoo	37	1960
92 Kitumbuuni	76	1960
93 Kiu (Ngungu)	83	1960
94 Kyai	106	1960
95 Kyemundu	141	1960
96 Lariak	4,998	1932
97 Lelan	14,820	1958
98 Lembus	12,276	1959
99 Leroghi	91,944	1936
100 Leshau	195	1960
101 Loitokitok	766	1977
102 Londiani	108	1932
103 Lugari	2,163	1977
104 Lusoi	260	1984
105 Maatha	639	1959
106 Macha	15	1991
107 Magumo North	242	1978
108 Magumo South	369	1979
109 Mailuganji	1,715	1941
110 Maji Mazuri	7,609	1932
111 Makongo-kitui	3,432	1961
112 Makongo-machakos	166	1960
113 Makuli-nguuta	1,653	1960
114 Malaba	719	1933
115 Mangrove Swamp	45,068	1932
116 Maragoli	470	1957
117 Marenji	1,529	1967
118 Marmanet	23,329	1932
119 Marop	217	1949
120 Marsabit	15,281	1932
121 Mataa	43	1960
122 Matthews Range	93,766	1956
123 Mau Narok	797	1967
124 Mbili	10	1991
125 Mchungunyi	8	1991
126 Menengai	5,990	1977
127 Meru (Lower Imenti)	2,462	1938
128 Meru (Upper Imenti)	10,388	1938
129 Metkei	1,987	1954
130 Mkongani North	1,113	1956
131 Mkongani West	1,366	1956

132	Modagache (Weni-tole)	3	1991
133	Molo	902	1932
134	Momandu	139	1955
135	Mosegem	204	1949
136	Mount Elgon	73,706	1932
137	Mount Kenya	200,871	1943
138	Mount Londiani	29,682	1932
139	Mount Nyiru	45,932	1956
140	Mrima	377	1961
141	Mtarakwa	112	1949
142	Muguga	225	1938
143	Mukobe	749	1962
144	Mukogodo	30,190	1937
145	Mumbaka	479	1986
146	Mumoni Hill	2	1938
147	Munguni	194	1959
148	Muringato Nursery	25	1932
149	Mutejwa	1,376	1959
150	Mutharanga	300	1959
151	Mutito	1,959	1962
152	Mutula	567	1960
153	Mwachi	417	1938
154	Mwachora	6	1991
155	Mwakamu	2	1991
156	Mwandongo	688	1991
157	Nabkoi	3,015	1932
158	Nairobi Arboretum	30	1932
159	Nakuru	619	1977
160	Namanga Hill	11,784	1979
161	Namuluku	8	1986
162	Nandi North	10,501	1936
163	Nandi South	19,502	1936
164	Nanyungu	16	1986
165	Ndare	5,554	1932
166	Ndatai	14	1960
167	Ndiwenyi	6	1991
168	Ndotos Range	97,165	1956
169	Nduluni-kalani	110	1960
170	Ngaia	4,140	1959
171	Ngamba	1,070	1961
172	Ngong Hills	3,077	1985
173	Ngong Road	1,325	1932
174	Njuguni	2,003	1959
175	North Mbooni	40	1933
176	Nthangu	844	1960
177	Ntugi	1,379	1959
178	Nuu	3,533	1961
179	Nyambeni	5,391	1959
180	Nyamweru	797	1941
181	Nyeri	1,135	1932
182	Nyeri Hill	192	1944
183	Nyeri Municipality	8	1987
184	Nzau	967	1960
185	Ol-arabel	9,365	1941
186	Ol-bolossat	3,327	1938
187	Ol-pusimoru	16,833	1957
188	Ololua	668	1941
189	Pemwai	148	1949
190	Perkerra Catchment	4,359	1962
191	Rumuruti	6,367	1932
192	Saimo	751	1949
193	Sanao	300	1949
194	Sekenwo	862	1962
195	Sekhendu	804	1977
196	Shimba	19,243	1956
197	Sogotio	3,561	1941
198	Sokta Hill	164	1949

199	South Laikipia		3,472	1932
200	South Mbooni		208	1933
201	South-western Mau		82,411	1932
202	Southern Mau		136	1941
203	Susu		2	1991
204	Tarambas Hill		423	1949
205	Taressia		385	1936
206	Thunguru Hill		631	1959
207	Thuuri		735	1959
208	Timau		295	1950
209	Timboroa		5,891	1932
210	Tinderet		27,870	1932
211	Tinderet North		26,150	1932
212	Tingwa Hill		915	1954
213	Toropket		117	1941
214	Transmara		35,270	1941
215	Tulimani		326	1960
216	Tumeya (Elgeyo Marakwet)		366	1961
217	Tumeya (Uasin Gishu)		215	1941
218	Turbo		10,788	1968
219	Tutwain		12	1949
220	Uaso Narok		2,041	1960
221	Ururu		433	1936
222	Utangwa		55	1960
223	Utunene		166	1960
224	Uuni		93	1960
225	Waiya		263	1960
226	Wanga		77	1986
227	Weni-Mwana		5	1991
228	West Molo		275	1932
229	Western Mau		19,833	1932
230	Witu		3,938	1962
	Subtotal	230 sites	1,639,079 ha*	
Game Sanctuary				
231	Maralai		500	
	Subtotal	1 site	500 ha	
Marine National Parks				
232	Kisite/Mpunguti		3,900	1978
233	Malindi		600	1968
234	Mombasa		1,000	1986
235	Ras Tenewi		35,000	1991
236	Watamu		3,200	1968
	Subtotal	5 sites	43,700 ha	
Marine National Reserves				
237	Kiunga		25,000	1979
238	Malindi		21,309	1968
239	Mombasa		20,000	1986
240	Mpunguti		1,100	1978
241	Watamu		3,200	1968
	Subtotal	5 sites	70,609 ha	
National Parks				
242	Aberdare		76,619	1950
243	Amboseli		39,206	1974
244	Arabuko Sokoke		600	1990
245	Central Island		500	1983
246	Chyulu		47,090	1983
247	Hell's Gate		6,800	1984
248	Kora		178,780	1989
249	Lake Nakuru		18,800	1967
250	Longonot		5,200	1983
251	Malka Mari		87,600	1989
252	Meru		87,044	1966
253	Mount Elgon		16,923	1968

254 Mount Kenya	71,759	1949
255 Nairobi	11,721	1946
256 Ndere Island	420	1986
257 Ol Donyo Sabuk	1,842	1967
258 Ruma	12,000	1983
259 Saiwa Swamp	192	1974
260 Sibiloi	157,085	1973
261 South Island	3,880	1983
262 Tsavo East	1,174,700	1948
263 Tsavo West	906,500	1948
Subtotal	22 sites	2,905,261 ha

National Reserves

264 Arawale	53,324	1974
265 Bisanadi	60,600	1979
266 Boni	133,900	1976
267 Buffalo Springs	13,100	1985
268 Dodori	87,739	1976
269 Kakamega	4,468	1985
270 Kamnarok	8,774	1983
271 Kerio Valley	6,570	1983
272 Lake Bogoria	10,705	1970
273 Losai	180,680	1976
274 Marsabit	208,800	1949
275 Masai Mara	151,000	1974
276 Mwea	6,803	1976
277 Nasolot	9,200	1979
278 Ngai Ndethya	21,209	1976
279 North Kitui	74,500	1979
280 Rahole	127,000	1976
281 Samburu	16,500	1985
282 Shaba	23,910	1974
283 Shimba Hills	19,251	1968
284 South Kitui	183,300	1979
285 South Turkana	109,100	1979
286 Tana River Primate	16,900	1976
Subtotal	23 sites	1,527,333 ha

Nature Reserves

287 Arabuko Sokoke	4,332	1979
288 Cheptugen-Kapchemutwa	31	
289 Kaimosi Forest	19	
290 Kaptagat Forest		
291 Karura	102	
292 Katimok Kabarnet	58	
293 Langata	96	
294 Mbololo		
295 Nandi North	3,434	1978
296 South-Western Mau	43,032	1961
297 Uaso Narok	1,575	1981
Subtotal	11 sites	52,679 ha*

Proposed (Forest Reserves)

Aroso	294	
Awach Nursery	2	
Aywaya	142	
Bondoni		
Boni	18,466	
Bura Nursery	10	
Chawia	86	
Chepnyal	920	
Cheptiram	567	
Chonyi-kaya	195	
Endau (Kenya)	6,718	
Fighi Juu Mkumu	1,000	
Fungo-kaya	100	
Gaikuyu	3,075	

Gembe	1,987
Giribe	44
God Kwach	5
Goye	8
Gwasi	12,140
Homa	1,062
Huri Hills	30,000
Igho Mkundu	2,000
Igi Ikumu	100
Imba	732
Irizi	476
Jaycee	10
Jibana-kaya	150
Kabonge	31
Kakuzi Hill	1,800
Kalangu	200
Kamatira	1,910
Kambe-kava	57
Kanzulu	100
Karaini	24
Karangu	101
Kasigau Nursery	3
Kauma-kaya	100
Kaya Ribe	36
Kegonga	9
Kiambere	643
Kiangombe	2,104
Kianjiru	1,004
Kibauni	2,000
Kigala	200
Kingatua	58
Kiria	
Kirimiri	101
Kitovo	161
Kodera	694
Kodera Forest Area	12
Koguta	413
Kotim	3,295
Kuja Bull Camp	18
Kwa Hill	2
Kwisagat	1,909
Kyawea	63
Lambwe	2,516
Latema	41
Loima Hills	10,000
Lowero Hills	121
Lungi	9,517
Maeta Hill	36
Mai	515
Maimu	500
Makinyambu	405
Makutani	81
Mango	45
Mangrove (Mto Tana)	250
Mangrove (Res Mwachera)	5
Marabu-Magina	25
Maranga	219
Marigat	41
Masai Mau	45,744
Matha	100
Mavindi	100
Mbololo Juu	69
Mbololo Mwambirua	18
Mikuro	100
Miriu	171
Mngambua (Mwawanyu)	1,000
Molinduko	194

Mount Kulal		45,729
Mraru		200
Mugabwa (Ngabwa)		405
Mumoni		10,441
Museve		48
Mutha		1,785
Muthini		
Mutuluni		596
Mutunyi		2,035
Muune		100
Mwaganini		36
Mwarungu		200
Mworungu		400
Ndhoani		1,387
Ndune		
Ngangao		123
Ngorome		348
Njukini East		498
Njukini West		570
Nyamarere		
Nyasoko		22
Nyasumbi Hill		9
Ole Lengishu		4,633
Onoo Water Point		
Otacho		118
Rabai		600
Rabuor		50
Ramogi		283
Ranen		67
Rangwe		1,214
Ronge		318
Sagalla		70
Sagegi Hill		8
Salaita		41
Sekerr		8,021
Sodany Hill		202
Sungululu		50
Tana River (Bangali)		119,531
Tana River (Herimani I & II)		97,813
Tana River (Hewani)		2,699
Tana River (Kokani)		61,600
Tana River (Mbalambala)		3,910
Tana River (Mwina)		3,357
Tana River (Wayu I,II,III)		41,965
Twanyoni		
Usenge		63
Weni-mbogho		2
Wesu		50
Wire		392
Yale		22
Yekanga		100
Subtotal	132 sites	581,261 ha*
Proposed (Marine National Park)		
Diani Complex		250
Subtotal	1 site	250 ha
Proposed (National Parks)		
Arabuko Sokoke		36,000
Marsabit		36,000
South-Western Mau		43,032
Subtotal	3 sites	115,032 ha
Totals		
Existing conservation areas	297 sites	6,239,161 ha*
Proposed conservation areas	136 sites	696,543 ha*

* Subtotal is incomplete because of missing data.

¹Includes an unknown number of plantation reserves covering a total area of 165,000ha.

SOMALIA

Controlled Hunting Areas

1 Borama District		1969
2 Bushbush		1969
3 Juba Left		1969
Subtotal	3 sites	ha*

Game Reserves

4 Bushbush		334,000	1969
5 Geedkabeheleh		10,360	1969
6 Mandera			1969
7 Mogadishu			1969
Subtotal	4 sites	344,360	ha*

Nature Reserves

8 Alifuuto (Arbowerow)		180,000	
9 Balcad		190	1988
Subtotal	2 sites	180,190	ha

Partial Game Reserves

10 Belet Wein			1969
11 Bulo Burti			1969
12 Jowhar			1969
13 Oddur			1969
Subtotal	4 sites		ha*

Proposed (National Parks)

Angole Farbiddu			
Awdhegle-Gandershe		80,000	
Daalo Forest		251,000	
Gaan Libaah		50,000	
Gezira Lagoon		5,000	
Har Yiblana			
Jowhar-Warshek		220,000	
Lag Badana-Bushbush		334,000	
Lag Dere		500,000	
Las Anod-Taleh-El Chebet		800,000	
Rus Guba			
Subtotal	11 sites	2,240,000	ha*

Proposed (Wildlife Reserves)

Boja Swamps		110,000	
Eji-Oobale			
El Hammure		400,000	
Far Libah			
Far Wamo		140,000	
Haradere-Awale Rugno		250,000	
Harqan Dalandoole		800,000	
Hobyu		250,000	
Ras Hajun			
Zeila		400,000	
Subtotal	10 sites	2,350,000	ha*

Totals

Existing conservation areas	13 sites	524,550	ha*
Proposed conservation areas	21 sites	4,590,000	ha*

* Subtotal is incomplete because of missing data.

SUDAN

Game Reserves

1 Ashana		90,000	1939
2 Bengangai		17,000	1939
3 Bire Kpatuos		500	1939
4 Chelkou		550,000	1939
5 Fanyikango Island		48,000	1935
6 Juba		20,000	1939
7 Kidepo		120,000	1975
8 Mbarizunga		1,000	1939
9 Mongalla		7,500	1939
10 Numatina		210,000	1939
11 Rahad		350,000	1939
12 Sabaloka		116,000	1946
13 Tokar		630,000	1939
14 Zeraf		970,000	1939
Subtotal	14 sites	3,130,000	ha

Marine National Park

15 Sanganeb Atoll		26,000	1990
Subtotal	1 site	26,000	ha

National Parks

16 Bandingilo		1,650,000	1986
17 Boma		2,280,000	1986
18 Dinder		890,000	1935
19 Nimule		41,000	1954
20 Radom		1,250,000	1980
21 Shambe		62,000	1985
22 Southern		2,300,000	1939
Subtotal	7 sites	8,473,000	ha

Wildlife Sanctuaries

23 Arkawit		82,000	1939
24 Arkawit-Sinkat		12,000	1939
25 Khartoum Sunt Forest		1,500	1939
Subtotal	3 sites	95,500	ha

Proposed (Bird Sanctuaries)

El Rosieris Dam			
Jebel Aulia Dam			
Khashm el Girba Dam			
Lake Abiad			
Lake Keilak		3,000	
Lake Kundi		1,200	
Lake Nubia		10,000	
Sennar Dam			
Subtotal	8 sites	14,200	ha*

Proposed (Game Reserves)

Abroch			
Boro		150,000	
Machar			
Meshra		450,000	
Wadi Howar			
Subtotal	5 sites	600,000	ha*

Proposed (Managed Nature Reserve)

Mukawwar		12,000	
Subtotal	1 site	12,000	ha

Proposed (Marine National Park)

Port Sudan			
Subtotal	1 site		ha*

Proposed (National Parks)

Lantoto		76,000
Suakin Archipelago		
Subtotal	2 sites	76,000 ha*
Proposed (Nature Conservation Areas)		
Imatong Mountains		100,000
Jebel Elba		480,000
Jebel Marra massif		150,000
Lake Ambadi		150,000
Lake No		
Subtotal	5 sites	880,000 ha*
Totals		
Existing conservation areas	25 sites	11,724,500 ha
Proposed conservation areas	22 sites	1,582,200 ha*

* Subtotal is incomplete because of missing data.

UGANDA

Controlled Hunting Areas

1 Buhuka		1,750	
2 Central Karamoja (Napak)		22,451	
3 East Madi		175,220	
4 East Teso			
5 Kaiso Tonya		22,690	
6 Karuma		24,061	
7 Katonga		227,660	
8 Lipan		89,856	
9 North Karamoja		1,079,330	
10 North Teso			
11 Sebei		253,490	
12 Semliki		50,400	
13 South Karamoja		798,470	
14 West Madi		83,123	
Subtotal	14 sites	2,828,501	ha*

Game Reserves

15 Ajai		15,600	1962
16 Bokora Corridor		203,363	1964
17 Bugungu		74,830	1968
18 Karuma		71,272	1964
19 Katonga		20,662	1964
20 Kibale Forest Corridor		33,915	1964
21 Kigezi		38,232	1952
22 Kyambura		15,514	1965
23 Manteniko		158,656	1964
24 Plain Upe		228,715	1964
25 Toro		58,456	1929
Subtotal	11 sites	919,215	ha

National Parks

26 Gorilla (Mgahinga)		2,445	1991
27 Kidepo Valley		134,400	1962
28 Lake Mburo		53,600	1982
29 Mt Rwenzori		61,361	1991
30 Murchison Falls		384,000	1952
31 Queen Elizabeth*		197,800	1952
Subtotal	6 sites	833,606	ha

Nature Reserves

32 Igwe/Luvunya		1,080	1989
33 Kasagala		10,314	1976
34 Kisanju		2,117	1960
35 Maruzi Hills		6,829	1990
36 Ngogo		7,200	
37 North Mabira		3,355	
38 Ntendure Hill		913	1984
39 Nyakafunjo		710	1945
40 Rkungiri		268	
41 Waibira		3,210	1989
42 Wambabya		3,429	1989
43 Zoka		6,084	1990
Subtotal	12 sites	45,509	ha

Sanctuaries

44 Difule Animal		1,024	
45 Entebbe Animal & Bird		5,120	
46 Jinja Animal		3,261	
47 Kazinga Animal		2,243	
48 Malawa Bird		768	
49 Mount Kei White Rhino		45,220	
50 Otze Forest White Rhino		20,480	
51 Zoka Forest Elephant		20,700	
Subtotal	8 sites	98,816	ha

Sites of Special Scientific Interest			
52 Buto-Buvuma		1,096	1989
53 Kifu		1,419	1989
54 Mpanga		453	1989
55 Nile Bank		606	1989
Subtotal	4 sites	3,574 ha	
Proposed (Nature Reserve)			
West Bugwe		3,054	
Subtotal	1 site	3,054 ha	
Totals			
Existing conservation areas	55 sites	4,729,221 ha*	
Proposed conservation areas	1 site	3,054 ha	

* Subtotal is incomplete because of missing data.

Annex 7.2 Extent of notified forests by forest origin and forest function. Non-forest includes both degraded forest and lands not forested at the time of their reservation.

Region: Africa

Sub-region: East Sahelian Africa

Name of country/state: Djibouti

Total area (sq.km): 23200

Land area (sq.km): 23180

Month/year of reference: 1990

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural						
Non-forest						
Plantation						
TOTAL	0	0	0	0	0	0

Notes: There are no forest reserves in Djibouti.

Annex 7.2 (continued)

Region: Africa

Sub-region: East Sahelian Africa

Name of country/state: Ethiopia

Total area (sq.km): 1221900

Land area (sq.km): 1101000

Month/year of reference: August 1991.

FOREST ORIGIN	P R O D U C T I O N		P R O T E C T I O N		C O N S E R V A T I O N	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural		1628738		2443107		
Non-forest						
Plantation						
TOTAL	0	1628738	0	2443107	0	0

Notes: Data provided by Kidane (State Forest Conservation and Development Department), pers. comm., 30 August 1991.
295

National forest priority areas are awaiting legal gazettelement.

Most national forest priority areas serve a variety of production, conservation and protection functions and are being subdivided into relevant management blocks.

60% of national forest priority areas are inaccessible for commercial purposes (EFAP, 1991). 2,443,107 ha out of a total of 4,071,845 ha (60 %) has therefore been placed in the protection forest category.

Annex 7.2 (continued)

Region: Africa

Sub-region: East Sahelian Africa

Name of country/state: Kenya

Total area (sq.km): 580370

Land area (sq.km): 569690

Month/year of reference: August, 1991.

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural					1474079	581261
Non-forest						
Plantation	165000					
TOTAL	165000	0	0	0	1474079	581261

Notes: Data provided by Omollo & Blackett, August 1991; Blackett, March, 1992.

Forest reserves in Kenya have not been classified under the forest function categories above. However, the government banned all felling of indigenous trees in 1986. Therefore, the area of forest reserves, apart from the 165,000 ha of industrial plantations, has been placed under conservation forest.

There is about 53,000 ha of nature reserves found within forest reserves and constitutes part of the total in the above table.

Annex 7.2 (continued)

Region: Africa

Sub-region: East Sahelian Africa

Name of country/state: Somalia

Total area (sq.km): 637660

Land area (sq.km): 627340

Month/year of reference: October 1991.

FOREST ORIGIN	P R O D U C T I O N		P R O T E C T I O N		C O N S E R V A T I O N	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural						
Non-forest						
Plantation						
TOTAL	0	0	0	0	0	0

Notes: According to Simonetta (pers. comm., 1987), there are 27 "protected forests" in the country. No further data is available.

Annex 7.2 (continued)

Region: Africa

Sub-region: East Sahelian Africa

Name of country/state: Sudan

Total area (sq.km): 2505810

Land area (sq.km): 2376000

Month/year of reference: September, 1991.

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	1270000	1600000				
Non-forest						
Plantation						
TOTAL	1270000	1600000	0	0	0	0

Notes: Data provided by Ali, pers. comm., 1991.

According to the Central Forests Act, forest reserves serve protection/conservation and production functions.

Annex 7.2 (continued)

Region: Africa

Sub-region: East Sahelian Africa

Name of country/state: Uganda

Total area (sq.km): 235880

Land area (sq.km): 199550

Month/year of reference: May 1990

FOREST ORIGIN	F O R E S T		F U N C T I O N		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	357510	131827	114491		806708	3054
Non-forest						
Plantation	25900					
TOTAL	383410	131827	114491	0	806708	3054

Notes: Data provided by Byarugaba (Forest Department), pers. comm., 21 May 1990; Kiwanuka (Forest Department), pers. comm., July 1990; Department of Environment Protection, 1992.

The total area of nature reserves (45,509 ha) which occurs within natural production forest is included under conservation forest. Conservation forest also includes 2 protection forests (125,625 ha), 4 sites of special scientific interest (3,574 ha) and 461 savanna woodland reserves (632,000 ha).

One nature reserve constitutes the total in the proposed conservation forest category, while the 131,827 ha in the proposed production forest category is forest parks (Kiwanuka, pers. comm., 1991).

The 114,491 ha of protection forest is located in tropical high forest (production).

Several forest reserves have dual status as game reserves, animal sanctuaries or national parks.

8 WEST AFRICA



Km



8 WEST AFRICA

Benin, Côte d'Ivoire, Ghana, Guinea, Liberia, Nigeria, Sierra Leone, Togo

8.1 HISTORICAL PERSPECTIVE

Protection of nature in West Africa has its origins in oral customary law, traditional rules and taboos concerning hunting. Examples from Ghana include the protection of snails and tree species in sacred groves of the closed forest zone, and the establishment of a monkey sanctuary at Boabeng-Fiema in the Brong-Ahafo region. At Boabeng-Fiema, mona and black and white colobus monkeys are considered sacred and are protected as such.

The first protected areas were created in the early 20th century, when most of the countries in the region were under colonial rule. Colonial authorities in the subregion were Britain (Ghana, Nigeria, Sierra Leone) and France (Benin, Cote d'Ivoire, Guinea, Togo). Liberia is an exception in not having been subject to colonial rule.

8.2 NATURE CONSERVATION POLICY AND LEGISLATION

Legal provisions for the establishment of protected areas have been passed in all countries within the subregion. These are summarised in Table 8.1 and reviewed below.

Conservation areas in the subregion are designated either under the forest law, or under separate wildlife law. In both cases, designations are generally similar and follow those given in the African Convention of 1968. This provides definitions of strict nature reserve, national park and special reserve (which includes other areas such as game reserve, partial reserve, sanctuary and soil, water and forest reserve).

8.2.1 Forestry Sector

Policy Information on forest policy is only available for Ghana, Guinea, and Sierra Leone. In general, the role of forests, both in serving a conservation function and as a natural resource, is recognised in all three countries.

Legislation Forest policy and forest law in colonial Africa were based on experience from continental Europe, and reflect the idea, common at the time, that nature provides a readily exploited resource. Legislation principally concerned land tenure, and forest exploitation.

In British colonies, the early administrators followed the pattern of reservation of forest lands adopted in India. This mainly concerned establishment within a legal framework of a permanent forest estate the boundaries and use of which could only be amended by the highest authority in the land.

In francophone countries within the subregion, legislation was derived directly from France, a country with a long experience of temperate forestry. This legislation was based on the principle of Roman legislation, according to which any unoccupied land where existence of written ownership documents could not be proved, belonged to the state. All forest lands were thus declared state property, although local populations exercised many usage rights. Contradiction between oral customary law and the written regulations of the forest law resulted in a general reluctance of local people to accept the delineation of reserve forests. Since independence, French-speaking countries have tried to amend the regulations on forest ownership. However, as a general rule, the whole forest area is still considered to be state property (*forêt domaniale*), the concept of private forests being virtually non-existent.

Throughout francophone countries, the concept still exists of state forests comprising classified forests and protected forests. Classified forests are gazetted areas in which customary rights of use are generally permitted, but which are otherwise generally protected. Protected forests comprise that part of the state forest not subject to individual classification orders, which therefore do not appear in Table 8.1. Within protected forests,

uncontrolled clearing and unauthorised logging are forbidden, as well as the regulation of customary rights which the population could otherwise exercise without restraint.

Most current forest laws within the subregion contain some reference to the multiple role and uses of forests for environmental protection and raw material production.

Information on existing forest legislation is not available for Togo, but a new Code de la Forêt et de la Faune is due to be passed, which will make Togo the only country within the subregion not to have separate forest and wildlife legislation.

8.2.2 Wildlife Sector

Policy Information on wildlife policy is available only for Ghana, Liberia, Nigeria and Sierra Leone. In these countries, the importance of preserving wildlife is stressed. The need to ensure that local people benefit from protected areas is also recognised, for example, by permitting the use of protected areas as a source of bushmeat.

Legislation All countries within the region, other than Togo, have passed wildlife legislation designating protected areas. There is often close interlinkage between this and the forest legislation. Present nature conservation legislation in the subregion generally follows the 1968 (Algiers) African Convention. Designations are for national parks, strict nature reserves, wildlife sanctuaries, hunting reserves and sport hunting reserves, definitions of each category generally being similar throughout the region. The highest degree of protection is given in strict nature reserves, where access is only permitted for management purposes and scientific research. National parks are open to tourism, but residence is not permitted. Sanctuaries are for the protection of named species. Reserves in which hunting is permitted comprise hunting reserves, where subsistence hunting is allowed, and sport hunting reserves, where hunting for sport is permitted, usually following purchase of a permit. In general, many categories of conservation area have been defined for which there are as yet no examples on the ground.

8.2.3 Other Sectors

Not applicable

8.3 MANAGED AREAS ADMINISTRATION

Departments responsible for administration of protected areas are given in Table 8.1. Categories are listed according to the language used in the original legislation. A glossary of terms (French, Portuguese and French) is given in Part I.

8.3.1 Forestry Sector

Administration of forestry is the responsibility of forest departments in the respective countries (Table 8.1). Most have histories dating back to colonial times, earlier this century. For all countries for which data is available, the forestry sector is responsible for at least some of the conservation areas.

8.3.2 Wildlife Sector

Conservation areas are generally managed under a single administrative organisation within the forest departments of countries within the subregion. The Wildlife Division has been upgraded to departmental status in Ghana, and recommendation has been made for upgrading the wildlife and national parks section in Liberia. Separate wildlife sections have not been established in Guinea or Togo, conservation areas in these countries being administered by the Forestry Sector.

8.3.3 Other Sectors

Not applicable

8.3.4 Non-Governmental Organisations

Togo provides the only example in the subregion of management being entrusted to a non-governmental organisation. Management of Fazao-Malfakassa Faunal Reserve has been passed to the F. Weber Convention for a period of 25 years, starting in 1990 (Bleich, 1991).

8.4 MANAGED AREAS STATUS

The managed areas system is mapped (where possible) for each country within the subregion, in Figs 8.1-8 (Part III). Details of individual conservation areas are given in Annex 8.1 which serves as a key to the maps.

8.4.1 Managed Areas within the Forestry Sector

Coverage Data for the subregion, although far from up-to-date, is rather more complete than for the neighbouring subregions of West Sahel and Central Africa. Managed areas within the forestry sector account for approximately 9.4% of the total area of West Africa (Table 8.2). As available data is incomplete, this should be considered a minimum figure. Managed areas within the forestry sectors of the subregion are most extensive in Liberia (13%), although this area comprises solely production forest. By contrast, in Benin, which ranks second in this table, all the 12% of land managed within the forestry sector comprises conservation forest. Of the countries for which data was available, Togo has the lowest figure (1.8%) for managed areas within the forest sector.

8.4.2 Conservation Areas within Forestry, Wildlife and Additional Sectors

Coverage There are over 386 legally designated conservation areas in West Africa covering a total area of over 14 million ha or 6.7% of the subregion (Table 8.3). Approximately 8.7% of these conservation areas are under total protection, covering 3.1% of the subregion. The rest are partially protected. The totally protected areas tend to be much larger than the partially protected areas, such that the area covered by the two categories is roughly equal.

The 10% target of total area under protection for conservation purposes has been reached only by Benin, Cote d'Ivoire and Togo. Benin has by far the largest protected areas system within the region, due to several large reserves in the north of the country. The protected area systems of Liberia and Sierra Leone are the smallest in the subregion, covering less than 2% of each country.

Representativeness Representativeness of the protected area systems within the subregion varies widely. The systems of Cote d'Ivoire and Togo are extensive, and are considered to be adequate, particularly as most habitat types are represented. Two of the habitats protected within Cote d'Ivoire are only protected in one other country: dense humid Guinean forest in Ghana and mangroves in Senegal. The systems of Ghana, Guinea and Nigeria are comparable, although less extensive, in being fairly well dispersed throughout the countries, and representing most habitat types.

Although Benin has by far the most extensive protected areas system within the subregion, distribution is very uneven, all areas being in the north of the country, on the border with Burkina Faso and Niger.

Sierra Leone has a small protected areas system. However, when sites which are currently proposed are finally gazetted, all the vegetation types in the country will be covered.

Ecofloristic zone analysis [pending data from FAO]

Integrity Data in Table 8.4 indicate that conservation areas under the wildlife sector tend to be large or very large throughout the subregion. Mean size of totally protected areas is in all cases at least double that of partially protected areas. National parks form the bulk of the former category and, by definition, they tend to be relatively large areas to provide a range of services.

In contrast, mean size of conservation areas within the forestry sector tend to be far smaller, throughout the subregion.

Effectiveness Apart from inadequate representation of the subregion's biological diversity within existing conservation area networks, conservation efforts are limited by weaknesses in policy, legislation, institutional support and management. Existing legislation frequently needs strengthening or updating (Table 8.6). Management plans for conservation areas within the region generally do not appear to exist.

The general lack of commitment of resources for conservation areas is largely responsible for many of the deficiencies in their management, which generally is ineffective or in some cases non-existent. Enforcement is very often handicapped by the absence of clearly-demarcated boundaries that are easily recognisable on the ground. Encroachment by people is ubiquitous, few conservation areas being free of this problem.

8.4.3 Contribution of the Forestry Sector to Nature Conservation

The forestry sector is directly responsible for the vast majority (90%) of the conservation areas within the subregion, which cover a total area of approximately 7 million ha or 3.4% of the region. However, these conservation areas largely comprise classified forests, which in general are small. Therefore, the total area for which the forestry service is responsible is actually slightly less than the area covered by the 31 conservation areas for which the wildlife sector is responsible.

Data in Table 8.2 suggest that the contribution of the forestry sector to nature conservation is minimal (3.3%) in terms of the total area of the subregion under protection and conservation forest. However, this figure is almost certainly minimal, and the contribution of the forestry sector to protection and conservation is probably higher than suggested by the statistics because data are incomplete.

The contribution of the forestry sector to conservation is further underestimated, as no figures are available of the extent of protected forests, which are legislated for in all francophone countries within the subregion. Protected forests comprise virtually all land outside gazetted areas, in which felling, amongst other things is prohibited, and which thus serve a conservation function.

8.5 FUTURE PROSPECTS

8.5.1 Expanding the Conservation Area Network

There appear to be relatively few official proposals to expand the conservation area network. Figures in Table 8.3 show a total for 54 proposed sites covering 1,176,529ha or 0.6% of the total area of the subregion. Approximately equal numbers fall within the wildlife and forestry sectors, although the wildlife sector represents the bulk of the area covered.

8.5.2 Other National Initiatives

Strengthening networks No information

Overcoming Economic Constraints Funding is a major factor which limits the effective management of conservation areas throughout the region.

Improving Management Throughout the region an increase in funding is necessary to enable adequate management. Problems in recruiting sufficient trained professional staff are common. Guinea has a particular problem in having an excess of staff, who are largely unmotivated. Reducing the numbers and increasing training is considered a priority task.

8.5.3. International Initiatives

Conventions and Programmes All countries within the region, apart from Togo, participate in one or more international conventions and programmes concerned with conservation areas (Table 8.5). Only Ghana is party to the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention), hence Owabi, Ghana's only Ramsar site, is the single Ramsar site within the subregion.

Cooperative Agreements Guinea and Cote d'Ivoire cooperate in the management of Mount Nimba, which is a joint World Heritage site. A Conseil d'Entente with Niger, Burkina Faso, Côte d'Ivoire and Togo provides an administrative structure for cooperation between neighbouring countries, although the relevance of this to managed areas is not clear. A proposal to set up a single authority to manage the three contiguous "W" national parks in Burkina Faso, Benin and Niger, totalling over 1 million ha, and to raise funds for its operation, is being considered.

8.6 PRIORITIES FOR ACTION

Priorities for conservation action in the subregion were reviewed in the now dated *IUCN Systems review of the Afrotropical Realm* (MacKinnon and MacKinnon, 1987) and the accompanying Action Strategy (IUCN, 1987).

Priorities have been reviewed more recently (IUCN, 1992) for the IV World Congress on National Parks and Protected Areas. These are generalised, recognising that translation of priorities into action will vary according to national conservation objectives, history and political will. They provide a foundation to the more specific priorities identified in this report and summarised in Table 8.6. The *Sudano-Sahelian PLATFORM for Action on UNCED Negotiations and Beyond: A Contribution to the African Position* (Anon, 1991), concerning environmental degradation within the Sahel, was drawn up for UNCED 1992, following two consultative meetings of 22 Sudano-Sahelian countries, including several from the West Africa subregion. The report highlights the link between poverty and mismanagement of natural resources, particularly exploitation of marginal lands and deforestation. Recommendations include action to be taken at both the international and African level.

In conclusion, progress in the subregion has been seriously hampered by the environmental conditions (i.e. drought), and the demand on resources by rapidly growing human populations. Although mostly aware of the need for conservation area networks, well-funded institutions and up-to-date policy and legislation, governments in the subregion have generally not been able to ensure these are established.

REFERENCES

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- Anon. (1991). *Sudano-Sahelian PLATFORM for Action on UNCED Negotiations and Beyond: A Contribution to the African Position*. Prepared by the 22 Sudano-Sahelian Countries. CILSS, UNSO, IGADD. 22 pp.
- Bleich, M. (1991). *Rapport de la saison 90-91. Parc national de Malfakassa-Fazao/Togo*. Unpublished. 14 pp.
- IUCN (1987). *Action strategy for protected areas in the Afrotropical Realm*. IUCN, Gland, Switzerland and Cambridge, UK. 56 pp.
- Frame, G.W. and Tanghanwaye, N.N. (1991). *African Elephant Action Plan Togo National Plan for Elephant Conservation*. Ministry of Environment and Tourism, Lome, Togo. 77 pp.
- MacKinnon, J. and MacKinnon, K. (1986). *Review of the protected areas system in the Afrotropical Realm*. IUCN, Gland, Switzerland and Cambridge, UK/UNEP, Nairobi, Kenya. 14 pp.
- Stuart, S.N. and Adams, R.J. (1990). *Biodiversity in Sub-saharan Africa and its islands: conservation, management and sustainable use*. IUCN, Gland, Switzerland. 242 pp.

Table 8.1 Legal provisions for protected areas, with year of enactment and responsible administrative authority. Protected areas are classified according to management objective (T = total protection, P = partial protection, L = local extractive use, C = commercial extractive use).

Country	Legislation		Administrative authority	Managed areas		
	Year	Title [Sector]		Man.	Designation	
Bénin	1987	Loi No. 87-012 portant Code forestier [F]	Service forestier	P	Forêt classée	
				P	Forêt protégée	
				P	Périmètre de reboisement	
				?	Réserve	
				P	Zone cynégétique	
	1987	Loi No. 87-014 portant réglementation de la protection de la nature et de l'exercice de la chasse [W]	Service de Faune et Parcs Nationaux	T	Parc national	
				P	Réserve de faune	
				T	Réserve naturelle intégrale	
				P	Réserve spéciale	
				P	Zone cynégétique	
Côte d'Ivoire	1978	Décret No. 78-231 fixant les modalités de gestion du Domaine forestier de l'Etat [F]	Ministère des Eaux et Forêts	P	Domaine forestier permanent de l'Etat	
				C	Domaine forestier rural de l'Etat	
	1965	Loi No. 65-425 portant Code forestier [F]	Ministère des Eaux et Forêts	C	Forêt classée	
				P	Forêt protégée	
				P	Périmètre de protection	
				P	Périmètre de reboisement	
		1966	Décret No. 66-433 portant statut et réglementation de la procédure de classement et de déclassement des réserves naturelles intégrales ou partielles et des parcs nationaux [W]	Secrétariat d'Etat aux Parcs Nationaux	T	Parc national
					P	Réserve de faune
			T		Réserve naturelle intégrale	
			P		Réserve naturelle partielle	

Ghana	1927	Forest Ordinance (Cap. 157) [F]	Forestry Department	P P L C P P	Amenity forest Forest reserve Private forest Production forest Protection forest Sacred grove
	1974	Trees and Timber Decree [F]	Forestry Department	P	Protected area
	1961	Wild Animals Preservation Act [W]	Department of Game and Wildlife	P T T P	Game production reserve National park Strict nature reserve Wildlife sanctuary
Guinea	?	Legislation unknown [F]	Direction Nationale des Forêts et Chasses	P	Forêt classée
	1990	Ordonnance No. 007/SGG/90 portant code de la protection de la faune sauvage et réglementation de la chasse [F]	Direction Nationale des Forêts et Chasses	T P P T P P P P P	Parc national Réserve naturelle gérée Réserve naturelle intégrale Réserve spéciale Zone de chasse Zone d'intérêt cynégétique Sanctuaire
Liberia	1953	Act for the Conservation of the Forests [W]	Forestry Development Authority	L P T T P P	Communal forest Government forest reserve National park Native authority forest reserve Wildlife refuge
	1988	Wildlife and National Parks Act [W]	Wildlife and National Parks Section, Forest Development Authority [W]	L P P T T T	Communal forest reserve Controlled hunting area Game reserve National park Nature reserve
	?	Legislation unknown [W]	?	P P	Conservation area Nature conservation unit

Nigeria	1937	Forestry Ordinance - Northern Region [F]	Department of Forestry (Northern Region)	P	Communal forestry area
	?	Legislation unknown [F]	State Departments of Forestry	T	Government forest reserve and protected forest
	?	Legislation unknown [F]	State Departments of Forestry	P	Native authority or local government council forest reserve
Sierra Leone	1991	Federal National Parks Decree No. 36 [W]	National Parks Board	T	Strict nature reserve
	1988	Forestry Act [F]	Forestry Division	C/L	Game reserve
	1990	Forestry Regulations [F]	Forestry Division	C	National park
	1972	Wild Life Conservation Act No. 27 [W]	Wildlife Conservation Branch	P	Community forest
				P	National production forest
				C/L	National protection forest
Togo	1988	Code de l'Environnement [F]	Direction des Forêts, des Chasses et de l'Environnement	P	Protected area
	?	Legislation unknown (to be included within proposed Code de la Forêt et de la Faune) [F]		P	Community forest
				T	Sacred bush area
				P	Unclassified forest
				P	Controlled hunting area
				P	Game reserve
				T	Game sanctuary
				T	National park
				P	Non-forest hunting area
				T	Strict natural reserve
				P	Zone d'environnement protégée
				P	Réserve de faune
				T	Parc national
				P	Forêt classée

Table 8.2 Extent of notified natural forests, classified by forest function. Units are in sq. km, followed by % total area. Full data, with sources, are given in Annex X.2.

Country SUBREGION	Total area	F O R E S T F U N C T I O N			T o t a l
		Production	Protection	Conservation	
Benin	112,620	0	0	13,737 (12.2)	13,737 (12.2)
Côte d'Ivoire	322,460	23,787 (7.4)	0	12,222 (3.8)	36,009 (11.2)
Ghana	238,540	12,560 (5.3)	6,396 (2.7)	0	18,956 (7.9)
Guinea	245,860	0	8,931 (3.6)	1,635 (0.7)	10,566 (4.3)
Liberia	111,370	14,453 (13.0)	0	0	14,453 (13.0)
Nigeria	923,770	76,492 (8.3)	0	20,988 (2.3)	97,480 (10.5)
Sierra Leone	71,740	2,853 (4.0)	0	0	2,853 (4.0)
Togo	56,790	0	0	1,042 (1.8)	1,042 (1.8)
WEST AFRICA	2,083,150	130,145 (6.2)	15,327 (0.7)	49,624 (2.4)	195,096 (9.4)

Table 8.3 Extent of notified and proposed conservation areas, classified by sector and national designation. Management categories are assigned to designations based on national legislation (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses). Totals for proposed sites may include areas of properties already protected but proposed for upgrading to higher conservation status. Details of individual properties are given in Annex 2. N is the total number of conservation areas.

COUNTRY Sector National designation	Man. Cat.	Notified		Proposed	
		N	Area(ha)	N	Area(ha)
BENIN (112,620 sq. km)					
Forest Sector					
Classified Forest	P	45	1,373,707	0	0
Reforestation Area	P	7	2,567	0	0
Subtotals		52	1,376,274	0	0
(% total area)			(12.2)		(0.0)
Wildlife Sector					
Hunting Zone	P	3	510,000	0	0
National Park	T	2	843,500	0	0
Subtotals		5	1,353,500	0	0
(% total area)			(12.0)		(0.0)
Totals		57	2,729,774	0	0
(% total area)			(24.2)		(0.0)
CÔTE D'IVOIRE (322,460 sq. km)					
Forest Sector					
Classified forest	P	63	1,222,190	0	0
Subtotals		63	1,222,190	0	0
(% total area)			(3.8)		(0.0)
Wildlife Sector					
Botanical Reserve	P	1	7,350	0	0
Fauna and Flora Reserve	P	1	123,000	0	0
National Park	T	8	1,762,500	0	0
Partial Faunal Reserve	P	1	95,000	0	0
Strict Nature Reserve	T	1	5,000	0	0
Subtotals		12	1,992,850	0	0
(% total area)			(6.2)		(0.0)
Totals		75	3,215,040	0	0
(% total area)			(10.0)		(0.0)
GHANA (238,540 sq. km)					
Forest Sector					
Forest Reserve	P	23	209,623	2	17,011
Protection Working Circle	P	?	430,000	0	0
Subtotals		23	639,623	2	17,011
(% total area)			(2.7)		(0.1)
Wildlife Sector					
Game Production Reserve	P	5	136,080	1	15,359
National Park	T	5	1,029,795	1	21,264
Strict Nature Reserve	T	1	32,400	0	0
Wildlife Sanctuary	P	3	12,702	1	1,200
Subtotals		14	1,210,977	3	37,823
(% total area)			(5.1)		(0.2)

COUNTRY Sector National designation	Man. Cat.	Notified		Proposed	
		N	Area (ha)	N	Area (ha)
Totals (% total area)		37	1,850,600 (7.8)	5	54,834 (0.3)
GUINEA (245,860 sq. km)					
Forest Sector					
Classified Forest	P	131	893,076	0	0
Faunal Reserve	P	0	0	5	14 *
National Park	T	1	38,200	0	0
Strict Nature Reserve	T	2	125,300	1	5,032
Subtotals		134	1,056,576	6	5,046 *
(% total area)			(4.3)		(0.0)
Totals (% total area)		134	1,056,576 (4.3)	6	5,046 * (0.0)
LIBERIA (111,370 sq. km)					
Forest Sector					
National Forest	P	0	0	4	453,400
Subtotals		0	0	4	453,400
(% total area)			(0.0)		(4.1)
Wildlife Sector					
National Park	T	1	129,230	1	55,400
Nature Conservation Unit	P	0	0	2	46,364
Subtotals		1	129,230	3	101,764
(% total area)			(1.2)		(0.9)
Totals (% total area)		1	129,230 (1.2)	7	555,164 (5.0)
NIGERIA (923,770 sq. km)					
Forest Sector					
Game Reserve	P	26	2,040,782	13	371,920 *
Strict Nature Reserve	P	8	58,013	0	0
Subtotals		34	2,098,795	13	371,920 *
(% total area)			(2.3)		(0.4)
Wildlife Sector					
National Park	T	6	2,114,396	1	29,700
Subtotals		6	2,114,396	1	29,700
(% total area)			(2.3)		(0.0)
Totals (% total area)		40	4,213,191 (4.6)	14	401,620 * (0.4)
SIERRA LEONE (71,740 sq. km)					
Wildlife Sector					
Game Reserve	P	1	1,200	6	42,958
Game Sanctuary	P	0	0	2	7,511
National Park	T	1	80,813	5	70,573
Strict Nature Reserve	T	0	0	9	38,823
Subtotals		2	82,013	22	159,865
(% total area)			(1.1)		(2.2)
Totals (% total area)		2	82,013 (1.1)	22	159,865 (2.2)

COUNTRY Sector National designation	Man. Cat.	Notified		Proposed	
		N	Area (ha)	N	Area (ha)
TOGO (56,790 sq. km)					
Forest Sector					
Faunal Reserve	P	9	290,381	0	0
Forest reserve	P	28	104,157	0	0
National Park	T	3	357,290	0	0
Subtotals		40	751,828	0	0
(% total area)			(13.2)		(0.0)
Totals		40	751,828	0	0
(% total area)			(13.2)		(0.0)
WEST AFRICA (2,083,150 sq. km) - summary by sector					
Forestry Sector		346	7,145,286	25	847,377 *
(% total area)			(3.4)		(0.4)
Wildlife Sector		40	6,882,966	29	329,152
(% total area)			(3.3)		(0.2)
Additional Sector or sector unknown		0	0	0	0
(% total area)			(0.0)		(0.0)
WEST AFRICA (2,083,150 sq. km) - summary by management category					
Total protection		31	6,518,424	18	220,792
(% total area)			(3.1)		(0.1)
Partial protection		355	7,509,828	36	955,737 *
(% total area)			(3.6)		(0.5)
Degree of protection unknown		0	0	0	0
(% total area)			(0.0)		(0.0)
Totals		386	14,028,252	54	1,176,529 *
(% total area)			(6.7)		(0.6)

* Subtotal is incomplete because of missing data for either number of sites or area covered.

Table 8.4(a) Frequency distributions of notified and proposed conservation area sizes, with means, classified by management category (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses), for (a) Forestry, (b) Wildlife and (c) Additional sectors.

		N	Mean size (ha)	Number in each size class (ha)			
				≤1000	1001-10,000	10001-100,000	>100,000
a) Forestry Sector							
BENIN							
Notified sites	P	52	26,466	19	20	8	5
	Total	52	26,466	19	20	8	5
GHANA							
Notified sites	P	23	9,114	8	7	8	0
	Total	23	9,114	8	7	8	0
Proposed sites	P	2	8,505	0	1	1	0
	Total	2	8,505	0	1	1	0
GUINEA							
Notified sites	T	3	54,500	0	0	2	1
	P	131	6,817	61	46	24	0
	Total	134	7,884	61	46	26	1
Proposed sites	T	1	5,032	0	1	0	0
	P	3	4	3	0	0	0
	Total	4	1,261	3	1	0	0
LIBERIA							
Proposed sites	P	4	113,350	0	0	2	2
	Total	4	113,350	0	0	2	2
NIGERIA							
Notified sites	P	34	61,729	8	5	12	9
	Total	34	61,729	8	5	12	9
Proposed sites	P	10	37,192	0	2	7	1
	Total	10	37,192	0	2	7	1
TOGO							
Notified sites	T	3	119,096	0	1	0	2
	P	9	32,264	1	2	5	1
	Total	12	53,972	1	3	5	3
WEST AFRICA							
Notified sites	T	6	86,798	0	1	2	3
	P	249	19,550	97	80	57	15
	Total	255	21,133	97	81	59	18
Proposed sites	T	1	5,032	0	1	0	0
	P	19	44,333	3	3	10	3
	Total	20	42,368	3	4	10	3

Note that N (the total number of conservation areas) does not necessarily equate

to N in Table 3, because the areas of some individual sites may be unknown.

Countries for which there are no relevant data are not included in the table.

Table 8.4(b) Frequency distributions of notified and proposed conservation area sizes, with means, classified by management category (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses), for (a) Forestry, (b) Wildlife and (c) Additional sectors.

		N	Mean size (ha)	Number in each size class (ha)			
				≤1000	1001-10,000	10001-100,000	>100,000
b) Wildlife Sector							
BENIN							
Notified sites	T	2	421,750	0	0	0	2
	P	3	170,000	0	0	0	3
	Total	5	270,700	0	0	0	5
CÔTE D'IVOIRE							
Notified sites	T	9	196,388	0	2	4	3
	P	3	75,116	0	1	1	1
	Total	12	166,070	0	3	5	4
GHANA							
Notified sites	T	6	177,032	0	1	2	3
	P	8	18,597	1	3	4	0
	Total	14	86,498	1	4	6	3
Proposed sites	T	1	21,264	0	0	1	0
	P	2	8,279	0	1	1	0
	Total	3	12,607	0	1	2	0
LIBERIA							
Notified sites	T	1	129,230	0	0	0	1
	Total	1	129,230	0	0	0	1
Proposed sites	T	1	55,400	0	0	1	0
	P	2	23,182	0	0	2	0
	Total	3	33,921	0	0	3	0
NIGERIA							
Notified sites	T	6	352,399	0	0	1	5
	Total	6	352,399	0	0	1	5
Proposed sites	T	1	29,700	0	0	1	0
	Total	1	29,700	0	0	1	0
SIERRA LEONE							
Notified sites	T	1	80,813	0	0	1	0
	P	1	1,200	0	1	0	0
	Total	2	41,006	0	1	1	0
Proposed sites	T	14	7,814	0	11	3	0
	P	8	6,308	0	7	1	0
	Total	22	7,266	0	18	4	0
WEST AFRICA							
Notified sites	T	25	239,905	0	3	8	14
	P	15	59,022	1	5	5	4
	Total	40	172,074	1	8	13	18
Proposed sites	T	17	12,691	0	11	6	0
	P	12	9,449	0	8	4	0
	Total	29	11,350	0	19	10	0

Note that N (the total number of conservation areas) does not necessarily equate to N in Table 3, because the areas of some individual sites may be unknown.

Countries for which there are no relevant data are not included in the table.

Table 8.5 State parties to international (and regional) conventions or programmes concerning the conservation of natural areas, together with the number of properties (natural or mixed natural/cultural in the case of the World Heritage Convention) recognised under respective conventions in brackets.

	World Heritage Convention	Biosphere Reserves¹	Ramsar Convention	African Convention
Bénin	1982 (0)	1986 (1)	-	S
Côte d'Ivoire	1981 (3)	1977 (2)	-	R
Ghana	1975 (0)	1983 (1)	1988 (1)	R
Guinea	1979 (1)	1980 (2)	-	S
Liberia	-	-	-	R
Nigeria	1974 (0)	1977 (1)	-	R
Sierra Leone	-	-	-	S
Togo	-	-	-	R

¹Unesco MAB Project 8

R = ratified

S = signatory

Table 8.6 Summary of national priorities for action relating to conservation areas.

COUNTRY	Legislation	Completing the network	Managing the network
Bénin		Upgrade the designation of some classified forests	Improve management. Limit human settlement in protected areas.
Côte d'Ivoire		System considered adequate	Improve management to control poaching and gold prospecting
Ghana	Review Wildlife and Protected Area legislation	Establish protected area(s) in upland evergreen forest and semi-deciduous forest	Improve management by increasing funding and recruitment of staff, particularly at higher grades
Guinea		Extend protected area system following thorough survey to identify sites. Include areas of mangrove and important coastal bird areas.	Improve management by training staff and reducing staff numbers, and controlling hunting, logging and cultivation within protected areas
Liberia	Enact 1989 draft regulations to the 1988 Wildlife & National Parks Act	Develop protected area system to comprise totally protected core areas, surrounded by multiple use zones	Management collapsed during civil war
Nigeria	State wildlife law needs revising, to differentiate between strict nature reserves and forest or game reserves	Extend protected area system to protect lowland, swamp and montane forest	Improve management to enable implementation of the national wildlife policy
Sierra Leone	Consolidate the numerous categories into fewer and more distinct classes	Extend protected area system to include protected areas proposed under the mandate of the Wildlife Conservation Branch	Recruit more professional staff into management positions in the Forestry Department and Wildlife Conservation Branch
Togo	Finalise the new Code de la Forêt et de la Faune	Extend protected area system slightly, to include corridor between Keran NP and Pendjari NP in Benin	Complete reassessment of protected area system to enable redefinition of limits and management objectives

Annex 8.1 List of conservation areas. Locations of most notified conservation areas are shown in the accompanying maps in Part III

BENIN

Classified Forests

1	Agoua	75,300	1953
2	Agrimey	2,800	1945
3	Atcherigbe	3,150	1942
4	Atlantique	900	1953
5	Bassila	2,500	1943
6	Bellefoungou	1,300	1943
7	Birni	3,200	1943
8	Boko	300	1952
9	Bonou	197	1946
10	Dan	1,237	1942
11	Dassa-zoume	2,645	1945
12	Djigbe	4,300	1942
13	Dogo	31,850	1955
14	Donga	250	1943
15	Gougoun	73,200	1950
16	Guene	1,300	1942
17	Itchede	191	1945
18	Ketou	11,000	1945
19	Kilir	50	1943
20	L'Alibori Superieur	256,000	1955
21	La Lama Nord	6,500	1946
22	La Lama-Sud	9,750	1942
23	La Sota	53,000	1947
24	Logozohe	1,200	1942
25	Mekrou	9,320	1950
26	Mont Kouffe	180,300	1949
27	N'Dali	4,721	1942
28	Ouari Maro	107,500	1946
29	Ouedo	586	1944
30	Oueme Boukou	20,500	1954
31	Oueme Superieur	177,542	1954
32	Ouenou-Benou	30,000	1943
33	Pahou	765	1940
34	Penessoulou	5,470	1942
35	Sakarou	240	1954
36	Sakete	60	1946
37	Savalou	1,015	1945
38	Seme	1,290	1943
39	Serou	498	1946
40	Soubroukou	84	1946
41	Tchaourou	1,100	1942
42	Tchaourou Gokana	2,000	1948
43	Toui	29,030	1942
44	Tozoun	66	1942
45	Trois Rivieres	259,500	1949
	Subtotal	45 sites	1,373,707 ha

Hunting Zones

46	Atakora	122,000	1980
47	Djona	188,000	1980
48	Pendjari	200,000	1980
	Subtotal	3 sites	510,000 ha

National Parks

49	Boucle de la Pendjari	275,500	1961
50	W du Benin	568,000	1954
	Subtotal	2 sites	843,500 ha

Reforestation Areas

51 Abomey		173	1945
52 Barage de Natitingou		345	1952
53 Kandi		250	1942
54 Kouandi		250	1942
55 Natitingou		203	1946
56 Parakou		256	1949
57 Taneka		1,090	1951
Subtotal	7 sites	2,567	ha
Totals			
Existing conservation areas	57 sites	2,729,774	ha
Proposed conservation areas	0 sites		ha

COTE D'IVOIRE

Botanical Reserve			
1 Divo		7,350	1975
Subtotal	1 site	7,350 ha	
Fauna and Flora Reserve			
2 Haut Bandama		123,000	1973
Subtotal	1 site	123,000 ha	
National Parks			
3 Azagny		19,000	1981
4 Banco		3,000	1953
5 Comoe		1,150,000	1968
6 Iles Ehotile		10,500	1974
7 Marahoue		101,000	1968
8 Mont Peko		34,000	1968
9 Mont Sangbe		95,000	1976
10 Tai		350,000	1973
Subtotal	8 sites	1,762,500 ha	
Partial Faunal Reserve			
11 N'Zo		95,000	1972
Subtotal	1 site	95,000 ha	
Strict Nature Reserve			
12 Mont Nimba		5,000	1944
Subtotal	1 site	5,000 ha	
Totals			
Existing conservation areas	12 sites	1,992,850 ha	
Proposed conservation areas	0 sites	ha	

GHANA

Forests Reserves

1 Abasumba		104	1927
2 Aboben Hill		725	1962
3 Abutia Hills		899	1939
4 Ahirasu (Blocks I & II)		104	1927
5 Akrobong		260	1930
6 Anhwiaso North		363	1926
7 Bombi		148	1963
8 Daka Headwaters		14,566	1952
9 Dede		5,110	1955
10 Gambaga East		12,753	1948
11 Gambaga West I		11,500	1954
12 Gambaga West II		22,222	1968
13 Krokosua Hills FoR*		48,170	1935
14 Kumbo		16,449	1956
15 Marago River		8,806	1954
16 Nasia Tributaries		31,469	1956
17 Nuale		5,180	1954
18 Obotumfo Hills		155	1930
19 Sapawsu		1,531	1957
20 Sekondi Waterworks (Blocks II & III)		1,010	1938
21 Sissili North		8,288	1940
22 Sukusuku		14,760	1972
23 Volta River		5,051	1940
Subtotal	23 sites	209,623 ha	

Game Production Reserves

24 Ankasa		20,736	1976
25 Bia		22,810	1974
26 Gbele		54,691	1975
27 Kalakpa		32,400	1975
28 Shai Hills		5,443	1976
Subtotal	5 sites	136,080 ha	

National Parks

29 Bia		7,770	1974
30 Bui		207,360	1971
31 Digya		312,595	1971
32 Mole		491,440	1971
33 Nini-Suhien		10,630	1976
Subtotal	5 sites	1,029,795 ha	

Strict Nature Reserve

34 Kogyae		32,400	1976
Subtotal	1 site	32,400 ha	

Wildlife Sanctuaries

35 Boabeng-Fiema		260	1974
36 Bomfobiri		5,184	1975
37 Owabi		7,258	1971
Subtotal	3 sites	12,702 ha	

Proposed (Forest Reserves)

Greenbelt		1,471	
Kulpawn Tributaries		15,540	
Subtotal	2 sites	17,011 ha	

Proposed (Game Production Reserve)

Assin-Attandanso		15,359	
Subtotal	1 site	15,359 ha	

Proposed (National Park)

Kakum		21,264	
Subtotal	1 site	21,264 ha	

Proposed (Wildlife Sanctuary)		
Agumatsa		1,200
Subtotal	1 site	1,200 ha
Totals		
Existing conservation areas	37 sites	1,420,600 ha
Proposed conservation areas	5 sites	54,834 ha

GUINEA

Classified Forests

1	Badiar-sud	7,300	1956
2	Bagata	2,000	1942
3	Bakoum	28,000	1951
4	Balayan-Souroumba	25,000	1951
5	Bambaya	336	1951
6	Bani	18,900	1952
7	Banie	23,160	1956
8	Bantarawel	675	1936
9	Baro	8,000	1943
10	Beauvois	2,300	1945
11	Beko	800	1943
12	Bellel	1,350	1944
13	Binti	410	1944
14	Botokoly	2,300	1942
15	Boula	27,500	1955
16	Chutes de Kinkon	320	1955
17	Chutes de Tinkisso	1,100	1944
18	Colline-Macenta	780	1945
19	Counsignaki	13,700	1955
20	Damakhania	425	1944
21	Dara-Labe	375	1943
22	Darawondi	30	1978
23	Darou-salam	17,474	1954
24	Diecke	64,000	1945
25	Diego Tamba	70	1946
26	Diogoure	1,000	1943
27	Dixinn	3,900	1944
28	Djimbera (Bantiguel)	700	1983
29	Dokoro	7,800	1952
30	Fanafanako	380	1986
31	Fello Digui	2,925	1967
32	Fello Diouma	418	1936
33	Fello Sounga	6,700	1953
34	Fello-Selouma	4,000	1955
35	Fello-Touni	100	1983
36	Fitacouna	95	1942
37	Fougoumba	795	1944
38	Foye-Madinadian	1,595	1954
39	Galy	1,500	1943
40	Gambi	15,500	1955
41	Gangan	9,000	1942
42	Gban	500	
43	Gbinia	6,175	1945
44	Gioumba	12,580	1956
45	Goto	120	
46	Gouba	950	1945
47	Goulgoul-Kankande	6,800	1954
48	Grandes Chutes	13,400	1944
49	Gueme Sangan	2,740	1955
50	Gueroual	300	1944
51	Guwel	600	1936
52	Guirila	8,100	1954
53	Haute-Komba	1,300	1944
54	Hoo	150	
55	Kabela	3,920	1955
56	Kakrima	238	1955
57	Kala	240	1944
58	Kaloum	672	1955
59	Kambia	520	1944
60	Khabitaye	4,900	1944
61	Kolumba	1,230	1943
62	Koni	116	
63	Konkoure Fetto	1,200	1945
64	Kora	750	1955

65 Koulou	90	1978
66 Koumban-Kourou	4,000	1942
67 Kourani-Oulete- Dienne	59,000	1942
68 Kouya	67,400	1952
69 Koyoto	320	
70 L'Amama	19,800	1952
71 Laine	203	1955
72 Lefarani	1,900	1943
73 Ley-Billel	172	1955
74 Loffa	700	1945
75 Lombha	90	1967
76 Lombonye	350	
77 Mafou	52,400	
78 Makona	700	1942
79 Mankiti	400	1985
80 Milo	13,600	1942
81 Mirire	230	1944
82 Miti Kambadaga	330	1944
83 Mombeya	225	1943
84 Mt. Balan	2,000	1952
85 Mt. Balandougou	2,800	1945
86 Mt. Banan	990	1950
87 Mt. Bero	23,600	1952
88 Mt. Gouba	950	1945
89 Mt. Konossou	2,680	1955
90 Mt. Kouya	303	1943
91 Mt. Loura	530	1955
92 Mt. Salia	4,840	1942
93 Mt. Tetini	23,500	1955
94 Mt. Yonon	4,750	1950
95 N'Dama	67,000	1956
96 N'Guidou	18	1954
97 Nimba Piedmont	7,000	1943
98 Nono	5,600	1936
99 Nzo	8,000	
100 Ore-Djima	1,200	1936
101 Ouladin	1,500	1950
102 Paradji	700	1955
103 Pic de Fon	25,600	1953
104 Pic de Tibe	6,075	1945
105 Pincely	13,000	1945
106 Pissonon	250	
107 Sala	568	1945
108 Samba la "Ton"	600	1986
109 Sambalankan	3,500	1952
110 Selly-Koro	2,300	1951
111 Sere	315	1936
112 Serima	1,500	1943
113 Sierra-Fore	4,100	1942
114 Sincery-Ourssa	14,000	1942
115 Singuelema	121	1978
116 Sobory	1,175	1956
117 Souarela	2,000	1944
118 Sources de Dinguiraye	71	1951
119 Sources de Kindia	70	1943
120 Soyah	8,400	1945
121 Tafsirla	1,780	1961
122 Tamba	15,000	1945
123 Tangama	410	1944
124 Teliko	462	1978
125 Tialakoun	336	1943
126 Tinka	540	1944
127 Tolole	200	
128 Tomine Koumba	36,000	1954
129 Vonn	240	
130 Wonkon	282	1967
131 Yardo	4,096	1956

Subtotal	131 site	893,076 ha	
National Park			
132 Badiar		38,200	1985
Subtotal	1 site	38,200 ha	
Strict Nature Reserves			
133 Massif du Ziama		112,300	1943
134 Mount Nimba		13,000	1944
Subtotal	2 sites	125,300 ha	
Proposed (Faunal Reserves)			
Alkatraz			1932
Blanche		9	
Cabri		1	
Corail		4	
Tristao			
Subtotal	5 sites	14 ha*	
Proposed (Strict Nature Reserve)			
Kamalaya (Kounounkan)		5,032	
Subtotal	1 site	5,032 ha	
Totals			
Existing conservation areas	134 sites	1,056,576 ha	
Proposed conservation areas	6 sites	5,046 ha*	

* Subtotal is incomplete because of missing data.

LIBERIA

National Park			
1 Sapo		129,230	1983
Subtotal	1 site	129,230 ha	
Proposed (National Forests)			
Belle		65,600	
Cestos-Sankwen		145,000	
Lofa-Mano		230,000	
Tienpo		12,800	
Subtotal	4 sites	453,400 ha	
Proposed (National Park)			
Cape Mount		55,400	
Subtotal	1 site	55,400 ha	
Proposed (Nature Conservation Units)			
Wologizi Area		20,234	
Wonegizi Area		26,130	
Subtotal	2 sites	46,364 ha	
Totals			
Existing conservation areas	1 site	129,230 ha	
Proposed conservation areas	7 sites	555,164 ha	

NIGERIA

Game Reserves

1 Alawa	29,620	1971
2 Bakono	190,000	1972
3 Baturiya Wetlands	29,700	1976
4 Dagida	29,422	1971
5 Dagona	70	
6 Falgore (Kogin Kano)	92,000	1969
7 Gilli-Gilli	36,300	1916
8 Ibi	156,000	1972
9 Ifon	28,230	1990
10 Kambari	41,400	1969
11 Kashimbila	139,600	1977
12 Kwale	1,340	1916
13 Kwiambana	261,400	1971
14 Lame/Burra	205,767	1972
15 Margadu-Kabak Wetlands	10,000	
16 Nguru/Adiani Wetlands	7,500	
17 Okomu	11,200	1985
18 Ologbo	19,440	1981
19 Opara	110,000	1973
20 Orle River	110,000	1916
21 Pai River	248,600	1972
22 Pandam	22,400	1972
23 Sambisa	68,600	1978
24 Udi/Nsukka	5,600	1981
25 Wase	186,500	1972
26 Wase Rock Bird	93	1972
Subtotal	26 sites	2,040,782 ha

National Parks

27 Chad Basin	45,696	1991
28 Cross River	422,688	1991
29 Gashaka/Gumti	636,300	1991
30 Kainji Lake	534,082	1975
31 Old Oyo	251,230	1991
32 Yankari	224,400	1991
Subtotal	6 sites	2,114,396 ha

Strict Nature Reserves

33 Akure	32	
34 Bam Ngelzarma	142	
35 Bonu	145	
36 Lekki	7,800	
37 Milliken Hill	49,200	1912
38 Omo	460	1949
39 Ribako	170	
40 Urhonigbe	64	
Subtotal	8 sites	58,013 ha

Proposed (Game Reserves)

Akpaka	19,400	
Anambra	35,400	
Ankwe River		
Damper Sanctuary		
Ebbe/Kampe	11,730	
Iri-Ada-Obi		
Kamuku	120,000	
Meko	96,610	
Num River	9,720	
Ohosu	47,100	
Okeleuse	11,440	
Opanda	10,520	
Stubbs Creek	10,000	
Subtotal	13 sites	371,920 ha*

Proposed (National Park)		
Baturiya Wetlands		29,700
Subtotal	1 site	29,700 ha
Totals		
Existing conservation areas	40 sites	4,213,191 ha
Proposed conservation areas	14 sites	401,620 ha*

* Subtotal is incomplete because of missing data.

SIERRA LEONE

Game Reserve

1 Tiwai Island		1,200	1987
Subtotal	1 site	1,200 ha	

National Park

2 Outamba-Kilimi		80,813	1986
Subtotal	1 site	80,813 ha	

Proposed (Game Reserves)

Bagru-Moteva Creeks		5,000	
Kagboro Creek (Yawri Bay)		5,000	
Kangari Hills		8,573	
Kpaka-Pujehun		2,500	
Sankan Biriwa (Tingi Hills)		11,885	
Sewa-Waanje		10,000	
Subtotal	6 sites	42,958 ha	

Proposed (Game Sanctuaries)

Bo Plains		2,590	
Bumpe Mangrove Swamp		4,921	
Subtotal	2 sites	7,511 ha	

Proposed (National Parks)

Kuru Hills		6,993	
Lake Mape/Mabesi		7,511	
Lake Sonfon		5,180	
Loma Mountains		33,201	
Western Area		17,688	
Subtotal	5 sites	70,573 ha	

Proposed (Strict Nature Reserves)

Bonthe Mangrove Swamp		10,101	
Gola (West) Forests		6,200	
Gola North Extension		3,885	
Mamunta-Mayoso Swamp		2,072	
Mogbai (Gola North)		4,000	
Port Loko Plains		2,590	
Sulima Mangrove Swamp		2,590	
Wemago (Gola East)		3,500	
Yelibuya Island		3,885	
Subtotal	9 sites	38,823 ha	

Totals

Existing conservation areas	2 sites	82,013 ha	
Proposed conservation areas	22 sites	159,865 ha	

TOGO**Faunal Reserves**

1 Abdoulaye		30,000	1951
2 Akaba		25,626	
3 Aledjo		765	1959
4 Djamde		1,650	1954
5 Galangashie		7,500	1954
6 Haho-Yoto		18,000	1955
7 Kpessi		28,000	
8 Oti Mandouri		147,840	
9 Togodo		31,000	1952
Subtotal	9 sites	290,381 ha	

National Parks

10 Fazao-Malfakassa		192,000	1951
11 Fosse aux Lions		1,650	1954
12 Keran		163,640	1950
Subtotal	3 sites	357,290 ha	

Totals

Existing conservation areas	12 sites	647,671 ha
Proposed conservation areas	0 sites	ha

Annex 8.2 Extent of notified forests by forest origin and forest function. Non-forest includes both degraded forest and lands not forested at the time of their reservation.

Region: Africa

Sub-region: West Africa

Name of country/state: Benin

Total area (sq.km): 112620

Land area (sq.km): 110620

Month/year of reference: 1991

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural					1373707	
Non-forest			2567			
Plantation						
TOTAL	0	0	2567	0	1373707	0

Notes: Data are taken from B.D.Otchoun, pers.comm. 1991.

The figure for conservation forests represents 45 classified forests (see Annex 8.1). Classified forests are listed as protected areas by the Department of Forests and Natural Resources, although according to legislation (Décret No. 89-385), classified forests may be exploited if permission is granted by the Minister responsible for Water, Forests and Hunting.

The figure for protection forests represents 7 reforestation areas.

Annex 8.2 (continued)

Region: Africa

Sub-region: West Africa

Name of country/state: Cote D'Ivoire

Total area (sq.km): 322460

Land area (sq.km): 318000

Month/year of reference: February 1990

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	2378670					1222190
Non-forest						
Plantation						
TOTAL	2378670	0	0	0	0	1222190

Notes: Data are taken from Bagno, 1990.

There are 191 classified forests, 128 of which occur in dense forest and serve primarily a production function, and 63 (1,222,190ha) which are found in the savanna zone and serve principally a protection function.

The total for production forests does not include the area for 25 classified forests which are to be declassified for agricultural purposes.

Annex 8.2 (continued)

Region: Africa

Sub-region: West Africa

Name of country/state: Ghana

Total area (sq.km): 238540

Land area (sq.km): 230020

Month/year of reference: August 1990

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	1255989		639623	1471		
Non-forest						
Plantation	52828		482517	108049		
TOTAL	1308817	0	1122140	109520	0	0

Notes: Data are from the Forestry Commission, 1990; Forestry Department, 1990 (above totals).

Many of the production forests have Protection Working Circles which generally consist of steep slopes and watersheds in which logging is prohibited and, therefore, serve primarily a protection function. The total area under Protection Working Circles is estimated to be 430,000ha (Gartey, 1990).

The figure for protection forests of natural origin comprises 209,623ha of forest reserve (Annex 8.1) and 430,000ha protection working circles.

Annex 8.2 (continued)

Region: Africa

Sub-region: West Africa

Name of country/state: Guinea

Total area (sq.km): 245860

Land area (sq.km): 245860

Month/year of reference: March 1992

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural			893076		163500	
Non-forest						
Plantation			1406			
TOTAL	0	0	894482	0	163500	0

Notes: Data are taken from the Direction Nationale des Forêts et Chasses (1992).

The figure for conservation forests represents the national park and strict nature reserves.

The figure 893,076 represents classified forests (see Annex 8.1).

The figure 1,406 represents reforestation areas, which are assumed to be of plantation origin, and for protection purposes.

Information concerning production forests is not available.

Annex 8.2 (continued)

Region: Africa

Sub-region: West Africa

Name of country/state: Liberia

Total area (sq.km): 111370

Land area (sq.km): 96320

Month/year of reference: May 1992

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	1445327					508800
Non-forest						
Plantation						
TOTAL	1445327	0	0	0	0	508800

Notes: Data are taken from B.S.Gwyan (Forestry Development Authority); Anstey (1991).

National forests (production) are administered by the Forestry Development Authority. National parks and other conservation areas are managed by the Wildlife and National Parks section within FDA and are therefore not included in this table.

Annex 8.2 (continued)

Region: Africa

Sub-region: West Africa

Name of country/state: Nigeria

Total area (sq.km): 923770

Land area (sq.km): 910770

Month/year of reference: June/December 1990

FOREST ORIGIN	F O R E S T F U N C T I O N						
	Production forests		Protection forests		Conservation forests		
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	
Natural	7649180					2098795	371920
Non-forest							
Plantation	194178						
TOTAL	7843358	0	0	0	0	2098795	371920

Notes: Data are taken from the Forestry Research Institute, 1990 (production forest totals); Nigerian Conservation Foundation, 1990; WCMC database (conservation forest totals).

The figure 2,098,795 represents strict nature reserves and game reserves, which are managed and administered by each State Department of Forestry. National parks used to be administered by the Division of Wildlife and Conservation within the Federal Department of Forestry, but since 1991, have been controlled and managed by the corporate National Parks Governing Board, operating through individual National Parks Management Committees. The area of national parks is therefore excluded from the above table.

Strict nature reserves can occur within game reserves, hence the figure 2,098,795 may be an overestimate.

Annex 8.2 (continued)

Region: Africa

Sub-region: West Africa

Name of country/state: Sierra Leone

Total area (sq.km): 71740

Land area (sq.km): 71620

Month/year of reference: 1990

FOREST ORIGIN	F O R E S T		F U N C T I O N		Conservation forests	
	Production forests		Protection forests		Existing	Proposed
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	285300	34000				
Non-forest						
Plantation					11800	
TOTAL	285300	34000	0	0	11800	0

Notes: Data are from Davis (1987), Allan (1990) and Palmer (1992).

National Parks and other conservation areas fall under the Wildlife Conservation Branch within the Forestry Division and are not included in the above table.

The 11,800 ha of conservation forest are stands planted 200m deep along road strips, for conservation purposes.

Annex 8.2 (continued)

Region: Africa

Sub-region: West Africa

Name of country/state: Togo

Total area (sq.km): 56790

Land area (sq.km): 54390

Month/year of reference: August 1990

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural					104157	
Non-forest	29180					
Plantation	38881					
TOTAL	68061	0	0	0	104157	0

Notes: Data are from Frame, G.W. and Tanghanwaye, N.N. (1991). The Ministry of Environment and Tourism comprises six departments. These include the Department of National Parks, Fauna Reserves and Hunting (responsible for management of national parks and reserves, which are therefore not included in this table), and the Department of Protection and Control of Exploitation of the Flora, which is responsible for conserving the natural vegetation in all the forest reserves, and for enforcing the forest code.

Some forest reserves are managed by the Ministry of Rural Development, which exploits natural forests and tree plantations both within and outside forest reserves.

Togo has 80 forest reserves. Approximately 28 of these, (covering 104,157ha) mainly fulfil a conservation function, and are listed here as conservation forests. A further 39 are listed here as production forests. These comprise 11 reserves (covering 29,180ha), listed as being of non-forest origin, which have been cleared of natural vegetation, and 28 (covering 38,881ha) being plantations. Remaining forest reserves lie within the faunal reserves and national parks.

9 CENTRAL AFRICA



Km



0 600 1200

9 CENTRAL AFRICA

Cameroon, Central African Republic, Congo, Equatorial Guinea, Gabon, Sao Tome and Principe, Zaïre

9.1 HISTORICAL PERSPECTIVE

Protection of nature in Central Africa has its origins in oral customary law, traditional rules and taboos concerning hunting.

Nature conservation legislation within the subregion still reflects the countries' colonial histories. In the Central African Republic, Congo and Gabon (previously French colonies) and Zaïre (previously a Belgian colony), policy and law were derived directly from France or Belgium (by Royal Decree of the Belgian monarch), and the long experience of temperate forestry in those countries. The situation in Cameroon, which was formed by the union of two parts formerly under British and French administrations, is more complex. Reserves in Equatorial Guinea, then a Spanish colony, were created by Ministerial Decree of the Spanish government. Sao Tome and Principe, a Portuguese colony was subject to Portuguese colonial law.

9.2 NATURE CONSERVATION POLICY AND LEGISLATION

Legal provisions for the establishment of protected areas have been passed in all countries within the subregion, other than Sao Tome and Principe, since independence. These are summarised in Table 9.1 and reviewed below.

Conservation areas in the subregion are designated either under the forest law, or under separate wildlife law. In both cases, designations are generally similar and follow those given in the African Convention of 1968. This provides definitions of strict nature reserve, national park and special reserve (which includes other areas such as game reserve, partial reserve, sanctuary and soil, water and forest reserve).

9.2.1 Forestry Sector

Policy In general, little information on forest policy is available. Sao Tome and Principe had no forest policy by 1985. In Cameroon, main objectives of the forest sector are defined under the VIe Plan de Développement for the period 1986-1991, but no policy has been formulated.

Legislation Texts from the colonial period were based on experience from continental Europe, and reflect the principle, common at the time, that nature provides a readily exploitable resource. A decree, based on France's long experience of temperate forestry, established the forestry regime in French Equatorial Africa (which included Chad, Cameroon, Central African Republic and Gabon). The original French forestry legislation was based on the principle of Roman legislation. According to this, unoccupied land, where existence of written ownership documents could not be proved, belonged to the state. All forest lands were thus declared state property, although local populations exercised many rights of use. Contradiction between the oral customary law and these written regulations led to a general reluctance of local people to accept the delineation of reserved forests.

Since independence, all francophone countries in the subregion have promulgated new forestry law, based on the earlier French legislation. The concept of state forests, comprising classified forests and protected forests, still exists. Classified forests are gazetted areas in which customary rights of use are generally permitted, but which are otherwise generally protected. Protected forests comprise that part of the state forest not subject to individual classification orders, which, therefore, do not appear in Table 9.1. Within protected forests, uncontrolled clearing and unauthorised logging are forbidden, as is the regulation of customary rights which the population could otherwise exercise without restraint.

In general, forest legislation within the subregion concerns only the large forest massifs. Clauses which concern forest outside these areas are few, and technically far behind those found in recent legislation for countries in neighbouring subregions.

The situation in Cameroon is confusing. Areas of forest were originally designated as forest reserves. New forest legislation has subsequently been passed, which provides for many designations, but not for forest reserves. Existing forest reserves are, therefore, awaiting reclassification as production or protection forests, but meanwhile continue to be known as forest reserves.

Conservation areas may be established under the forest legislation (e.g. Cameroon, the Central African Republic, Congo and Gabon). Alternatively, they may be established under separate wildlife legislation (Zaire). The Forest Codes of Cameroon and the Central African Republic name various designations of conservation area, but definitions of these categories are only given in the subsequent wildlife laws.

Equatorial Guinea and Zaire only have fragmentary forest legislation.

9.2.2 Wildlife Sector

Policy Information on nature conservation policies is not available.

Legislation Conservation areas legislation has been promulgated within Cameroon, Central African Republic, Equatorial Guinea and Zaire.

Designations for conservation areas, whether defined under the forest code or separate wildlife legislation, are generally the same throughout the subregion, and follow the 1968 African Convention. Categories defined include national parks, strict nature reserves, wildlife sanctuaries, hunting reserves and sport hunting reserves. The highest degree of protection is afforded to strict nature reserves, where access is only permitted for management purposes and scientific research. National parks are open to tourism, but residence is not permitted. Sanctuaries are for the protection of named species. Reserves in which hunting is permitted include hunting reserves, where subsistence hunting is allowed, and sport hunting reserves, where licensed hunting for sport is permitted.

Gabon is anomalous in that definitions of conservation areas do not follow those given in the African Convention.

Protected areas were established in Equatorial Guinea when the region was under colonial rule. Following independence these were all ignored. Eight protected areas have recently been established in the country, but information is not available concerning the legislation under which they have been gazetted. Legislation on the creation of protected areas in Sao Tome and Principe has not been passed, and needs to be established urgently.

9.2.3 Additional Sectors

Presidential reserves in the subregion are established by presidential decree.

9.3 MANAGED AREAS ADMINISTRATION

Departments responsible for administration of protected areas are given in Table 9.1. Categories are listed according to the language used in the original legislation. A glossary of terms (French, Portuguese and French) is given in Part I.

9.3.1 Forestry Sector

Within the region, there is a proliferation of state and para-statal institutions involved in the forestry sector. Individual managed areas are frequently managed by numerous organisations. In the Congo, six different ministries are involved in forest management, and in Zaire, ten departments are involved.

In general this leads to confusion and inefficient overall management.

9.3.2 Wildlife Sector

Conservation areas have been managed traditionally under a single administrative organisation within the forest departments of respective countries within the subregion. This remains the case in the Central African Republic, Equatorial Guinea and Gabon, where conservation areas are managed by departments within the ministry responsible for forests. In Cameroon the department responsible for wildlife is in a separate ministry to that responsible for forests.

Management of conservation areas in the Congo and Zaïre is complex, many organisations being involved, which, in the Congo fall within six different ministries.

In Gabon, a para-military force of forestry and wildlife staff is directly responsible for managing reserves.

9.3.3 Additional Sectors

Officially decreed presidential reserves exist in both the Central African Republic and Gabon, under direct control of the countries' presidents.

9.3.4 Non-Governmental Organisations

No information is available on the direct involvement of non-governmental organisations in the management of protected areas within the subregion.

9.4 MANAGED AREAS STATUS

The protected areas system is mapped for each country within the subregion in Fig 9.1-7 (Part III). Details of individual conservation areas are given in Annex 9.1 which serves as a key to the maps.

9.4.1 Managed Areas within the Forestry Sector

Coverage Data for the region is generally so incomplete that general conclusions concerning the extent of managed areas within the forestry sector cannot reasonably be made. Available data is given in Table 9.2, and indicates that a minimum of 8.8% of the total area of the subregion is managed by the forestry sector, although this is considered to be a gross underestimate.

According to Table 9.2, managed areas within the forestry sector appear to be most extensive in Equatorial Guinea (11.3%). This figure represents eight recently established protected areas, which are presumed to be under the management of the forest sector.

Apart from Equatorial Guinea, the country in the subregion with the greatest area (3%) managed by the forest sector is Cameroon, virtually all of which comprises production forest. This is in contrast to the overall figures for the subregion which indicate that most of the land managed by the forest sector is allocated to protection or conservation purposes.

The contribution of the forest sector to conservation is further underestimated in the tables, as no figures are available for the extent of protected forests, which are legislated for in all francophone countries within the subregion.

Throughout the francophone countries, virtually all land outside gazetted areas is known as forêt protégée, in which felling, amongst other things is prohibited, and which thus serves a conservation function. The contribution of the forestry sector as a whole to protection and conservation is, therefore, much higher than suggested by the statistics in Table 9.2.

9.4.2 Conservation Areas within Forestry, Wildlife and Additional Sectors

Coverage There are some 209 legally designated conservation areas in the subregion covering a total of 27 million ha or 6.7% of the subregion (Table 9.3). Approximately one half of these conservation areas are under total protection, covering 3.2% of the subregion (Table 9.3). The rest are partially protected. The forestry sector is directly responsible for only 75 conservation areas, covering a total area of 3 million ha or 0.2% of the region. Bearing in mind the paucity of information available, this is certainly an underestimate.

The 10% target of total area under protection for conservation purposes has only been reached by the Central African Republic and Equatorial Guinea. Only 5.4% of Zaïre is protected. This is an important consideration, bearing in mind that this country alone accounts for 57% of the subregion. In contrast, Sao Tome and Principe have no protected areas, but as the total land area of the two islands which comprise the country only amount to less than 0.1% of the subregion, this is insignificant on a subregional level.

Representativeness No protected areas yet exist in Sao Tome and Principe. As the country consists of two islands this has greater implications than if an equally small area on the mainland was totally unprotected. Although currently 9.5% of Cameroon lies within protected areas, these are not evenly distributed. National parks were originally set up in the north, where big game could be more easily viewed in the Sudanian savanna. This region is, therefore, well represented in contrast to forest areas in the south of the country, which are much less well represented. Similarly, in Central African Republic, most protected areas are located in the northern Sudanian savanna. However, attempts have been made recently to improve the representativeness of the system with the establishment in 1990 of Dzanga-Ndoki National Park and Dzanga-Sangha Special Reserve in the extreme south-west corner in a region of rain forest. In the Congo the situation is quite different. Samples of all vegetation types except swamp forest are included within protected areas, although the area gazetted is minimal (3.9% by 1982), and, as management is virtually non-existent, these are in effect only paper parks. Until recently, Equatorial Guinea had no protected areas, the well organised areas established during colonial days having collapsed. However, nine areas have recently been accorded formal protection, theoretically establishing an effective system. Again, information available suggests that these too exist only in name. Conservation areas in Gabon are located primarily on or near the coast, with little of the east of the country being represented. In Zaïre, conservation areas are well distributed throughout the country.

Ecofloristic zone analysis [pending data from FAO]

Integrity Data in Table 9.4b indicate that conservation areas under the wildlife sector tend to be large or very large throughout the subregion, particularly in Zaïre, which has a mean size of totally protected area of over 1 million ha. Mean size of totally protected areas is in all cases almost double that of partially protected areas. National parks form the bulk of the former category which, by definition, tend to be relatively large areas and provide a range of services. The two presidential reserves listed under Additional Sector (Table 9.4c) are similarly large. In contrast, reserves managed by the forestry sector are comparatively minute with a range of 4 to 40,000ha, apart from in Zaïre which once again provides conservation areas with the largest mean size, of 141,500ha in this instance.

Effectiveness Apart from inadequate representation of the subregion's biological diversity within existing conservation area networks, conservation efforts are limited by weaknesses in policy, legislation, institutional support and management. Existing legislation frequently needs strengthening or updating (Table 9.6). Management of protected areas throughout the sub-region is inadequate or totally lacking. Management plans for conservation areas within the region generally do not appear to exist, and many protected areas are ineffective, existing only on paper. The general lack of commitment of resources for conservation areas is largely responsible for many of the deficiencies in their management. Enforcement is very often handicapped by the absence of clearly-demarcated boundaries that are easily recognisable on the ground. Encroachment by people is ubiquitous, few conservation areas being free of this problem. Poaching is a continual problem throughout the region.

Even in Gabon, management is generally low despite the country's relative affluence, an exception being the relatively well protected Wonga-Wongué Presidential Reserve. Invasion of protected areas by local populations,

which is a considerable problem elsewhere in Africa, is generally not a problem within this region, due to the comparatively low population pressure.

9.4.3 Contribution of the Forestry Sector to Nature Conservation

Preliminary data in Table 9.2 suggest that the contribution of the forestry sector to nature conservation is low (8%) in terms of the total area of the subregion under protection and conservation forest. The great majority (86%) of the conservation area network falls within the domain of the wildlife sector (Table 9.3).

The figures in Table 9.2 should be considered to be an absolute minimum. Data for the subregion was sparse, and the contribution of the forest sector to conservation is further underestimated, as no figures are available of the extent of protected forests. These are legislated for in all francophone countries within the subregion, and comprise virtually all land outside gazetted areas. Numerous activities, including felling, are prohibited, hence these forests serve a conservation function.

9.5 FUTURE PROSPECTS

9.5.1 Expanding the Conservation Area Network

The conservation area networks in all the countries within the region need to be expanded. In Cameroon, legislation states that 20% of the country should be protected, but present coverage is much less than this. Gabon is one of the few countries in the world that still offers exceptional potential for conservation. In general, the major ecosystems remain intact, and human activities are having less of an influence on the forest as people become more sedentary.

Proposals exist for the establishment of completely protected ecological zones on Sao Tome and Principe, at high altitudes, and on very steep slopes. Official proposals to expand the conservation area network throughout the region total some 1.7 million ha or 0.4 % of the total area of the subregion (Table 9.3).

9.5.2 Other National Initiatives

Strengthening networks

No information

Overcoming Economic Constraints Funding is a major factor which limits the effective management of conservation areas throughout the region, although this is much less of a problem in Gabon, which has a GNP at least double that of other countries within the sub-region.

Improving Management Management needs to be implemented, or improved throughout the sub-region.

9.5.3 International Initiatives

Conventions and Programmes All the countries within the sub-region are the subject of a regional programme "Conservation and Rational Utilisation of Forest Ecosystems in Central Africa", financed by the European Development Fund of the EC (IUCN, 1989).

Sao Tome and Principe, and Equatorial Guinea are not party to any of the international conventions listed in Table 9.5, to which other countries in the subregion belong. These comprise the 1968 (Algiers) African Convention on the Conservation of Nature and Natural Resources, the Unesco Man and the Biosphere Programme, under which biosphere reserves are established, and the Convention Concerning the World Cultural and Natural Heritage (in which all other countries in the subregion participate). Gabon is the only country within the subregion party to the Ramsar Convention, under which three wetlands have been designated, all of which encompass areas of forest.

Cooperative agreements Zaïre has transfrontier parks with Uganda and Rwanda, in neighbouring subregions, but there does not appear to be any cooperation in management.

9.6 PRIORITIES FOR ACTION

Priorities for conservation action in the subregion, summarised in Table 9.6, were reviewed in the now dated *IUCN Systems review of the Afrotropical Realm* (MacKinnon and MacKinnon, 1986) and the subsequent action plan (IUCN, 1987). Priorities have more recently been reviewed by IUCN (1989), and IUCN (1992) in preparation for the IV World Parks Congress. These are generalised, recognising that translation of priorities into action will vary according to national conservation objectives, history and political will. They provide a foundation to the more specific priorities identified in this report and are summarised in Table 9.6.

Recommendations listed in IUCN (1989) include limiting the great diversity of institutions responsible for forest management, establishing coordination between NGOs and the forest services, and the recruitment of women, who usually play an important role in agriculture and collection of forest products, into the forest service.

The *Sudano-Sahelian PLATFORM for Action on UNCED Negotiations and Beyond: A Contribution to the African Position* (Anon., 1991), concerning environmental degradation within the Sahel, was drawn up for UNCED 1992, following two consultative meetings of 22 Sudano-Sahelian countries, which included Cameroon. The report highlights the link between poverty and mismanagement of natural resources, particularly exploitation of marginal lands and deforestation. Recommendations include action to be taken at both the international and African level.

In conclusion, although mostly aware of the need for conservation area networks, well-funded institutions and up-to-date policy and legislation, governments in the subregion have generally not been able to ensure these are established, which has hampered progress within the subregion.

REFERENCES

- Anon. (1991). *Sudano-Sahelian PLATFORM for Action on UNCED Negotiations and Beyond: A Contribution to the African Position*. Prepared by the 22 Sudano-Sahelian Countries. CILSS, UNSO, IGADD. 22 pp.
- IUCN (1987). *Action strategy for protected areas in the Afrotropical Realm*. IUCN, Gland, Switzerland and Cambridge, UK. 56 pp.
- IUCN (1989). *La Conservation des Ecosystèmes forestiers d'Afrique centrale*. IUCN, Gland, Switzerland and Cambridge, UK. 124 pp.
- IUCN (1992). *Parks for Life: proceedings of the IV World Parks Congress on National Parks and Protected Areas*. 250 pp.
- MacKinnon, J. and MacKinnon, K. (1986). *Review of the protected areas system in the Afrotropical Realm*. IUCN, Gland, Switzerland and Cambridge, UK/UNEP, Nairobi, Kenya. 259 pp.
- Stuart, S.N. and Adams, R.J. (1990). *Biodiversity in Sub-saharan Africa and its islands: conservation, management and sustainable use*. IUCN, Gland, Switzerland. 242 pp.

Table 9.1 Legal provisions for protected areas, with year of enactment and responsible administrative authority. Protected areas are classified according to management objective (T = total protection, P = partial protection, L = local extractive use, C = commercial extractive use).

Country	Legislation Year	Title [Sector]	Administrative authority	Managed areas Man. Designation
Cameroon	1983	Décret No. 83/169 fixant le régime des forêts [F]	Département des Eaux et Forêts, Ministre de l'Agriculture	C Forêt de production
	1983	Décret No. 83/170 relatif au régime de la faune [W]		P Forêt de protection P Forêt récréative P Périmètre de reboisement T Réserve naturelle intégrale
	?	Décret No. 83/170 relatif au régime de la faune [W]	Direction de la Faune et des Aires Protégées	P Game ranch T Parc national P Réserve de faune T Réserve naturelle intégrale P Sanctuaire P Zone cynégétique P Zone tampon P Domaine de chasse

Central African Republic	1962	Loi No. 61/273 portant création d'un Code Forestier [F]	Office National des Forêts	P L C/L L T P T	Forêt classée Forêt communale Forêt du domaine coutumier Forêt rurale Parc national Réserve de faune et de flore Réserve intégrale
	1984	Ordonnance No. 84.045 portant Code de la protection de la faune sauvage et réglementant l'exercice de la chasse [W]	Centre National pour la Protection et l'Aménagement de la Faune	T P T P	Parc national Réserve de faune Réserve naturelle intégrale Zone d'intérêt cynégétique
	?	Décret présidentiel [A]	Chef de l'Etat	P	Parc présidentiel
	?	? [W]	?	P	Sanctuaire
	?	? [W]		P	Réserve spéciale
Congo	1982	Loi No. 32/82 portant modification de la Loi No. 004/74 portant code forestier [F]	Several departments within the Ministère des Eaux et Forêts	L C P P	Forêt de développement communautaire Forêt de production Forêt de protection Forêt protégée
	1982	Loi No. 32/82 portant modification de la Loi No. 004/74 portant code forestier [W]	Direction du Projet Inventaire et Aménagement de la Faune	T P P T	Parc national Périmètre de reboisement Réserve naturelle Réserve naturelle intégrale
	1985	Décret 85/879 [W]	Direction du Projet Inventaire et Aménagement de la Faune	P P	Réserve de faune Domaine de chasse

Equatorial Guinea	1990	Decreto-Ley forestal No. 14 [F]	Ministerio de Aguas, Bosques y Repoblación Forestal	C C C	Bosque publico comunal Bosque publico estatal Bosque privado
	1981	Ley No. 8 reguladora de la Fauna Silvestre, Caza y Areas Protegidas [F]	Ministerio de Aguas, Bosques y Repoblación Forestal	T T P P	Reserva científica Parque nacional Refugio de fauna Santuario de vida silvestre
	?	?	Ministerio de Aguas, Bosques y Repoblación Forestal	P	Area protegida
Gabon	1982	Loi No. 1/82 d'Orientation en Matière des Eaux et Forêts [F]	Various departments within the Direction Général des Eaux et Forêts	C P P P P P P	Forêt de production à vocation permanente Forêt de protection Forêt récréative Parc national à vocation forestière Périmètre de reboisement Réserve de faune Zone protégée d'exploitation de la faune
	1982	Loi No. 1/82 d'Orientation en Matière des Eaux et Forêts [W]	Direction de la faune et de la chasse	P T T P	Domaine de chasse Parc national Réserve naturelle intégrale Sanctuaire
	?	Décret présidentiel [A]	Chef de l'Etat	P	Réserve présidentielle
Sao Tome and Principe		None			

Zaire	1949	Décret du 11 avril sur le régime forestier [F]	Service des Eaux et Forêts	P	Forêt classée
	1969	Ordonnance-Loi No. 69-041 relative à la conservation de la nature [W]	Institut Zaïrois pour la Conservation de la Nature	P L	Forêt classée des indigènes Forêt protégée
	1982	Ordonnance-Loi No. 82-002 sur la chasse [W]	Institut Zaïrois pour la Conservation de la Nature	T T	Parc national Réserve naturelle intégrale
	1975	Loi 75/024 [?]	?	P	Réserve partielle de faune
	1973	Loi du 20 juillet 1973 [?]	?	P P ?	Réserve totale de faune Domaine de chasse Secteur sauvagardé
				P	Réserve forestière

Table 9.2 Extent of notified natural forests, classified by forest function. Units are in sq. km, followed by % total area. Full data, with sources, are given in Annex 9.2.

Country SUBREGION	Total Area	F O R E S T F U N C T I O N			T o t a l
		Production	Protection	Conservation	
Cameroon	475,440	14,037 (2.9)	477 (0.1)	<1(<0.1)	14,514 (3.0)
Central African Republic	622,980	9,500 (1.5)	0	6,335 (1.0)	15,835 (2.5)
Congo	342,000	?	3,170 (0.9)		3,170 (0.9)
Equatorial Guinea	28,050	?	?	316,700 (11.3)	316,700 (11.3)
Gabon	267,670	?	?	?	
Sao Tome & Principe	960	?	?	?	
Zaire	2,345,100	6,185 (0.3)	0	5,172 (0.2)	11,357 (0.5)
CENTRAL AFRICA	4,082,200	29,722 (0.7)	3,647(<0.1)	328,207 (8.0)	361,576 (8.8)

? = No information

Table 9.3 Extent of notified and proposed conservation areas, classified by sector and national designation. Management categories are assigned to designations based on national legislation (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses). Totals for proposed sites may be inflated because they may include areas of properties already protected but proposed for upgrading to higher conservation status. Details of individual properties are given in Annex 9.2. N is the total number of conservation areas.

COUNTRY Sector National designation	Man. Cat.	Notified		Proposed	
		N	Area (ha)	N	Area (ha)
CAMEROON (475,440 sq. km)					
Forest Sector					
Protection Forest	P	9	47,676	11	154,985
Recreation Forest	P	1	25	3	124
Subtotals		10	47,701	14	155,109
(% total area)			(0.1)		(0.3)
Wildlife Sector					
Faunal Reserve	P	9	1,018,995 *	4	85,000 *
Hunting Reserve	P	27	1,721,190	0	0
National Park	T	7	1,031,800	1	353,180
Subtotals		43	3,771,985 *	5	438,180 *
(% total area)			(7.9)		(0.9)
Totals		53	3,819,686 *	19	593,289 *
(% total area)			(8.0)		(1.2)
CENTRAL AFRICAN REPUBLIC (622,980 sq. km)					
Forest Sector					
Classified Forest	P	46	633,472	0	0
Subtotals		46	633,472	0	0
(% total area)			(1.0)		(0.0)
Wildlife Sector					
Faunal Reserve	P	7	2,668,000	1	320,000
National Park	T	4	3,102,000	1	435,900
Sanctuary	P	0	0	1	265,000
Special Reserve	P	1	335,900	0	0
Strict Nature Reserve	T	1	86,000	0	0
Subtotals		13	6,191,900	3	1,020,900
(% total area)			(9.9)		(1.6)
Additional Sector, or sector unknown					
Private Reserve	P	1	250,000	0	0
Subtotals		1	250,000	0	0
(% total area)			(0.4)		(0.0)
Totals		60	7,075,372	3	1,020,900
(% total area)			(11.3)		(1.6)

COUNTRY Sector National designation	Man. Cat.	Notified		Proposed	
		N	Area(ha)	N	Area(ha)
CONGO (342,000 sq. km)					
Forest Sector					
Protection Forest	P	?	317,000	0	0
Subtotals		0	317,000	0	0
(% total area)			(0.9)		(0.0)
Wildlife Sector					
Faunal Reserve	P	6	895,794	0	0
Hunting Reserve	P	3	155,000	0	0
National Park	T	1	126,600	0	0
Subtotals		10	1,177,394	0	0
(% total area)			(3.5)		(0.0)
Totals		10	1,494,394	0	0
(% total area)			(4.4)		(0.0)
EQUATORIAL GUINEA (28,050 sq. km)					
Forest Sector					
Protected Area	P	8	316,700	0	0
Subtotals		8	316,700	0	0
(% total area)			(11.3)		(0.0)
Wildlife Sector					
National Park	T	0	0	1	0 *
Subtotals		0	0	1	0 *
(% total area)			(0.0)		(0.0)
Totals		8	316,700	1	0 *
(% total area)			(11.3)		(0.0)
GABON (267,670 sq. km)					
Forest Sector					
Faunal Reserve	P	4	650,000	0	0
Hunting Area	P	6	695,000	0	0
Strict Nature Reserve	T	1	15,000	0	0
Subtotals		11	1,360,000	0	0
(% total area)			(5.1)		(0.0)
Additional Sector, or sector unknown					
Presidential Reserve	P	1	380,000	0	0
Subtotals		1	380,000	0	0
(% total area)			(1.4)		(0.0)
Totals		12	1,740,000	0	0
(% total area)			(6.5)		(0.0)
SAO TOME AND PRINCIPE (960 sq. km)					
Wildlife Sector					
Ecological Zone	P	0	0	2	29,000
Subtotals		0	0	2	29,000
(% total area)			(0.0)		(30.2)
Totals		0	0	2	29,000
(% total area)			(0.0)		(30.2)

COUNTRY Sector National designation	Man. Cat.	Notified		Proposed	
		N	Area (ha)	N	Area (ha)
ZAIRE (2,345,100 sq. km)					
Forest Sector					
Forest Reserve	P	?	517,169 *	0	0
Subtotals		0	517,169 *	0	0
(% total area)			(0.2)		(0.0)
Wildlife Sector					
Hunting Reserve	P	55	3,838,645 *	0	0
National Park	T	7	8,544,000	2	76,850 *
Strict Nature Reserve	T	4	0 *	0	0
Subtotals		66	12,382,645 *	2	76,850 *
(% total area)			(5.2)		(0.0)
Totals		66	12,899,814 *	2	76,850 *
(% total area)			(5.4)		(0.0)
CENTRAL AFRICA (4,082,200 sq. km) - summary by sector					
Forestry Sector		75	3,192,042 *	14	155,109
(% total area)			(0.8)		(0.0)
Wildlife Sector		132	23,523,924 *	13	1,564,930 *
(% total area)			(5.8)		(0.4)
Additional Sector or sector unknown		2	630,000	0	0
(% total area)			(0.2)		(0.0)
CENTRAL AFRICA (4,082,200 sq. km) - summary by management category					
Total protection		25	12,905,400 *	5	865,930 *
(% total area)			(3.2)		(0.2)
Partial protection		184	14,440,566 *	22	854,109 *
(% total area)			(3.5)		(0.2)
Degree of protection unknown		0	0	0	0
(% total area)			(0.0)		(0.0)
Totals		209	27,345,966 *	27	1,720,039 *
(% total area)			(6.7)		(0.4)

* Subtotal is incomplete because of missing data for either number of sites or area covered.

Table 9.4(a) Frequency distributions of conservation area sizes, with means, classified by management category (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses), for (a) Forestry, (b) Wildlife and (c) Additional sectors.

		N	Mean size (ha)	Number in each size class (ha)			
				≤1000	1001-10,000	10001-100,000	>100,000
a) Forestry Sector							
CAMEROON							
Notified sites	P	10	4,770	6	3	1	0
	Total	10	4,770	6	3	1	0
Proposed sites	P	14	11,079	7	3	4	0
	Total	14	11,079	7	3	4	0
CENTRAL AFRICAN REPUBLIC							
Notified sites	P	46	13,771	19	17	7	3
	Total	46	13,771	19	17	7	3
EQUATORIAL GUINEA							
Notified sites	P	8	39,587	0	1	7	0
	Total	8	39,587	0	1	7	0
GABON							
Notified sites	T	1	15,000	0	0	1	0
	P	10	134,500	0	0	6	4
	Total	11	123,636	0	0	7	4
ZAIRE							
Notified sites	P	2	141,500	0	0	1	1
	Total	2	141,500	0	0	1	1
CENTRAL AFRICA							
Notified sites	T	1	15,000	0	0	1	0
	P	76	34,550	25	21	22	8
	Total	77	34,297	25	21	23	8
Proposed sites	P	14	11,079	7	3	4	0
	Total	14	11,079	7	3	4	0

Note that N (the total number of conservation areas) does not necessarily equate to N in Table 3, because the areas of some individual sites may be unknown.

Countries for which there are no relevant data are not included in the table.

Table 9.4(b) Frequency distributions of conservation area sizes, with means, classified by management category (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses), for (a) Forestry, (b) Wildlife and (c) Additional sectors.

		N	Mean size (ha)	Number in each size class (ha)			
				≤1000	1001-10,000	10001-100,000	>100,000
b) Wildlife Sector							
CAMEROON							
Notified sites	T	7	147,400	0	2	0	5
	P	35	78,291	1	3	25	6
	Total	42	89,809	1	5	25	11
Proposed sites	T	1	353,180	0	0	0	1
	P	2	42,500	0	0	2	0
	Total	3	146,060	0	0	2	1
CENTRAL AFRICAN REPUBLIC							
Notified sites	T	5	637,600	0	0	1	4
	P	8	375,487	0	0	0	8
	Total	13	476,300	0	0	1	12
Proposed sites	T	1	435,900	0	0	0	1
	P	2	292,500	0	0	0	2
	Total	3	340,300	0	0	0	3
CONGO							
Notified sites	T	1	126,600	0	0	0	1
	P	9	116,754	0	1	6	2
	Total	10	117,739	0	1	6	3
ZAIRE							
Notified sites	T	7	1,220,571	0	0	0	7
	P	14	274,188	2	1	4	7
	Total	21	589,649	2	1	4	14
Proposed sites	T	1	76,850	0	0	1	0
	Total	1	76,850	0	0	1	0
CENTRAL AFRICA							
Notified sites	T	20	644,520	0	2	1	17
	P	66	161,114	3	5	35	23
	Total	86	273,534	3	7	36	40
Proposed sites	T	3	288,643	0	0	1	2
	P	4	167,500	0	0	2	2
	Total	7	219,418	0	0	3	4

Note that N (the total number of conservation areas) does not necessarily equate to N in Table 3, because the areas of some individual sites may be unknown.

Countries for which there are no relevant data are not included in the table.

Table 9.4(c) Frequency distributions of conservation area sizes, with means, classified by management category (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses), for (a) Forestry, (b) Wildlife and (c) Additional sectors.

c) Additional Sector(s)		N	Mean size (ha)	Number in each size class (ha)			
				≤1000	1001-10,000	10001-100,000	>100,000
CENTRAL AFRICAN REPUBLIC							
Notified sites	P	1	250,000	0	0	0	1
	Total	1	250,000	0	0	0	1
GABON							
Notified sites	P	1	380,000	0	0	0	1
	Total	1	380,000	0	0	0	1
CENTRAL AFRICA							
Notified sites	P	2	315,000	0	0	0	2
	Total	2	315,000	0	0	0	2

Note that N (the total number of conservation areas) does not necessarily equate to N in Table 3, because the areas of some individual sites may be unknown.

Countries for which there are no relevant data are not included in the table.

Table 9.5 State parties to international (and regional) conventions or programmes concerning the conservation of natural areas, together with the number of properties (natural of mixed natural/cultural in the case of the World Heritage Convention) recognised under respective conventions in brackets.

	World Heritage Convention	Biosphere Reserves¹	Ramsar Convention	African Convention
Cameroon	1982 (1)	1979 (3)	-	R
Central African Republic	1980 (1)	1977 (2)	-	R
Congo	1987 (0)	1977 (2)	-	R
Equatorial Guinea	-	-	-	-
Gabon	1986 (0)	1983 (1)	1986 (3)	S
Sao Tome and Principe	-	-	-	-
Zaire	1974 (4)	1976 (3)	-	R

¹Unesco MAB Project 8

R = ratified

S = signatory

Table 9.6 Summary of national priorities for action relating to conservation areas.

COUNTRY	Legislation	Completing the network	Managing the network
Cameroon	Complete ongoing radical reform and revision of 1981 forest legislation	Increase representation of forest zone	Improve management
Central African Republic	Revise 1961 Forest Code to strengthen provision for conservation	Expand network	Improve management and enforce legislation
Congo	Revise Forest Code and pass nature conservation legislation	Expand network. Gazette reforestation areas as reserves and expand the network in the north of the country	Create one authority responsible for the management of protected areas
Equatorial Guinea		Re-establish and expand network	Instigate management
Gabon	Restore legislation to conform with the African Convention	Expand network to cover different forest ecosystems. Develop buffer zones around protected areas	Increase funding to improve management. Reorganise the Direction Générale des Eaux et Forêts and reduce departments to three. Train personnel for conservation in forest areas, as well as in the existing savanna-based school
Sao Tome and Principe	Enact conservation legislation	Establish network	Instigate management
Zaire	Enact new Code Forestier, currently in preparation	Expand network	Improve management by reducing the number of organisations responsible for individual protected areas, and improving coordination between those that remain

Annex 9.1 List of conservation areas. Locations of most notified conservation areas are shown in the accompanying maps in Part III

CAMEROON

Faunal Reserves

1 Campo	300,000	1932
2 Dja	526,000	1950
3 Douala-Edea	160,000	1932
4 Kimbi	5,625	1964
5 Lac Ossa	4,000	1968
6 Mbi Crater	370	1964
7 Nanga-Eboke	16,000	
8 Sanaga		
9 Santchou	7,000	1933
Subtotal	9 sites	1,018,995 ha*

Hunting Reserves

10 Bandjoukri	58,780	
11 Bel Eland	26,000	
12 Boune Dje	97,040	
13 Cobas	50,000	
14 Densa	70,480	
15 Djibao	64,600	
16 Dobinga	44,600	
17 Elephants	17,000	
18 Faro Coron	56,860	
19 Faro Ouest	125,950	
20 Grand Capitaine	29,360	
21 Hippopotame	46,950	
22 Kourouk	95,000	
23 Landou	38,370	
24 Logone Birni	80,000	
25 Mayo Duele	64,600	
26 Mayo Oldiri	46,940	
27 Mayo Oldiri Nord	60,000	
28 Mayo Oldiri Sud	38,370	
29 Mayo Sala	38,000	
30 Ndock	181,120	
31 Rhinoceros	72,510	
32 Sadge	26,660	
33 Tatou	20,000	
34 Tcheboa	160,800	
35 Vogzom	85,000	
36 Waimba	26,200	
Subtotal	27 sites	1,721,190 ha

National Parks

37 Benoue	180,000	1968
38 Bouba Ndjidah	220,000	1968
39 Faro	330,000	1980
40 Kalamaloue	4,500	1972
41 Korup	125,900	1986
42 Mozogo-Gokoro	1,400	1968
43 Waza	170,000	1968
Subtotal	7 sites	1,031,800 ha

Protection Forests

44 Bakwery	9,324	
45 Barombi-Mbolake	885	
46 Mbamidjin	145	
47 Mont Koupe	300	
48 Mont-Bamboutos	222	1948
49 Monts Ekasekas	250	
50 Mouma	10,000	1936
51 Nkilzock	3,000	1936

52 Obala		23,550	
Subtotal	9 sites	47,676 ha	
Recreation Forest			
53 Bois des Singes		25	
Subtotal	1 site	25 ha	
Proposed (Faunal Reserves)			
Bafia		42,000	
Boumba bec			
Lac Lobeke		43,000	1974
Nki			
Subtotal	4 sites	85,000 ha*	
Proposed (National Park)			
Mbam et Djerem		353,180	1968
Subtotal	1 site	353,180 ha	
Proposed (Protection Forests)			
Boumba Belo		54,540	
Ejagham		5,300	
Kakaya (Kiki)		78	
Kouloumbou		31,700	
Koutaba		332	
Meri		22,490	
Mogode		285	
Mpadama		2,080	
Nyassogolo		6,400	
Yamben		31,400	
Zebe		380	
Subtotal	11 sites	154,985 ha	
Proposed (Recreation Forests)			
Edea		20	
Poli		20	
Sokilimbanga		84	
Subtotal	3 sites	124 ha	
Totals			
Notified conservation areas	53 sites	3,819,686 ha*	
Proposed conservation areas	19 sites	593,289 ha*	

* Subtotal is incomplete because of missing data.

CENTRAL AFRICAN REPUBLIC

Classified Forests

1	Badada Kere	200	1952
2	Bako Malikpa	200	1952
3	Bandengue	195	
4	Banzoum	5,600	1950
5	Batangrafo	17,900	1955
6	Batouri Kadei	110,000	1953
7	Batouri Sadowa	23,500	1952
8	Bengue	80	1954
9	Birini	120,000	1951
10	Bolee	90	
11	Botambi	11,700	1950
12	Boungou	16,000	1952
13	Calvaire	112	1952
14	Collines de Bangui	195	1952
15	Cote des Singes	6,500	1952
16	Disso Donago	7,500	1952
17	Herman	36	1956
18	Landjia	270	1948
19	Lole	1,900	1951
20	Lotomo	5,500	1951
21	Loumi	6,000	1950
22	Mobaye	2,180	1951
23	Mokinda	415	
24	N'dres	30	1948
25	Nan Barya Ngoudou	400	
26	Nayomo Guimi	150	
27	Ngotto	62,500	1951
28	Ngoulo	150	1950
29	Nidou	18	
30	Ohou	120,000	1951
31	Ouabere	330	1950
32	Ouele Ouele	2,200	1952
33	Pami	5,000	1951
34	Pamia	9,000	1952
35	Pande Zamaga	40,000	1953
36	Paoua	20	
37	Paya	31	1956
38	Pepoulou	1,500	1950
39	Poto Poto	3,500	1951
40	Pradama	20	
41	Sabo	26,000	1953
42	Seriki	5,700	1952
43	Tomi	1,800	1952
44	Yakamele	3,000	1951
45	Yangana	6,050	1952
46	Zizi	10,000	1951
	Subtotal	46 sites	633,472 ha

Faunal Reserves

47	Aouk-Aoukale	330,000	1939
48	Gribingui-Bamingui	438,000	1940
49	Koukourou-Bamingui	110,000	1940
50	Nana-Barya	230,000	1960
51	Ouandjia-Vakaga	130,000	1925
52	Yata-Ngaya	420,000	1960
53	Zemongo	1,010,000	1925
	Subtotal	7 sites	2,668,000 ha

National Parks

54	Andre Felix	170,000	1960
55	Bamingui-Bangoran	1,070,000	1933
56	Dzanga-Ndoki	122,000	1990
57	Manovo-Gounda-Saint Floris	1,740,000	1933
	Subtotal	4 sites	3,102,000 ha

Private Reserve			
58 Avakaba Presidential Park		250,000	1980
Subtotal	1 site	250,000 ha	
Special Reserve			
59 Dzanga-Sangha		335,900	1990
Subtotal	1 site	335,900 ha	
Strict Nature Reserve			
60 Vassako-Bolo		86,000	1960
Subtotal	1 site	86,000 ha	
Proposed (Faunal Reserve)			
Bahr Oulou		320,000	
Subtotal	1 site	320,000 ha	
Proposed (National Park)			
Sangha Economique		435,900	
Subtotal	1 site	435,900 ha	
Proposed (Sanctuary)			
Bongo		265,000	
Subtotal	1 site	265,000 ha	
Totals			
Notified conservation areas	60 sites	7,075,372 ha	
Proposed conservation areas	3 sites	1,020,900 ha	

CONGO

Faunal Reserves			
1	Conkouati	144,294	1980
2	Lefini	630,000	1951
3	Lekoli-Pandaka	68,200	1955
4	Mont Fouari	15,600	1958
5	Nyanga Nord	7,700	1958
6	Tsoulou	30,000	1963
	Subtotal	895,794	ha
		6 sites	
Hunting Reserves			
7	M'boko	90,000	1955
8	Mont Mavoumbou	42,000	1955
9	Nyanga Sud	23,000	1958
	Subtotal	155,000	ha
		3 sites	
National Park			
10	Odzala	126,600	1940
	Subtotal	126,600	ha
		1 site	
Totals			
	Notified conservation areas	1,177,394	ha
	Proposed conservation areas	0	ha
		10 sites	
		0 sites	

EQUATORIAL GUINEA

Protected Areas			
1	Altos de Nsok	40,000	1990
2	Estuario de rio Muni	70,000	1990
3	Estuario de rio Ntem (Campo)	20,000	1990
4	Isla de Annobon	1,700	1990
5	Macizo de Monte Alen	80,000	1990
6	Macizo de los Montes Mitra	30,000	1990
7	Pico Basile o Sta. Isabel	15,000	1990
8	Sur de la Isla de Bioco	60,000	1990
	Subtotal	8 sites	316,700 ha
Proposed (National Park)			
	Monte del Frio		
	Subtotal	1 site	ha*
Totals			
	Notified conservation areas	8 sites	316,700 ha
	Proposed conservation areas	1 site	ha*

* Subtotal is incomplete because of missing data.

GABON

Faunal Reserves

1	Lope	500,000	1962
2	Moukalaba-Dougoua	80,000	1962
3	Ouanga Plain	20,000	1966
4	Petit Loango	50,000	1966
	Subtotal	4 sites	650,000 ha

Hunting Areas

5	Grand Bam-Bam	20,000	1971
6	Iguela	180,000	1962
7	Moukalaba	20,000	1962
8	Ngove-Ndogo	250,000	1962
9	Sette-Cama	200,000	1962
10	Wonga Wongue	25,000	1962
	Subtotal	6 sites	695,000 ha

Presidential Reserve

11	Wonga-Wongue	380,000	1971
	Subtotal	1 site	380,000 ha

Strict Nature Reserve

12	Ipassa-Makokou	15,000	1970
	Subtotal	1 site	15,000 ha

Totals

	Notified conservation areas	12 sites	1,740,000 ha
	Proposed conservation areas	0 sites	ha

Sites 5 and 10 lie within Site 11. They are not mapped as information concerning their exact location was not available.

ZAIRE

Forest Reserves			
1 Luki		33,000	1979
2 Yangambi		250,000	
Subtotal	2 sites	283,000	ha
Hunting Reserves			
3 Alundas-Tutshokwea			
4 Azande			
5 Basse Kando			
6 Beni (Oicha)			
7 Bili-Uere		600,000	
8 Bombo-Lumene		240,000	
9 Botende		982	
10 Bukama			
11 Bushimaie		60,000	
12 Epi			
13 Epulu			
14 Fizi			
15 Gangala-na Bodio			
16 Gungu		380,000	
17 Hippo/Kolwezi			
18 Iles aux singes			
19 Iles de Kifuabire			
20 Kalemie			
21 Kalule			
22 Kibali-Ituri			
23 Kiziba-Baluba			
24 Kolwezi			
25 Lac Kwada		63	
26 Lac Mokoto			
27 Libenge			
28 Loma			
29 Lualaba			
30 Luama		340,000	
31 Luama/Shaba			
32 Lubudi-samppa		9,200	
33 Lueba-Izeba			
34 Lwadekere			
35 Maika-Penge		900,000	
36 Mangai		36,000	
37 Mitwaba			
38 Mole		32,400	
39 Mondo Missa		1,000,000	
40 Mont Hoyo			
41 Mufufya			
42 Mulumbu			
43 Mwanza			
44 Mwekaji			
45 Mwene			
46 Mwene Musona			
47 Rubi Tele			
48 Rubitele			
49 Rutshuru		100,000	
50 Sakanya			
51 Sandua			
52 Sefu-Kiongo			
53 Semliki-Kasenyi			
54 Sud-Ouest de Lubero			
55 Swa-Kibula		140,000	
56 Tshikamba			
57 Watalinga			
Subtotal	55 sites	3,838,645	ha*
National Parks			
58 Garamba		492,000	1938

59 Kahuzi-Biega		600,000	1975
60 Kundelungu		760,000	1970
61 Maiko		1,083,000	1970
62 Salonga		3,656,000	1970
63 Upemba		1,173,000	1939
64 Virunga		780,000	1925
Subtotal	7 sites	8,544,000 ha	
Nature Reserves			
65 Bomu			
66 Eaux Delcommune			
67 Lac Fwa			
68 Ubundu			
Subtotal	4 sites		ha*
Proposed (National Parks)			
Okapi			
Parc National Marine		76,850	
Subtotal	2 sites	76,850 ha*	
Proposed (Reserve)			
Lomako			
Marungu mountains			
Uvira			
Subtotal	3 sites		ha*
Totals			
Notified conservation areas	68 sites	12,665,645 ha*	
Proposed conservation areas	5 sites	76,850 ha*	

* Subtotal is incomplete because of missing data.

Annex 9.2 Extent of notified forests by forest origin and forest function. Non-forest includes both degraded forest and lands not forested at the time of their reservation.

Region: Africa

Sub-region: Central Africa

Name of country/state: Cameroon

Total area (sq.km): 475440

Land area (sq.km): 465400

Month/year of reference: March 1992

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	1403702	829345	47676	159585	25	124
Non-forest						
Plantation	48903	4009				
TOTAL	1452605	833354	47676	159585	25	124

Notes: Data are from B.Djingoer, pers.comm. 1992 Forestry Department, Ministry of the Environment and Forests.

Reforestation areas are listed as production forests of plantation origin. The figures for conservation forests represent 4 recreation forests.

Annex 9.2 (continued)

Region: Africa

Sub-region: Central Africa

Name of country/state: Central African Republic

Total area (sq.km): 622980

Land area (sq.km): 622980

Month/year of reference: May 1990

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	950000					633472
Non-forest						
Plantation						
TOTAL	950000	0	0	0	0	633472

Notes: Data are from Ministère des eaux, forêts, chasses, pêches et tourisme, 1990.

The figure 633,472 represents 46 classified forests (see Annex 9.1).

Annex 9.2 (continued)

Region: Africa

Sub-region: Central Africa

Name of country/state: Congo

Total area (sq.km): 342000

Land area (sq.km): 341500

Month/year of reference: 1981

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural			317000			
Non-forest						
Plantation						
TOTAL						0

Note: FAO (1981) gave an area of 317,000ha for the classified forests in the last assessment. New legislation has since been passed, and the term protection forest is now used.

Annex 9.2 (continued)

Region: Africa

Sub-region: Central Africa

Name of country/state: Equatorial Guinea

Total area (sq.km): 28050

Land area (sq.km): 28050

Month/year of reference: 1992

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural					316700	
Non-forest						
Plantation						
TOTAL	0	0	0	0	316700	0

Notes: Data are from Castroviejo (1992).

The figure for conservation forests 316,700ha represents eight protected areas, recently established, and presumed to be managed by the authorities responsible for forests.

Annex 9.2 (continued)

Region: Africa

Sub-region: Central Africa

Name of country/state: Gabon

Total area (sq.km): 267670

Land area (sq.km): 257670

Month/year of reference:

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural						
Non-forest						
Plantation						
TOTAL	0	0	0	0	0	0

Notes: No information available.

Annex 9.2 (continued)

Region: Africa

Sub-region: Central Africa

Name of country/state: Sao Tome/Principe

Total area (sq.km): 960

Land area (sq.km): 960

Month/year of reference: 1989.

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural		45000		29000		
Non-forest						
Plantation						
TOTAL	0	45000	0	29000	0	0

Notes: Data are taken from Jones et al (1989).

The figure for proposed protection forests represents two ecological zones to be established at higher altitudes and on steep slopes.

Annex 9.2 (continued)

Region: Africa

Sub-region: Central Africa

Name of country/state: Zaire

Total area (sq.km): 234510

Land area (sq.km): 226729

Month/year of reference: October 1988.

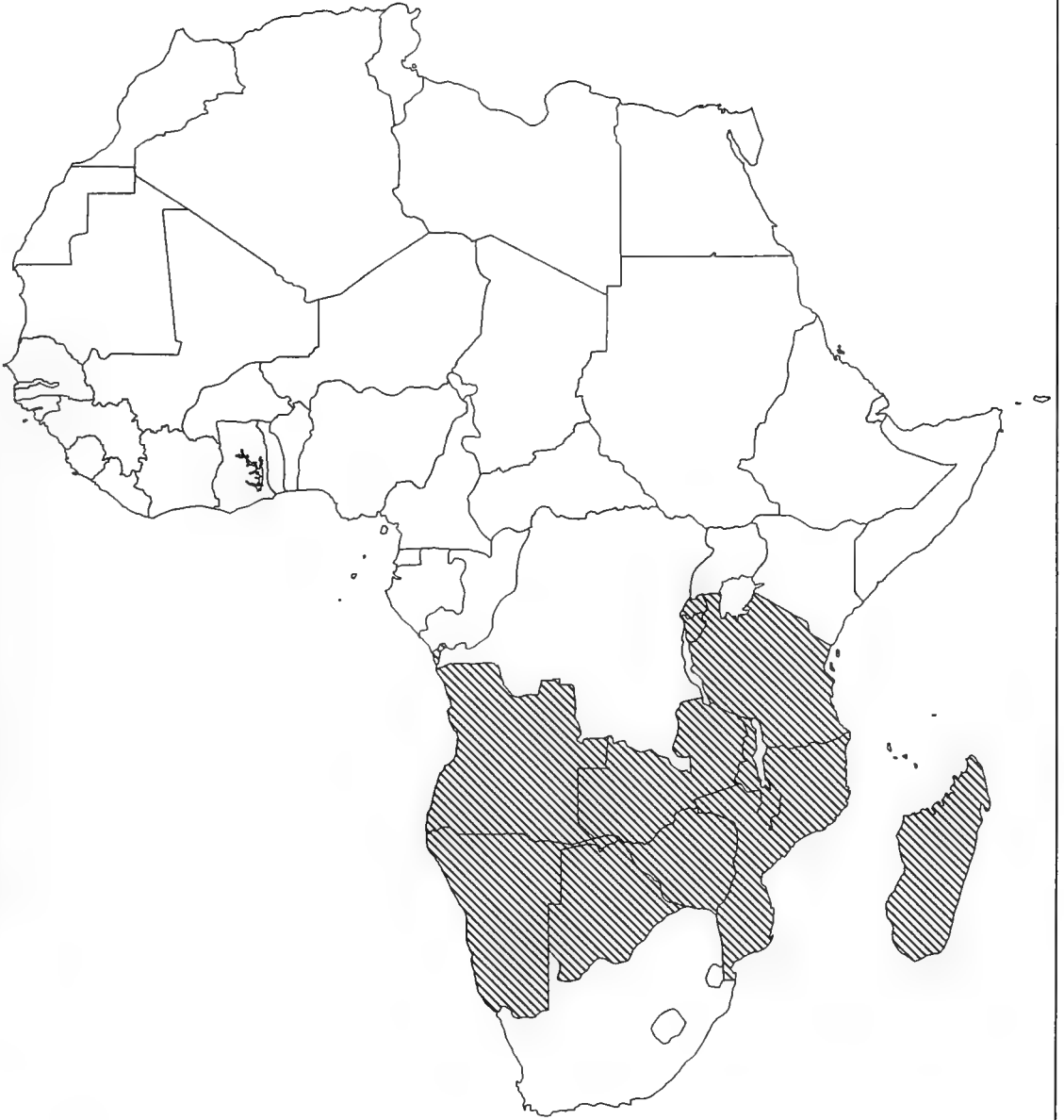
FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	618545					517169
Non-forest						
Plantation						
TOTAL	618545	0	0	0	0	517169

Notes: Data are taken from D.Katond, pers.comm. 1990 and IUCN (1990).

Management of forests in Zaire is complex, with numerous organisations being involved.

The figure 618,545 represents 200 production forests.
The figure 517,169 represents 117 forest reserves, under the management of the Direction de la Gestion des Ressources Naturelles Renouvelables.

10 TROPICAL SOUTHERN AFRICA



Km



0 600 1200

10 TROPICAL SOUTHERN AFRICA (including Madagascar)

**Angola, Botswana, Burundi, Madagascar, Malawi,
Mozambique, Namibia, Rwanda, Tanzania, Zambia, Zimbabwe**

10.1 HISTORICAL PERSPECTIVE

Protection of nature, in the form of traditional creeds and superstitions, is an old tradition throughout the subregion, one notable example being the protection of mountain forests and peaks in Madagascar. The "305 Articles Code" of the Ancient Malagasy Kingdom also provided protection for forests on the island and, under this code, those who were convicted of deforestation were condemned to be chained. During the 19th century, chiefs in Zambia had traditional hunting grounds where a measure of protection was provided.

Conservation in the subregion, however, stems mainly from the creation of extensive networks in both the forestry and wildlife sectors, with forest reserves first being created around the turn of the century in Malawi, in the 1920s, 1930s, and 1940s in most other countries, and somewhat later (1970s) in Botswana. To date, no forest reserves have been established in Namibia. Significant additions to the forest reserve networks of most countries has occurred in the post-independence period.

The establishment of conservation areas in the wildlife sector follows a similar pattern, with the first game reserve being created in 1897 in Malawi, followed by those created in the early 1900s in Namibia and Tanzania, in the 1920s and 1930s in Angola, Rwanda, Zambia, Zimbabwe and Madagascar, and in the 1950s and 1960s in Mozambique and Botswana, respectively. Significant additions to these wildlife sector networks occurred in the majority of countries from the 1950s onwards. In most countries, national parks were established somewhat later than game reserves, and Burundi represents one of very few African countries where no national park was established during the colonial period. The majority of conservation areas in the wildlife sector of Malawi were created from previously established forest reserves.

National monuments, which serve primarily to protect natural features, were first created in Zambia in the 1940s, Victoria Falls being a prominent example. National monuments, and legislation allowing for their creation, were established in the 1960s for both Malawi and Namibia.

Nature conservation is in various stages of development throughout the subregion. Legislation allowing for the creation of forest reserves exists in all countries, with the possible exception of Namibia. Further, all countries have legislation providing for the creation of conservation areas in the wildlife sector, most of which conform to international standards, the exception being Angola where conservation areas are established under individual laws (IUCN, 1987a). Apart from Madagascar, where the situation is under review, each country has distinct agencies or departments which are responsible for conservation areas in the forestry and wildlife sectors, respectively.

10.2 NATURE CONSERVATION POLICY AND LEGISLATION

Legislation exists for the creation and management of conservation areas in all countries of Tropical Southern Africa. These are summarised in Table 10.1 and reviewed below.

10.2.1 Forestry Sector

Policy Forest policy has been developed for a number of countries in the subregion, reflecting the dual purposes of protection and management for sustainable use. The need to increase the area under reservation is also stated. For example, the national constitution of Namibia (1989) outlines state policy on the conservation and sustainable use of natural resources. This is complimented by the Nationhood Programme for an Independent Namibia, which emphasises the environmental and economic role of forests. In addition, the recently approved National Forest Policy states that 10% of the country's land area will be managed as state forests. Similarly, the government of Zambia has set a target to increase the area of state-managed forests to

at least 15% in the future. In Malawi, the Department of Forestry's "Statement of Development Policies (1987-1996)" is currently guiding the management and control of the forest estate, while the accompanying five-year action plan (1988-1992) has identified a number of priority strategies including initiatives in community forestry and cooperation with other countries in the development of forest resources.

Legislation Within Tropical Southern Africa, early legislation allowing for the creation of forest reserves dates back to 1921 in Tanzania, the 1930s in Madagascar and Rwanda, the 1940s in Malawi, Zambia and Zimbabwe, and the mid-1950s in Mozambique. In almost all cases, these early acts have either been amended or new legislation adopted, mostly in the 1970s and 1980s. Forestry legislation has recently been passed in Botswana (1976) and Burundi (1989), while the origin and date of legislation creating forest reserves in Angola is unknown.

Early legislation in Rwanda, and probably in a number of other countries in the subregion, made provision for the exploitation of timber resources in the interests of European settlers, while leaving Rwandanese nationals free to cut wood in accordance with customary rights. Most forest reserve networks today, however, have been established with both exploitation and conservation in mind, and, in the case of Tanzania, the development of management plans for forest reserves is stipulated in its legislation.

Present forestry legislation throughout the subregion allows for the creation of one or more forest reserve designations, outlines provisions relating to forest exploitation and management, establishes management authorities, and sets out offences and accompanying penalties in connection with forest resources and reserves. Related and subsidiary legislation to the principal acts exists in most countries, notable among these being the Acquisition of Land for Public Purposes Ordinance No.19 (1948) of Malawi, which enables the proclamation of public lands, subsequently gazetted as forest reserves.

In no less than six countries (Botswana, Malawi, Rwanda, Tanzania, Zambia and Madagascar), the principal forest acts make provision for the establishment of private forest reserves, local authority forest reserves, community forests or village forests. These categories are generally governed by the same regulations set out for government reserves, and are usually managed by local authorities. Zimbabwe is unique in that it has distinct legislation governing the conservation and sustainable use of communal land.

All but Mozambique and Madagascar have distinct wildlife and forestry laws. In Botswana, hunting is allowed within the forest reserve network, while in Zambia national parks are classified as conservation forests by the Forestry Department.

10.2.2 Wildlife Sector

Policy Most countries within the subregion have formulated, or are in the process of developing nature conservation policies which emphasise the importance of conservation areas in protecting wildlife and natural habitat. For example, the Wildlife Conservation Policy of Botswana, 1986 emphasises the importance of national parks and reserves, wildlife management areas, and the rational use of wildlife. Similarly, Malawi's Wildlife Policy Statement, 1963 contains provisions for the protection of wildlife and natural habitat, the control of hunting, and for conservation education programmes. Somewhat more extensive, the Ministry of Wildlife, Conservation and Tourism in Namibia has recently set out a number of aims and objectives for the next decade, including the development and maintenance of a network of conservation areas which will contain at least 10% of each habitat type, the proclamation of marine reserves, and the development of master plans and management policies for each conservation area.

A second feature of many policies within the subregion is an emphasis on the role conservation areas play in support of rural development. For example, the Director of Wildlife (1991) stated that the overall conservation goal of Tanzania is to integrate wildlife conservation with rural development, and to maintain a viable network of conservation areas which will benefit rural people and provide for the conservation of flora and fauna. Likewise, the policies of Zambia and Zimbabwe, respectively, emphasise the protection and management of the parks and wildlife estate, and promote wildlife management as an economic form of sustainable resource use. Currently, the development of a national environmental policy is a priority area in Angola.

Legislation Within the subregion, the majority of countries had pre-independence laws relating to wildlife conservation and the creation of conservation areas in the wildlife sector. Early examples include the passing of the first game law in Botswana in 1891, legislation passed in Rwanda (1925) which allowed for the creation of Virunga National Park, the 1925 Game Ordinance of Zambia, a decree of 1927 which established the first nature reserves in Madagascar, the Game and Fish Preservation Act, 1929 of Zimbabwe, and the "Regulamento", 1936 of Angola, which allowed for the establishment of national parks and reserves. These were subsequently amended or repealed, most recently in the 1970s (Angola, Botswana, Malawi, Mozambique, Rwanda, Tanzania, and Zambia), or 1980s (Burundi, Namibia, and Zimbabwe).

There is recognition of the need to draft new conservation area legislation for Angola, while revision of the natural resources acts in Malawi is ongoing. The proposed Wildlife Conservation and National Parks Bill of Botswana is being promulgated and will amalgamate the existing Fauna Conservation Act and the National Parks Act, while the National Parks and Wildlife Act of Zambia has been redrafted and is currently before parliament. These new pieces of legislation will either create or redefine conservation area designations.

Present nature conservation legislation in the subregion commonly provides for the establishment of national parks, game/nature reserves, sanctuaries, controlled hunting areas, and strict (integral) nature reserves. Other categories found include the international game park of Zambia, national recreation area of Namibia, and a single piece of legislation providing for the establishment and management of Ngorongoro Conservation Area in Tanzania. National parks and strict nature reserves tend to afford the highest degree of protection, while controlled hunting areas the least throughout the subregion. Wildlife management areas and game management areas, which are a feature of Botswana and Zambia, respectively, provide for conservation, local utilisation of wildlife resources, and often serve as buffer zones to the more strictly protected designations. In Zimbabwe, a number of parks and reserves are a part of the estate of the late Cecil John Rhodes and as such are also covered by the terms of the Rhodes Estate Act of 1978.

10.2.3 Additional Sectors

In Tanzania, the creation and management of marine reserves is provided for by the Fisheries Act No. 6, 1970, and the accompanying regulations of 1975. National monuments legislation has been passed in Burundi, Malawi, Namibia, and Zambia.

10.3 MANAGED AREAS ADMINISTRATION

10.3.1 Forestry Sector

Administration of forestry is the responsibility of forest departments or services within the subregion. Exceptions to this are Botswana and Tanzania, where forestry is administered at the divisional level, Namibia, where a Forestry Directorate exists, and Zimbabwe where a Forestry Commission is the managing authority (Table 10.1). Most have a long institutional history, dating from the turn of the century in a number of countries.

Unlike all other countries of the subregion, where there are distinct agencies which administer conservation areas in the forestry and wildlife sectors, respectively, the Administration Forestière of Madagascar is responsible for all conservation areas. In Namibia, the Forestry Directorate will be responsible for the management of forest reserves when the necessary enabling legislation is introduced.

10.3.2 Wildlife Sector Many of the original game departments in the subregion were established for tsetse control and have since assumed conservation responsibilities. Further, the management of conservation areas today is closely tied to tourism in many countries.

With the exception of Madagascar, management of conservation areas in the wildlife sector is the responsibility of the respective wildlife departments. Today, these departments, apart from those in Angola and Mozambique, operate independently of their respective forestry administrations. For example, jurisdiction lies with the Department of Wildlife and National Parks in Botswana, and with the Office of Tourism and National Parks

in Rwanda. Somewhat unique are Burundi, where management responsibility lies with the National Institute for the Environment and the Conservation of Nature; Mozambique, where Eduardo Mondlane University manages the partially-protected Inhaca Island; and Tanzania, where three agencies have management authority: the Division of Wildlife, which is responsible for game reserves and game controlled areas; Tanzania National Parks; and the Ngorongoro Conservation Area Authority. In addition, while the majority of game reserves are controlled on a regional basis in Tanzania, seven are considered national projects and come directly under the management of the Wildlife Division.

Management of conservation areas in the wildlife sector is linked closely to rural development in a number of countries. For example, responsibilities of the National Parks & Wildlife Service of Zambia include management of the Administration Management Design Programme for Game Management Areas, and the wildlife component of the Luangwa Integrated Rural Development Project, while the Department of National Parks & Wildlife Management of Zimbabwe oversees the Communal Areas Management Programme for Indigenous Resources projects throughout a number of districts in the country.

10.3.3 Additional Sectors

The creation and management of national monuments is the responsibility of the National Monuments Council in Namibia and the National Heritage Conservation Commission in Zambia, respectively. The Fisheries Division in the Ministry of Tourism, Natural Resources and Tourism, Tanzania, manages the seven marine reserves in the country.

10.3.4 Non-Governmental Organisations

While there are no local NGOs which are exclusively responsible for the management of conservation areas, the Kalahari Conservation Society of Botswana funds projects relating to protected areas, the Wildlife Society of Zimbabwe promotes the establishment of wildlife areas, and the East Africa Wildlife Society and the Wildlife Conservation Society of Tanzania support the management of reserves in that country.

10.4 MANAGED AREAS STATUS

The managed areas system is mapped for each country within the subregion in Fig. 10.1-13. Details of individual conservation areas are given in Annex 10.1 which also serves as a key to the maps. The bulk (over 90%) of the conservation areas network (by total area) falls within the domain of the wildlife sector (Table 10.3).

10.4.1 Managed Areas within the Forestry Sector

Coverage Natural reserved forests account for at least 5.2% of the total area of Tropical Southern Africa (Table 10.2). They are most extensive in Tanzania (14.2%), Rwanda (12.7%), Madagascar (10.6%), and Zambia (9.6%), the latter having over 450 notified reserves. The reserved forest networks of all other countries in the subregion cover less than 10% of the respective country, while there are no notified reserves in Namibia.

Of the 5.2% of natural reserved forests in the subregion, the majority (about 72%) are allocated for commercial production purposes (Table 10.2). All reserved forests in Mozambique, however, serve a conservation purpose, those in Malawi and Burundi are all considered protection forests, and 75% of the forest estate in Madagascar is set aside for protection purposes.

10.4.2 Conservation Areas within Forestry, Wildlife and Additional Sectors

Coverage There are more than 650 notified conservation areas in Tropical Southern Africa, covering a total area of 99.9 million ha or 16% of the subregion (Fig. 10.1). The forestry sector is directly responsible for over 370 conservation areas, covering a total area of approximately 9.1 million ha or 1.4% of the subregion. Most of these lie in Madagascar (279) and Malawi (70). The total coverage of conservation areas under additional sectors is minimal.

Approximately 13% of conservation areas are under total protection, covering 4.4% of area in the subregion (Table 10.3). Most of these fall within the wildlife sector. The rest are partially protected.

The target of 10% of total area under protection for conservation purposes has been reached by eight of eleven countries of the subregion, including Zambia (29.7%), Tanzania (28.5%), Rwanda (21.0%) and Botswana (17.6%), which all have extensive conservation area networks. Least extensive are those of Burundi and Angola, both of which are about half way towards reaching the target. About 57% of the conservation area in Zambia and about 45% of the area in Tanzania, however, is tied up in game management areas and game controlled areas, respectively, which make minimal provision for habitat protection.

Representativeness In a number of countries in the subregion, nature conservation areas have been established haphazardly in the past, with little regard to ecological or other criteria for their selection. This is reflected in the existing networks of Angola, where conservation areas were established first in zones of low agricultural or economic potential, and Burundi, where the current conservation area system is comprised mostly of montane habitat. In contrast, Botswana supports 14 major ecosystem types, nine of which are represented in national parks and game reserves (Hannah *et al.*, n.d.). Forest reserves in the country are found primarily in dry woodland types.

In Madagascar, the establishment of conservation areas, beginning with the selection of ten nature reserves in 1927, was to provide a representative sample of the many ecological features of the island (IUCN/UNEP/WWF, 1987). Despite this intent, only about 8% of the country is included within the conservation area network, and not all native terrestrial forest communities are afforded protection. Fourteen additional sites have been proposed to extend protection to the south-west and centre-east, to mangrove and wetland habitat, and to coral reefs (Nicoll and Langrand, 1989).

Protection of the biotic communities in Malawi is extensive. Of the 29 communities recognised by Shaxson (1977), examples of 18 occur in conservation areas of the wildlife sector, while a number of others are found in the forest reserve network (Clarke and Bell, 1986). Extended protection to the deciduous miombo woodlands and the evergreen forest biome are considered priorities, among others. In Mozambique, increased protection is needed in highland and coastal forests, while in Namibia, the Ministry of Wildlife, Conservation & Tourism has set a target of protecting 10% of each habitat type (Grobler, 1991). In Tanzania, where conservation areas cover nearly 30% of its total area, recommendations to extend the conservation areas network to montane and lowland forests, and to establish conservation areas on Pemba and Zanzibar have been formulated (IUCN, 1987b; Stuart & Adams, 1990).

Zambia has a good conservation area network covering most major habitat types (MacKinnon & MacKinnon, 1986). Nevertheless, inadequately protected habitats include a number of montane habitats, and isolated patches of lowland and gallery forest in the north-west (MacKinnon & MacKinnon, 1986; Stuart & Adams, 1990). In Zimbabwe, additional protection has been recommended for lowland forest, quartz grassland and forest, and Parinari forests.

Integrity Using mean size as a measure of integrity, data in Table 10.4 indicate that forest reserves serving a conservation or protection function in Malawi and Zimbabwe tend to be small, the majority being less than 10,000ha in size. In contrast, the reserves of Botswana, although small in number, have a mean size in excess of 30,000ha. Totally protected sites (strict nature reserves) under the jurisdiction of the Administration Forestière of Madagascar have a mean size larger than 50,000ha. Extrapolating from Table 10.3, forest reserves serving a conservation or protection function in Mozambique tend to be large, with a mean size exceeding 135,000ha.

In the wildlife sector, the partially and totally protected conservation areas of Angola, Botswana, Mozambique, and Namibia tend to be few in number but large in size, with means in excess of 300,000ha for each country. Both Tanzania and Zambia have respectable numbers of partially and totally protected areas, again with means larger than 300,000ha. The totally protected sites of Malawi, Rwanda, and Zimbabwe have mean sizes (>100,000ha) which are considerably larger than those of their respective partially protected sites, while conservation areas in Burundi tend to be on the small side. Conservation areas in additional sectors in the subregion are all afforded partial protection and are small in size.

The mean size of totally protected areas (51,776ha) in the forestry sector, made up exclusively of strict nature reserves, is about four times that of partially protected sites (12,980ha), comprising mostly forest reserves. In the wildlife sector, the mean size of totally protected areas (353,825ha) is slightly larger than that for partially protected sites (329,060ha). National parks constitute the bulk of the former category, and by definition tend to be relatively large areas to provide a range of services. Partially protected areas comprise mainly game/nature reserves, sanctuaries, and controlled hunting areas. Significantly, conservation areas in the wildlife sector tend to be considerably larger than those in the forestry sector.

Effectiveness Apart from gaps in the representation of the subregion's biological diversity within existing conservation area networks, conservation efforts are limited by weaknesses in policy and legislation, inadequate institutional support and ineffective management.

As mentioned in Section 10.2, nature conservation policies in the forestry sector have been formulated at least in Malawi, Namibia, and Zambia, while the majority of countries in the subregion have nature conservation policies in the wildlife sector.

For a number of countries, legislation needs strengthening or updating. For example, wildlife legislation in Angola is in urgent need of revision, particularly when one considers that the existing designations of conservation area do not conform to international standards (IUCN, 1987a). In Botswana, the proposed Wildlife Conservation and National Parks Bill will upgrade a number of conservation areas, and make provisions for legally established wildlife management areas in the country. In Malawi, a weakness of forestry legislation is that nearly all of the country's statutes were enacted prior to independence and occasionally revised in the 1960s (Vardy, 1982). A new act governing natural resources management in Malawi is being prepared. Significantly, new forestry legislation (since 1980), allowing for the creation of various forest reserve designations, has been passed in Burundi, Rwanda, Tanzania and Zimbabwe. Enactment of conservation area legislation is hampered in a number of countries by civil unrest or lack of resources.

Institutional resources for conservation area management are inadequate for almost all countries within the subregion. Constraints include a lack of adequately trained staff, funds, resources, and in one or two cases, an infrastructure which is almost non-existent for the management of conservation areas. These problems are most acute in Burundi, Mozambique, and Angola, where, in the latter, the Forestry Development Institute operates on less than US\$ 20,000 per year for conservation areas management (IDF, 1991). Further hindrances to conservation area management are poor communication and transportation networks in a number of countries, rendering many sites inaccessible. A lack of coordination between agencies managing conservation areas has been identified as a problem in several countries of the subregion.

Low priority and a general lack of commitment of resources for conservation areas is largely responsible for many of the deficiencies in their management. This situation is exacerbated by countries having an unclear programme or weak planning of their conservation area networks. Very few conservation areas of the subregion have management plans. The majority of conservation areas in Angola and Mozambique, and game controlled areas in Tanzania exist on paper only, while Jolly (1990) has noted that many of the conservation areas in Madagascar are protected in name only, most being unprotected from land and animal poachers. Exceptions to these general trends are found in Namibia and Malawi, where conservation areas are well managed. In the case of Malawi, a master plan for national parks and wildlife, and protected area plans for conservation areas in the northern, central and southern regions were prepared in the early 1980s (Clarke, 1983 a,b,c,d; Mackinnon & Mackinnon, 1986; Stuart & Adams, 1990). Further, Botswana is actively managing its forest reserves, and has adopted a high cost/low volume tourism policy for the reserves, envisaging that considerable financial and ecological dividends will be realised in the long-term (Modise, pers. comm., 1991).

Common threats to the subregion's conservation areas include subsistence and commercial poaching, the growth of human settlements, illegal grazing, shifting cultivation, the unauthorised extraction of timber, fuelwood and minor forest products, uncontrolled bushfires, and in the cases of Botswana, Namibia, and Zambia, mineral prospecting. Other threats include rice cultivation in Malawi, hydroelectric developments and the expansion of industrial activities in Zambia, and forest swamp reserves are under threat from drainage plans in Namibia. These threats are compounded by rapidly growing populations in the subregion, and civil unrest in a number of countries.

10.4.3 Contribution of the Forestry Sector to Nature Conservation

Data in Table 10.2 indicate that the contribution of the forestry sector to nature conservation is small (1.4%) in terms of the total area of the subregion under protection and conservation forest. This percentage, however, represents minimum coverage as data are not available for all countries. For example, an unknown amount of commercial forest area in Zambia serves a protection function in guarding hilly slopes and sources of streams or rivers. Nevertheless, over 90% of the conservation area network falls within the domain of the wildlife sector, covering 14.4% of total area of the subregion (Table 10.3).

10.5 FUTURE PROSPECTS

10.5.1 Expanding the Conservation Area Network

Official proposals to expand the conservation area network total 14.6 million ha or 2.3% of the total area of the subregion (Table 10.3). These improvements to the network affect 10.7 million ha in Botswana, 1.3 million ha in Malawi, and 1.5 million ha in Mozambique. The establishment of wildlife management areas in Botswana will form buffer zones around most national parks and game reserves. Other significant extensions to existing national networks are planned for Madagascar and Tanzania, while extended protection will come about in Namibia through the creation of more conservation areas in the wildlife sector and the notification of forest reserves.

10.5.2 Other National Initiatives

Strengthening networks A variety of initiatives to strengthen conservation areas planning and management are being implemented or formulated. In Rwanda, a project entitled "Tourisme et Parcs Nationaux" ran from 1974 to 1990, the principal objectives being to develop infrastructure and tourism in conservation areas, and to provide equipment and technical assistance in park planning and management. Following this, a new programme is currently being planned (ORTPN, 1991). The Elephant Conservation Plan for Angola outlines a three-phase programme spread over the next five years. Actions within this programme include the establishment of an effective conservation area network and the creation of a state wildlife and conservation authority. In addition, regional Southern African Development Coordination Conference sub-sector proposals include infrastructure development in conservation areas of Angola (IDF, 1991). In Madagascar, IUCN and WWF are giving considerable support to improving the management of parks and reserves. As of 1991, there were no fewer than 29 separate WWF projects in the country. The World Bank, interested in the commercial possibilities of the proposed Kruger/Limpopo International Park, is considering a US\$ 12 million loan to Mozambique to get the scheme started (Caplan, 1991). In Tanzania, the Report on the Conservation of Ecosystems and Genetic Resources under the Tropical Forestry Action Plan contains a "Conservation Action Plan", drawn up for forest areas, which includes a number of projects for certain key areas, notably closed forest and mangrove forest (Bensted-Smith and Msangi, 1989). Other multi-agency projects include the planning and development of marine and terrestrial protected areas in the country.

Overcoming Economic Constraints Funding is a major factor which limits the effective management of conservation areas. In addition to the aid projects mentioned above, the Elephant Action Plans, prepared for most countries of the subregion, indicate funding and project priority areas.

In Namibia, income from hunting, tourism, and wildlife products is second only to the mining and fishing industries (Berry, 1990), while in Rwanda, tourism, based on the national parks, has been promoted vigorously and was the third largest foreign exchange earner in 1988 (Perlez, 1988; Wilson, 1991). Total earnings for the Wildlife Division in Tanzania were about US\$ 2.6 million, while Tanzania National Parks earned over US\$ 3.5 million, and Ngorongoro Conservation Area Authority received over US\$ 1.84 million in revenue in 1990 (WD, 1991). In total, Tanzania earns more than US\$ 70 million from wildlife in the form of tourism, sport hunting, live animal trade, and, formerly, from ivory (ITC, 1989). Further, the Tanzania Wildlife Protection Fund channels funds and other facilities to national organisations involved in wildlife management.

Under the Communal Areas Management Programme for Indigenous Resources projects in Zimbabwe, considerable revenue is being accrued by management trusts involved in community management. As of 1990, the estimated total revenue from hunting safaris in these areas was about US\$ 4 million, of which approximately 50% accrued directly to the districts involved (Metcalf, 1990). US-AID and WWF have provided support for the Administration Management Design programme for game management areas in Zambia, while wildlife management areas are being developed through the Natural Resources Management Project funded by US-AID in Botswana. In response to economic constraints, the Direcção Nacional de Florestas e Fauna Bravia is currently considering privatising the management of Mozambique's wildlife resources (Ministerio de Agricultura, 1991).

Improving Management Within the subregion, there are numerous initiatives which attempt to link conservation with development in and around conservation areas. Two examples include the goal to integrate protection and management into rural development programmes in Angola, and the development of wildlife management areas in Botswana to allow for conservation and controlled utilisation of wildlife outside conservation areas. In Madagascar, the World Bank has targeted the country in a pilot cooperative venture to integrate conservation and economic growth. An "Environmental Action Plan" has been drawn up, one of its features being the equal division of funds: half in support of conservation in reserves, and half to the local people (Jolly, 1990).

Integrated rural development programmes that include provision for local communities to benefit from wildlife have been in operation in several parts of Malawi for some time, and it has been suggested that these programmes be extended to the Lower Shire Valley (Stuart & Adams, 1990). Further, the Department of Forestry's current five-year action plan (1988-1992) has identified initiatives in community forestry and is encouraging multiple land use systems as priority strategies. In Rwanda, recommendations have been made to develop a scheme to involve local people in the management of conservation areas, while in Tanzania it has been proposed to set aside wildlife management areas and to develop wildlife-based industries for the benefit of village communities and the private sector (WD, 1991). Further, Ngorongoro Conservation Area in Tanzania was established as a multiple use management area to promote the conservation of wildlife and other natural resources and the interests of the 25,000 resident Masai pastoralists.

Currently, two major parallel initiatives testing different models for involving local communities in sustainable use of wildlife resources in Zambia are the Administration Management Design Programme for Game Management Areas and the Luangwa Integrated Rural Development Project (Lungu, 1990). The former provides a national policy framework for community-based wildlife conservation and management, linking wildlife benefits to local communities for conservation in game management areas. By comparison, the latter is more encompassing and is intended to be a multi-sectoral project for economic development in the central part of the Luangwa Valley, including wildlife management and initiatives aimed at development of agriculture, forestry, fisheries, water resources and infrastructure (Lungu, 1990). In Zimbabwe, the buffer zone concept was introduced in 1960, and considerable emphasis is placed on the role of conservation areas in raising rural living standards and generating revenue through domestic and foreign tourism and utilisation of wildlife (Child, 1984). Outside conservation areas, the Communal Areas Management Programme for Indigenous Resources projects have been initiated in at least thirteen districts of the country. Half the revenue realised from sport hunting and other activities on such lands accrues directly to the districts involved, the other half to the respective management trusts (Metcalf, 1990).

10.5.3 International Initiatives

Conventions and Programmes Most countries within the subregion participate in at least one international convention or programme concerned with conservation areas (Table 10.5). All countries except Angola, Botswana, Namibia, and Rwanda have accepted or ratified the Convention Concerning the World Cultural and Natural Heritage (World Heritage Convention). Of those countries which are party to the Convention, only Burundi and Mozambique have not had natural properties inscribed on the World Heritage List.

Zambia is the only country of the subregion to have acceded to or ratified the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention), while Madagascar, Rwanda and Tanzania participate in the Unesco Man and the Biosphere Programme. To date, two biosphere reserves have

been accepted in Tanzania, one in Rwanda, and one in Madagascar.

All countries of the subregion, with the exceptions of Angola, Namibia, and Zimbabwe, have either ratified or are signatories to the African Convention, which provides for the establishment of several conservation area designations. Most countries are members of the Southern African Development Coordination Conference (SADCC) and the Southern African Regional Commission for the Conservation and Utilisation of the Soil (SARCCUS), which both have sectors responsible for the conservation and management of natural resources.

Cooperative agreements Despite a number of security problems in the subregion, there are no fewer than thirteen transfrontier conservation areas between countries in and around Tropical Southern Africa. Botswana is currently considering a collaborative programme for the management of the contiguous Gemsbok National Park (Botswana) and Kalahari Gemsbok National Park of South Africa, and is assessing a number of sites for potential transborder parks with its other neighbours. Mozambique and the Southern African governments of South Africa, Zimbabwe, and Swaziland are discussing the creation of the Kruger/Limpopo International Park, which, if established, would comprise one of the largest national parks in the world (Ministerio de Agricultura, 1991).

10.6 PRIORITIES FOR ACTION

Priorities for conservation action in the subregion were reviewed as part of the IUCN *Systems review of the Afrotropical Realm* (MacKinnon and MacKinnon, 1986), and in the accompanying Action Strategy (IUCN, 1987b), but these are somewhat dated.

Priorities have more recently been reviewed in IUCN (1992) in preparation for the IV World Parks Congress. These are generalised, recognising that translation of priorities into action will vary according to national conservation objectives, history and political will. They will provide a foundation to the more specific priorities identified in this report and summarised in Table 10.6.

In conclusion, progress throughout the subregion has been variable, ranging from the well established and managed conservation areas of Malawi and Namibia to the almost non-existent networks of Angola and Mozambique. Not surprisingly, much of this situation is a direct reflection of the political stability in the first two cases and the civil unrest in the latter two. Other countries of the subregion fall in between these two extremes. Governments of Tropical Southern Africa are well aware of the need to integrate rural development with conservation, and have made remarkable progress in initiating such programmes in and around conservation areas of the subregion.

REFERENCES

- Bensted-Smith, R. and Msangi, T.H. (1989). Report on the conservation of ecosystems and genetic resources. Tropical Forestry Action Plan, United Republic of Tanzania. Unpublished report for the Forest and Beekeeping Division of the Ministry of Lands, Natural Resources and Tourism.
- Berry, H.H. (1990). Namibia: Large-scale commercial wildlife utilisation. *Gnusletter* 9(3): 15-17.
- Caplan, J. (1991). The park of all problems. *The Guardian*, 8 November. P. 31.
- Child, G. (1984). *Zimbabwe's approach to protected area management*. Proceedings of the 22nd Working Session, Commission on National Parks and Protected Areas, Victoria Falls, Zimbabwe, 22-27 May 1983.
- Clarke, J.E. (1983a). *Principal master plan for National Parks and Wildlife Management*. Department of National Parks and Wildlife, Lilongwe, Malawi. (Unseen).
- Clarke, J.E. (1983b). *Protected areas master plan for Northern Region*. Department of National Parks and Wildlife, Lilongwe, Malawi. 87 pp.
- Clarke, J.E. (1983c). *Protected areas master plan for Central Region*. Department of National Parks and Wildlife, Lilongwe, Malawi. 77 pp.
- Clarke, J.E. (1983d). *Protected areas master plan for Southern Region*. Department of National Parks and Wildlife, Lilongwe, Malawi. 163 pp.
- Clarke, J.E. and Bell, R.H.V. (1986). Representation of biotic communities in protected areas: a Malawian case study. *Biological Conservation* 35: 293-311.
- Grobler, D. (1991). Review of conservation in Namibia over the past decade and objectives for the next decade. Paper presented at the CNPPA Workshop for Anglophone Africa in preparation for the Fourth World Parks Congress, Amboseli, Kenya, 16-19 July 1991. 11 pp.
- Hannah, L., Wetterberg, G., and Duvall, L. (n.d.). *Botswana biological diversity assessment*. Agency for International Development, Bureau for Africa.
- IDF (1991). *Elephant Conservation Plan, Angola*. Instituto de Desenvolvimento Florestal, Luanda, Angola. 49 pp.
- ITC (1989). United Republic of Tanzania: development and promotion of wildlife utilisation. International Trade Centre Project No. URT/87/004. (Unseen).
- IUCN (1987a). *IUCN directory of Afrotropical protected areas*. IUCN, Gland, Switzerland and Cambridge, UK. P. 3.
- IUCN (1987b). *Action strategy for protected areas in the Afrotropical Realm*. IUCN, Gland, Switzerland and Cambridge, UK. 51 pp.
- IUCN (1992). Regional Review - Eastern Africa. In: *Regional reviews*. IUCN, Gland, Switzerland. Pp. 2.1-2.30.
- IUCN/UNEP/WWF (1987). *Madagascar: an environmental profile*. Jenkins, M.D. (Ed.). IUCN, Gland, Switzerland and Cambridge, UK. 374 pp.
- Jolly, A. (1990). A changing world banking on Madagascar. *Ecofrica* 4: 1-3.
- Lungu, F.B. (1990). Administrative Design for Game Management Areas (ADMADE) and Luangwa Integrated Rural Development Project (LIRD). In: Kiss, A. (Ed.), *Living with wildlife - wildlife resource management with local participation in Africa*. (Draft). World Bank, Washington, DC. Pp. 115-122.
- MacKinnon, J. and MacKinnon, K. (1986). *Review of the protected areas system in the Afrotropical Realm*. IUCN, Gland, Switzerland and Cambridge, UK/UNEP, Nairobi, Kenya. 259 pp.
- Metcalf, S. (1990). The CAMPFIRE programme in Zimbabwe. *Nature et Faune* 6(1): 22-27.
- Ministerio de Agricultura (1991). *Elephant Conservation Plan for Mozambique*. Direcção Nacional de Florestas e Fauna Bravia, Maputo, Mozambique. 47 pp.
- Nicoll, M.E., and Langrand, O. (1989). *Madagascar: revue de la conservation et des aires protégées*. WWF, Gland, Switzerland. 374 pp.
- ORTPN (1991). *Plan de conservation de l'éléphant au Rwanda*. Unpublished report. Office Rwandais du Tourisme. 43 pp.
- Perlez, J. (1988). Compromise keeps Rwanda's dwindling families of gorillas alive. *The Globe and Mail*, 27 December. P. A15.
- Shaxson, T.F. (1977). A map of the distribution of major biotic communities in Malawi. *J. Soc. Malawi* 30: 35-48. (Unseen).
- Stuart, S.N. and Adams, R.J. (1990). *Biodiversity in sub-saharan Africa and its islands: conservation, management and sustainable use*. IUCN, Gland, Switzerland. 242 pp.

- Vardy, R.G. (Compiler) (1982). Draft environmental profile of Malawi. Arid Lands Information Centre, University of Arizona, Tuscon, USA. 195 pp.
- WD (1991). Elephant conservation plan - Tanzania. Wildlife Division, Ministry of Tourism, Natural Resources and the Environment, Dar-es-Salaam. 152 pp.
- Wilson, R. (1991). The conflict in Rwanda and its impact on the mountain gorilla. *Oryx* 25: 119-120.

Table 10.1 Legal provisions for managed areas, with year of enactment and responsible administrative authority. Designations are classified according to management objective (T = total protection, P = partial protection, L = forest land under local extractive use, C = forest land under commercial extractive use).

Country	Legislation Year	Title [Sector]	Administrative authority	Managed areas Man. Designation	
Angola	1977	Decree No. 43/77 [W]	Wildlife Department, Instituto de Desenvolvimento Florestal	T	National park
				P	Partial reserve
				P	Regional nature park
				T	Special reserve Strict nature reserve
Botswana	1976	Forest Act [F]	Forestry Division	P	Forest reserve
				P	Controlled hunting area
	1961	Fauna Conservation Act [W]	Department of Wildlife and National Parks	P	Game reserve
				P	Private game reserve Sanctuary
1979	Fauna Conservation (Amendment) Act [W]	Department of Wildlife and National Parks	P	Wildlife management area	
			1968	National Parks Act [W]	Department of Wildlife and National Parks
Burundi	1989	Loi No. 1/02 portant Code forestier [F]	Service Forestier	P	Forêt de protection
	1980	Décret-loi No. 1/6 portant création de parcs nationaux et des réserves naturelles [W]	Institut National pour l'Environnement et la Conservation de la Nature	P	Périmètre de reboisement Réserve forestier
				P	Parc national Réserve naturelle (Réserve naturelle intégrale)

Madagascar	1930	Décret Forestier [F]	Administration Forestière	P C P P P P P C	Forêt classée Forêt réservée Parc national Périmètre de reboisement Réserve naturelle Réserve spéciale Station forestière
	1966	Décret No. 66-242 [F]	Administration Forestière	T	Réserve naturelle intégrale
Malawi	1942	Forest Act No. 2 (Cap. 63:01) [F]	Department of Forestry	P P P	Customary land administration area Forest reserve Village forest area
	1953	Game Act (Cap. 66:03) No. 26 [W]	Department of National Parks, Wildlife and Tourism	P P	Controlled area Game reserve
	1969	National Parks Act No. 33 [W]	Department of National Parks, Wildlife and Tourism	T	National park
	1959	Wild Birds Protection Act (Cap. 66:04) No. 7 [W]	Department of National Parks, Wildlife and Tourism	P P	Bird sanctuary Controlled area
	1965	Monuments Act No. 44 [A]	?	P	National monument
Mozambique	1955	Decree No. 40040 [F]	Unidad de Direcção de Fauna Bravia	P	Reserva florestais
	1955	Decree No. 40040 [W]	Unidad de Direcção Florestas	P P P P P	Coutada Parque nacionais Regimen de vigilancia Reserva especiais Reserva parciais

Namibia	1975	Nature Conservation Ordinance (Act No. 4) [W]	Ministry of Wildlife, Conservation & Tourism	P T P P P P	Game park National park National recreation area Nature reserve Recreation resort Natural monument
Rwanda	1969	National Monuments Act No. 28 [A]	National Monuments Council	P	Forêt protégée Réserve forestier intégral Zone de protection forestière
	1988	Loi No. 47 portant organisation du régime forestier [F]	Service forestier, Ministère de l'Agriculture, de l'Élevage et des Forêts	P P P	
	1973	Décret-loi portant confirmation et modification de l'Ordonnance-loi du 18 juin 1973 portant création de l'Office Rwandais du Tourisme et des Parcs Nationaux [W]	Office Rwandais du Tourisme et des Parcs Nationaux	P T T	Domaine de chasse Parc national Réserve spéciale (sanctuaire)
Tanzania	1982	Forest Ordinance (Cap. 389) [F]	Division of Forestry and Beekeeping, Ministry of Tourism, Natural Resources and the Environment	P P P	Local authority forest reserve Provisional state forest reserve State forest reserve
	1959	National Parks Ordinance No. 12 [W]	Tanzania National Parks	T	National park
	1959	Ngorongoro Conservation Area Act [W]	Ngorongoro Conservation Area Authority	T	Ngorongoro Conservation Area
	1974	Wildlife Conservation Act [W]	Division of Wildlife, Ministry of Tourism, Natural Resources and the Environment	P P P	Game controlled area Game reserve Partial game reserve
	1970	Fisheries Act No. 6 [A]	Fisheries Division, Ministry of Tourism, Natural Resources and the Environment	P	Marine reserve

Zambia	1973	Forest Act No. 39 [F]	Forest Department	P	Local forest
	1971	International Game Park and Wildlife Act No. 27 [W]	National Parks and Wildlife Service	P	National forest
	1968	National Parks and Wildlife Act No. 57 [W]	National Parks and Wildlife Service	P	International game park
	1989	National Heritage Conservation Commission Act No. 23 [A]	National Heritage Conservation Commission	P T P	Game management area National park National monument Natural heritage
Zimbabwe	1987	Communal Land Forest Produce Act (Cap. 247) [F]	Forestry Commission	C C P	Communal land Plantation Protected forest area
	1949	Forest Act (Cap. 125) [F]	Forestry Commission	P P	Demarcated forest State forest
	1975	Parks and Wildlife Act No. 14 [W]	Department of National Parks and Wildlife Management	T	Botanical reserve
				P	Development area
				T	National park
P				Recreational park	
			P	Safari area	
			P	Sanctuary	
			T	Special conservation area	
			P	Wild area	
			P	Wilderness area	

Table 10.2 Extent of notified natural forests, classified by forest function. Units are in sq. km, followed by % total area. Full data, with sources, are given in Annex 10.2.

Country SUBREGION	Total area	F O R E S T F U N C T I O N			T o t a l
		Production	Protection	Conservation	
Angola	1,246,700	18,560 (1.5)	0	0	18,560 (1.5)
Botswana	581,730	3,918 (0.7)	0	638 (0.1)	4,556 (0.8)
Burundi	27,830	0	430 (1.5)	0	430 (1.5)
Madagascar ¹	587,040	15,700 (2.7)	0	46,273 (7.9)	61,973 (10.6)
Malawi ^{2,3}	118,480	0	6,180 (5.2)	0	6,180 (5.2)
Mozambique ¹	799,380	0	0	19,400 (2.4)	19,400 (2.4)
Namibia	824,290	0	0	0	0 (0.0)
Rwanda ¹	26,340	1,380 (5.2)	760 (2.9)	1,201 (4.6)	3,341 (12.7)
Tanzania ^{1,2}	945,090	118,000 (12.5)	0	16,000 (1.7)	134,000 (14.2)
Zambia	752,610	72,553 (9.6)	0	0	72,553 (9.6)
Zimbabwe	390,580	8,957 (2.3)	22(+)	49(+)	9,028 (2.3)
TROPICAL SOUTHERN AFRICA					
	6,300,070	239,068 (3.8)	7,392 (0.1)	83,561 (1.3)	330,021 (5.2)

¹ A more thorough breakdown of conservation forest into non-forest and plantation categories is not available (see Annex 10.2.2). The totals for natural forest under conservation, therefore, may be inflated.

² The breakdown of natural forest into protection function, and/or the distinction between conservation and protection forest, is not available.

³ Total for conservation/protection forest is underestimated because the extent of conservation working circles is not included.

Table 10.3 Extent of notified and proposed conservation areas, classified by sector and national designation. Management categories are assigned to designations based on national legislation (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses). Totals for proposed sites may be inflated because they may include areas of properties already protected but proposed for upgrading to higher conservation status. Details of individual properties are given in Annex 10.2. N is the total number of conservation areas.

COUNTRY Sector National designation	Man. Cat.	Notified		Proposed	
		N	Area (ha)	N	Area (ha)
ANGOLA (1,246,700 sq. km)					
Wildlife Sector					
Integral Nature Reserve	T	2	828,200	0	0
National Park	T	6	5,423,000	0	0
Partial Reserve	P	4	1,920,000	0	0
Regional Nature Park	P	1	10,000	0	0
Subtotals		13	8,181,200	0	0
(% total area)			(6.5)		(0.0)
Totals		13	8,181,200	0	0
(% total area)			(6.5)		(0.0)
BOTSWANA (581,730 sq. km)					
Forest Sector					
Forest Reserve	P	2	63,750	0	0
Subtotals		2	63,750	0	0
(% total area)			(0.1)		(0.0)
Wildlife Sector					
Game Reserve	P	7	6,410,100	0	0
National Park	T	3	3,807,000	0	0
Sanctuary	P	4	9,910 *	0	0
Wildlife Management Area	P	0	0	12	10,702,700 *
Subtotals		14	10,227,010 *	12	10,702,700 *
(% total area)			(17.5)		(18.4)
Totals		16	10,290,760 *	12	10,702,700 *
(% total area)			(17.6)		(18.4)
BURUNDI (27,830 sq. km)					
Forest Sector					
Protection forest	P	?	43,000	?	20,000
Subtotals		0	43,000	0	20,000
(% total area)			(1.5)		(0.7)
Wildlife Sector					
National Park	P	3	88,865	0	0
Nature Reserve	P	5	12,125	0	0
Subtotals		8	100,990	0	0
(% total area)			(3.6)		(0.0)
Additional Sector, or sector unknown					
Natural Monument	P	2	35	0	0
Subtotals		2	35	0	0
(% total area)			(0.0)		(0.0)
Totals		10	144,025	0	20,000
(% total area)			(5.1)		(0.7)

COUNTRY Sector	Man. Cat.	Notified		Proposed	
		N	Area(ha)	N	Area(ha)
MADAGASCAR (587,040 sq. km)					
Forest Sector					
Classified forest	P	158	2,671,051	0	0
Hunting Reserve	P	4	15,000 *	0	0
Marine National Park	P	0	0	1	0 *
National Park	P	6	171,307	3	450,567
Reforestation Area	P	77	823,798	0	0
Special Reserve	P	23	376,580	0	0
Strict Nature Reserve	T	11	569,542	0	0
Subtotals		279	4,627,278 *	4	450,567 *
(% total area)			(7.9)		(0.8)
Totals		279	4,627,278 *	4	450,567 *
(% total area)			(7.9)		(0.8)
MALAWI (118,480 sq. km)					
Forest Sector					
Forest Reserve	P	70	617,984 *	88	1,267,079 *
Subtotals		70	617,984 *	88	1,267,079 *
(% total area)			(5.2)		(10.7)
Wildlife Sector					
Game Reserve	P	4	361,400	0	0
National Park	T	5	696,200	0	0
Subtotals		9	1,057,600	0	0
(% total area)			(9.0)		(0.0)
Totals		79	1,675,584 *	88	1,267,079 *
(% total area)			(14.2)		(10.7)
MOZAMBIQUE (799,380 sq. km)					
Forest Sector					
Forest Reserve	P	14	1,940,000 *	0	0
Subtotals		14	1,940,000 *	0	0
(% total area)			(2.4)		(0.0)
Wildlife Sector					
Faunal Reserve	P	1	2,000	0	0
Game Reserve	P	5	2,810,000	0	0
Marine National Park	P	1	377,000	1	0 *
National Park	P	4	1,590,000	4	1,500,000 *
Wildlife Utilization Area	P	2	2,200,000	0	0
Subtotals		13	6,979,000	5	1,500,000 *
(% total area)			(8.8)		(1.9)
Totals		27	8,919,000 *	5	1,500,000 *
(% total area)			(11.2)		(1.9)
NAMIBIA (824,290 sq. km)					
Wildlife Sector					
Game Park	P	13	8,005,635	0	0
National Park	T	3	2,360,400	0	0
Nature Reserve	P	2	6,005	0	0
Recreation Area	P	2	782,900	0	0
Subtotals		20	11,154,940	0	0
(% total area)			(13.5)		(0.0)

COUNTRY Sector	Man. Cat.	Notified		Proposed	
		N	Area (ha)	N	Area (ha)
National designation					
Additional Sector, or sector unknown					
Natural Monument	P	1	50	0	0
Subtotals		1	50	0	0
(% total area)			(0.0)		(0.0)
Totals		21	11,154,990	0	0
(% total area)			(13.5)		(0.0)
RWANDA (26,340 sq. km)					
Forest Sector					
Integral Forest Reserve	P	3	120,100	0	0
Protected Forest	P	?	76,000	0	0
Subtotals		3	196,100	0	0
(% total area)			(7.5)		(0.0)
Wildlife Sector					
Hunting Reserve	P	1	30,000	0	0
National Park	T	2	327,000	0	0
Subtotals		3	357,000	0	0
(% total area)			(13.5)		(0.0)
Totals		6	553,100	0	0
(% total area)			(21.0)		(0.0)
TANZANIA (945,090 sq. km)					
Forest Sector					
Forest Reserve	P	?	1,600,000	0	0
Subtotals		0	1,600,000	0	0
(% total area)			(1.7)		(0.0)
Wildlife Sector					
Conservation Area	T	1	828,800	0	0
Game Controlled Area	P	48	11,616,502	0	0
Game Reserve	P	18	8,970,050 *	3	500,000 *
National Park	T	11	3,909,975	1	120,000
Subtotals		78	25,325,327 *	4	620,000 *
(% total area)			(26.8)		(0.6)
Additional Sector, or sector unknown					
Marine Reserve	P	7	0 *	0	0
Subtotals		7	0 *	0	0
(% total area)			(0.0)		(0.0)
Totals		85	26,925,327 *	4	620,000 *
(% total area)			(28.5)		(0.6)
ZAMBIA (752,610 sq. km)					
Wildlife Sector					
Game Management Area	P	32	16,048,800	0	0
National Park	T	19	6,359,000	0	0
Subtotals		51	22,407,800	0	0
(% total area)			(29.7)		(0.0)
Additional Sector, or sector unknown					
Natural Monument	P	1	1,900	0	0
Subtotals		1	1,900	0	0
(% total area)			(0.0)		(0.0)
Totals		52	22,409,700	0	0
(% total area)			(29.7)		(0.0)

COUNTRY Sector National designation	Man. Cat.	Notified		Proposed	
		N	Area(ha)	N	Area(ha)
ZIMBABWE (390,580 sq. km)					
Forest Sector					
State Forest	P	5	7,017	0	0
Subtotals		5	7,017	0	0
(% total area)			(0.0)		(0.0)
Wildlife Sector					
Botanical Reserve	T	14	1,100	0	0
National Park	T	11	2,703,900	1	0 *
Recreation Park	P	15	346,001 *	0	0
Safari Area	P	17	1,892,774	0	0
Sanctuary	P	7	18,677	0	0
Subtotals		64	4,962,452 *	1	0 *
(% total area)			(12.6)		(0.0)
Totals		69	4,969,469 *	1	0 *
(% total area)			(12.6)		(0.0)

TROPICAL SOUTHERN AFRICA (6,300,070 sq. km) - summary by sector

Forestry Sector		373	9,095,129 *	92	1,737,646 *
(% total area)			(1.4)		(0.3)
Wildlife Sector		273	90,753,319 *	22	12,822,700 *
(% total area)			(14.4)		(2.0)
Additional Sector or sector unknown		11	1,985 *	0	0
(% total area)			(0.0)		(0.0)

TROPICAL SOUTHERN AFRICA (6,300,070 sq. km) - summary by management category

Total protection		88	27,814,117	2	120,000 *
(% total area)			(4.4)		(0.0)
Partial protection		569	72,036,316 *	112	14,440,346 *
(% total area)			(11.4)		(2.3)
Degree of protection unknown		0	0	0	0
(% total area)			(0.0)		(0.0)
Totals		657	99,850,433 *	114	14,560,346 *
(% total area)			(15.8)		(2.3)

* Subtotal is incomplete because of missing data for either number of sites or area covered.

Table 10.4(a) Frequency distributions of notified and proposed conservation area sizes, with means, classified by management category (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses), for (a) Forestry, (b) Wildlife and (c) Additional sectors.

		N	Mean size (ha)	Number in each size class (ha)			
				≤1000	1001-10,000	10001-100,000	>100,000
a) Forestry Sector							
BOTSWANA							
Notified sites	P	2	31,875	0	0	2	0
	Total	2	31,875	0	0	2	0
MADAGASCAR							
Notified sites	T	11	51,776	1	1	8	1
	P	30	18,762	4	9	17	0
	Total	41	27,620	5	10	25	1
Proposed sites	P	3	150,189	0	0	1	2
	Total	3	150,189	0	0	1	2
MALAWI							
Notified sites	P	65	9,507	21	28	16	0
	Total	65	9,507	21	28	16	0
Proposed sites	P	63	20,112	29	22	11	1
	Total	63	20,112	29	22	11	1
MOZAMBIQUE							
Notified sites	P	1	4,200	0	1	0	0
	Total	1	4,200	0	1	0	0
RWANDA							
Notified sites	P	3	40,033	0	1	2	0
	Total	3	40,033	0	1	2	0
ZIMBABWE							
Notified sites	P	5	1,403	2	3	0	0
	Total	5	1,403	2	3	0	0
TROPICAL SOUTHERN AFRICA							
Notified sites	T	11	51,776	1	1	8	1
	P	106	12,980	27	42	37	0
	Total	117	16,628	28	43	45	1
Proposed sites	P	66	26,024	29	22	12	3
	Total	66	26,024	29	22	12	3

Note that N (the total number of conservation areas) does not necessarily equate to N in Table 10.3, because the areas of some individual properties may be unknown.

Countries for which there are no relevant data are not included in the table.

Table 10.4(b) Frequency distributions of notified and proposed conservation area sizes, with means, classified by management category (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses), for (a) Forestry, (b) Wildlife and (c) Additional sectors.

		N	Mean size (ha)	Number in each size class (ha)			
				≤1000	1001-10,000	10001-100,000	>100,000
b) Wildlife Sector							
ANGOLA							
Notified sites	T	8	781,400	1	0	1	6
	P	5	386,000	0	1	1	3
	Total	13	629,323	1	1	2	9
BOTSWANA							
Notified sites	T	3	1,269,000	0	0	0	3
	P	10	642,001	4	1	0	5
	Total	13	786,693	4	1	0	8
Proposed sites	P	7	1,528,957	0	0	0	7
	Total	7	1,528,957	0	0	0	7
BURUNDI							
Notified sites	P	8	12,623	2	4	2	0
	Total	8	12,623	2	4	2	0
MALAWI							
Notified sites	T	5	139,240	0	1	2	2
	P	4	90,350	0	0	3	1
	Total	9	117,511	0	1	5	3
MOZAMBIQUE							
Notified sites	P	13	536,846	0	2	2	9
	Total	13	536,846	0	2	2	9
Proposed sites	P	1	1,500,000	0	0	0	1
	Total	1	1,500,000	0	0	0	1
NAMIBIA							
Notified sites	T	3	786,800	0	0	1	2
	P	17	517,325	4	4	3	6
	Total	20	557,747	4	4	4	8
RWANDA							
Notified sites	T	2	163,500	0	0	1	1
	P	1	30,000	0	0	1	0
	Total	3	119,000	0	0	2	1
TANZANIA							
Notified sites	T	12	394,897	0	1	4	7
	P	65	316,716	3	10	18	34
	Total	77	328,900	3	11	22	41
Proposed sites	T	1	120,000	0	0	0	1
	P	2	250,000	0	0	0	2
	Total	3	206,666	0	0	0	3

b) Wildlife Sector		N	Mean size (ha)	Number in each size class (ha)			
				≤1000	1001- 10,000	10001- 100,000	>100,000
ZAMBIA							
Notified sites	T	19	334,684	0	2	6	11
	P	32	501,525	0	0	5	27
	Total	51	439,368	0	2	11	38
ZIMBABWE							
Notified sites	T	25	108,200	14	1	5	5
	P	38	59,406	8	10	12	8
	Total	63	78,769	22	11	17	13
TROPICAL SOUTHERN AFRICA							
Notified sites	T	77	353,825	15	5	20	37
	P	193	329,060	21	32	47	93
	Total	270	336,123	36	37	67	130
Proposed sites	T	1	120,000	0	0	0	1
	P	10	1,270,270	0	0	0	10
	Total	11	1,165,700	0	0	0	11

Note that N (the total number of conservation areas) does not necessarily equate to N in Table 10.3, because the areas of some individual properties may be unknown.

Countries for which there are no relevant data are not included in the table.

Table 10.4(c) Frequency distributions of notified and proposed conservation area sizes, with means, classified by management category (P = partial protection with local, sustainable extractive uses; T = total protection with no extractive uses), for (a) Forestry, (b) Wildlife and (c) Additional sectors.

c) Additional Sector(s)		N	Mean size (ha)	Number in each size class (ha)			
				≤1000	1001-10,000	10001-100,000	>100,000
BURUNDI							
Notified sites	P	2	17	2	0	0	0
	Total	2	17	2	0	0	0
NAMIBIA							
Notified sites	P	1	50	1	0	0	0
	Total	1	50	1	0	0	0
ZAMBIA							
Notified sites	P	1	1,900	0	1	0	0
	Total	1	1,900	0	1	0	0
TROPICAL SOUTHERN AFRICA							
Notified sites	P	4	496	3	1	0	0
	Total	4	496	3	1	0	0

Note that N (the total number of conservation areas) does not necessarily equate to N in Table 10.3, because the areas of some individual properties may be unknown.

Countries for which there are no relevant data are not included in the table.

Table 10.5 State parties to international (and regional) conventions or programmes concerning the conservation of natural areas, together with the number of properties (natural or mixed natural/cultural in the case of the World Heritage Convention) recognised under respective conventions in brackets.

	World Heritage Convention	Biosphere Reserves ¹	Ramsar Convention	African Convention
Angola	-	-	-	-
Botswana	-	-	-	S
Burundi	1982 (0)	-	-	S
Madagascar	1983 (1)	1990 (1)	-	R
Malawi	1982 (1)	-	-	R
Mozambique	1982 (0)	-	-	S
Namibia	-	-	-	-
Rwanda	-	1983 (1)	-	R
Tanzania	1977 (4)	1981 (2)	-	S
Zambia	1984 (1)	-	1991 (2)	R
Zimbabwe	1982 (2)	-	-	-

¹Unesco MAB Project 8

R = ratified

S = signatory

A number of countries in the subregion are members of the Subcommittee of Forestry, Fisheries and Wildlife of the South African Development Coordination Conference.

Table 10.6 Summary of national priorities for action relating to conservation areas.

COUNTRY	Legislation	Completing the network	Managing the network
Angola	Update legislation	Establish representative network	Strengthen and support Instituto de Desenvolvimento Florestal
Botswana	Enact new legislation	Extend network to include wildlife management areas	Provide support for the Department of Wildlife & National Parks
Burundi	Review legislation	Not feasible to extend the network due to a large and expanding human population	Resolve management issues; enforce legislation
Madagascar	Review legislation	Extend network to include additional forest communities	Create a wildlife administration; enforce legislation
Malawi	Update legislation	Extend coverage of montane forest, deciduous miombo woodland and evergreen forest biomes	Strengthen Department of National Parks, Wildlife & Tourism, and Department of Forestry
Mozambique	Update legislation	Extend network to include representative habitats	Strengthen wildlife and forestry departments
Namibia	Update forestry legislation	Extend network to cover 10% of each habitat type	Provide additional support for Ministry of Wildlife, Conservation & Tourism; enforce wildlife legislation
Rwanda	Review legislation	Increase coverage of various habitats	Strengthen Office Rwandais du Tourisme et des Parcs Nationaux; enforce legislation; improve protection
Tanzania	Update legislation	Extend network to closed forest and mangrove forest habitats	Strengthen conservation area agencies and improve coordination between them
Zambia	Review legislation	Extend network to include montane, lowland and gallery forests	Strengthen the National Parks & Wildlife Service
Zimbabwe	Update legislation	Expand representation to include Great Dyke, lowland forests and Parinari forests	Improve cooperation between conservation area agencies

Annex 10.1 List of conservation areas. Locations of most notified conservation areas are shown in the accompanying maps in Part III

ANGOLA

Integral Nature Reserves

1 Ilheu dos Passaros		200	1973
2 Luando		828,000	1955
Subtotal	2 sites	828,200 ha	

National Parks

3 Bikuar		790,000	1964
4 Iona		1,515,000	1964
5 Kameia		1,445,000	1938
6 Kangandala		63,000	1970
7 Kisama		950,000	1957
8 Mupa		660,000	1964
Subtotal	6 sites	5,423,000 ha	

Partial Reserves

9 Bufalo		40,000	1974
10 Luiana		840,000	1966
11 Mavinga		595,000	1966
12 Mocamedes		445,000	1960
Subtotal	4 sites	1,920,000 ha	

Regional Nature Park

13 Chimalavera		10,000	1974
Subtotal	1 site	10,000 ha	

Totals

Existing conservation areas	13 sites	8,181,200 ha	
Proposed conservation areas	0 sites	ha	

BOTSWANA

Forest Reserves

1 Kasane		16,250	1968
2 Kasane Extension		47,500	1981
Subtotal	2 sites	63,750	ha

Game Reserves

3 Central Kalahari		5,180,000	1961
4 Gaborone		300	1980
5 Khutse		260,000	1971
6 Mabuasehube		166,500	1971
7 Makgadikgadi Pans		413,000	1970
8 Mannyelanong		300	1985
9 Moremi		390,000	1965
Subtotal	7 sites	6,410,100	ha

National Parks

10 Chobe		1,057,000	1968
11 Gemsbok		2,600,000	1971
12 Nxai Pan		150,000	1971
Subtotal	3 sites	3,807,000	ha

Sanctuaries

13 Bathaen		470	
14 Maun		8,500	
15 Mogabane		940	
16 Nnwane			
Subtotal	4 sites	9,910	ha*

Proposed (Wildlife Management Areas)

Grootlaagte		390,800	
Kedia			
Kgalagadi		2,500,000	
Kweneng			
Linyanti			
Matlho-a-Phuduhudu		881,600	
Nata Statelands			
Ngamiland Statelands		1,670,500	
Nunga			
Okavango Delta		1,388,000	
Okwa		1,361,800	
Southern District		2,510,000	
Subtotal	12 sites	10,702,700	ha*

Totals

Existing conservation areas	16 sites	10,290,760	ha*
Proposed conservation areas	12 sites	10,702,700	ha*

* Subtotal is incomplete because of missing data.

BURUNDI**National Parks**

1 Kibira		40,000	1933
2 Rusizi		5,235	
3 Ruvubu		43,630	
Subtotal	3 sites	88,865	ha

Natural Monuments

4 Chutes de Karera		15	
5 Nyakazu Gorge		20	
Subtotal	2 sites	35	ha

Nature Reserves

6 Bururi Forest		3,300	1951
7 Kigwena Forest		400	1951
8 Lac Rwihinda		425	
9 Monge Forest		2,000	1990
10 Rumonge-Vyanda Forest		6,000	1986
Subtotal	5 sites	12,125	ha

Totals

Existing conservation areas	10 sites	101,025	ha
Proposed conservation areas	0 sites		ha

MADAGASCAR

Hunting Reserves			
1 Lac Ihotry			1972
2 Lac Kasanga			
3 Lac Kinkony		15,000	1972
4 Lac Masama et Bemamba			1972
Subtotal	4 sites	15,000 ha*	
National Parks			
5 Isalo		81,540	1962
6 Mananara Marine		1,000	1989
7 Mananara Terrestrial		23,000	1990
8 Mantadia		10,000	1989
9 Montagne d'Ambre		18,200	1958
10 Ranomafana		37,567	1991
Subtotal	6 sites	171,307 ha	
Special Reserves			
11 Ambatovaky		60,050	1958
12 Ambohijanahary		24,750	1958
13 Ambohitantely		5,600	1982
14 Analamerana		34,700	1956
15 Andranomena		6,420	1958
16 Anjanaharibe-Sud		32,100	1958
17 Ankarana		18,220	1956
18 Bemarivo		11,570	1956
19 Beza-Mahafaly		580	1978
20 Bora		4,780	1956
21 Cap Sainte Marie		1,750	1962
22 Foret d'Ambre		4,810	1958
23 Kalambatritra		28,250	1959
24 Kasiy		18,800	1956
25 Mangerivola		11,900	1958
26 Maningoza		7,900	1956
27 Manombo		5,020	1962
28 Manongarivo		35,250	1956
29 Marotandrano		42,200	1956
30 Nosy Mangabe		520	1965
31 Perinet-Analamazaotra		810	1970
32 Pic d'Ivohibe		3,450	1964
33 Tampoketsa d'Analamaitso		17,150	1958
Subtotal	23 sites	376,580 ha	
Strict Nature Reserves			
34 Andohahela		76,020	1939
35 Andringitra		31,160	1927
36 Ankarafantsika		60,520	1927
37 Betampona		2,228	1927
38 Lokobe		740	1927
39 Marojejy		60,150	1952
40 Tsaratanana		48,622	1927
41 Tsimanampetsotsa		43,200	1927
42 Tsingy de Bemaraha		152,000	1927
43 Tsingy de Namoroka		21,742	1927
44 Zahamena		73,160	1927
Subtotal	11 site	569,542 ha	
Proposed (Marine National Park)			
Grand Recif			
Subtotal	1 site		ha*
Proposed (National Parks)			
Presqu'ile Masoala		300,000	
Ramomatan		37,567	
Soalala		113,000	
Subtotal	3 sites	450,567 ha	

Totals			
Existing conservation areas	44 sites	1,132,429 ha*	
Proposed conservation areas	4 sites	450,567 ha*	

* Subtotal is incomplete because of missing data.

MALAWI

Forest Reserves

1 Amalika	520	1974
2 Bangwe	4,196	1930
3 Bunganya	3,470	1973
4 Chigumula	622	1925
5 Chilolowe	1,347	
6 Chimaliro	17,120	1926
7 Chiradzulu	1,140	1924
8 Chisasira	932	1935
9 Chongoni	12,639	1924
10 Dedza Mountain	3,263	1926
11 Dedza/Salima		1974
12 Dowa Hills	2,420	1974
13 Dzalanyama	98,934	1922
14 Dzenza	829	1948
15 Dzonzi Mvai	4,020	1924
16 Escarpment	32,600	
17 Kalulu Hills	2,823	1958
18 Kalwe	200	1956
19 Kangwe	18,133	1926
20 Kaning'ina	14,970	1935
21 Kanjedza	181	1922
22 Kawilwe	699	1935
23 Litchenya	55	1948
24 Liwonde	29,473	1924
25 Mafinga Hills#	4,260	1976
26 Malabvi	207	1927
27 Maleri Islands		1971
28 Malosa	8,599	1924
29 Mangochi	37,553	1924
30 Mangochi Palm	510	1980
31 Masambanjati	92	1974
32 Masenjere	101	1930
33 Matandwe	26,205	1931
34 Matipa#	1,062	1948
35 Mchinji	19,166	1924
36 Michiru	3,263	1970
37 Mirale l	103	1949
38 Mndilansadzu		1958
39 Msitolengwe	85	1974
40 Mtangatanga	8,443	1935
41 Mua-Livulezi	12,147	1924
42 Mua-Tsanya	1,062	1932
43 Mughese	673	1948
44 Mulanje	55,209	1927
45 Musisi	6,734	1948
46 Mvai	4,268	1924
47 Nalikule	104	1948
48 Namizimu	86,994	1924
49 Ndirande	1,709	1922
50 Ngara	2,253	
51 Nkhwazi	2,668	1927
52 Ntchisi	9,712	1924
53 Nyika Juniper		
54 Perekezi	14,762	1935
55 Phirilongwe	16,129	1924
56 Ruvuo	2,460	1935
57 Sambani	129	1948
58 Senga	1,420	1958
59 Soche	363	1922
60 South Viphya		1948
61 Thambani	4,947	1927
62 Thuchila	2,434	1925
63 Thuma	16,395	1926
64 Thyolo	1,321	1924

65 Thyolo Mwani		932	1930
66 Tsamba		3,237	1928
67 Uzumara		596	1948
68 Vintukutu		2,227	1948
69 Wilindi		907	1948
70 Zomba		5,957	1913
Subtotal	70 sites	617,984	ha*
Game Reserves			
71 Majete		69,100	1955
72 Mwabvi		13,500	1953
73 Nkhota-Kota		180,200	1954
74 Vwaza Marsh		98,600	1977
Subtotal	4 sites	361,400	ha
National Parks			
75 Kasungu		231,600	1970
76 Lake Malawi		8,700	1980
77 Lengwe		88,700	1970
78 Liwonde		53,800	1973
79 Nyika		313,400	1965
Subtotal	5 sites	696,200	ha
Proposed (Forest Reserves)			
Bangwe			
Chambe			
Champira			
Chantasha		79	
Chanthurwa		212	
Chapananga		7,400	
Chikwawa Eastern escarpment		17,400	
Chilenje			
Chilolowe		1,347	
Chimvuo		144	
Chingale		6,700	
Chingoli		1	
Chinthe			
Chinundwe		5,281	
Chinungu/Kapelula		107	
Chipala		1,600	
Chipande		84	
Chiperoni			
Chipokosa		151	
Chisasira Extension		17,404	
Chitipa (Urban)			
Choma/Mpeza		11,364	
Dwambazi		788,627	
Dzonzi Mvai Extension		4,690	
Henga Hills			
Ighembe		400	
Jembya		15,010	
Kakhome		185	
Kalembo Hills		17,720	
Kambuto		7	
Kaning'ina Extension		9,398	
Kanobli		17,715	
Kaombe		76,152	
Karonga Escarpment		17,870	
Kasimba		65	
Kasungu/Chipala		143	
Katili		5,776	
Kavuzi		7,700	
Kawinga/Nyambi Hills			
Kawiya		1,160	
Kholonje			
Macheleni 1			
Macheleni 11			

Machemba		
Mahowa		7,500
Malinda		85
Maoko		2
Mbula		1,600
Mchezi/Chiuta		32
Mfumbati		8,048
Mirale ll		14
Mpemba		503
Msusi Extension		7,588
Muwanga		1,268
Mzuma/Ngazi		9,293
Nagogoda		34
Namatunu		
Namilongo		109
Namisu		33
Nankhunda		1,250
Nansengwe		476
Neno Eastern escarpment		63,100
Ngani		2
Ngara (Karonga)		471
Ngongonda		700
Njakwa		
Nkhoma		
Nkhwazi		3
Nkopola		
Nkuluti		10
North Viphya		6,816
Ntiya. l.ll.lll		
Ntonya		
Phirilongwe Extension		66,208
Pirimiti		
Sani		260
Sanjo		987
Simulemba		56
Songwe		
South Viphya Extension		38,047
Tedzani/Nkula		9,300
Thambani Extension		5,700
Thawiro		1,292
Therere		
Tsambe Extension		4,400
Ulumba		
Zigoma		
Zobue		
Subtotal	88 sites	1,267,079 ha*
Totals		
Existing conservation areas	79 sites	1,675,584 ha*
Proposed conservation areas	88 sites	1,267,079 ha*

* Subtotal is incomplete because of missing data.

MOZAMBIQUE

Faunal Reserve

1 Ilhas da Inhaca e dos Portugueses		2,000	1965
Subtotal	1 site	2,000 ha	

Forest Reserves¹

2 Baixo Pinda			
3 Bobole			
4 Derre			
5 Inhamitanga			
6 Licuati			
7 Maribano			
8 Maronga			
9 Matibane		4,200	1950
10 Mecuburi			
11 Mucheve			
12 Nepalue			
13 Nhapacue			
14 Ribaue			
15 Zomba			
Subtotal	14 sites	4,200 ha*	

Game Reserves

16 Gile		210,000	1960
17 Maputo		90,000	1969
18 Marromeu		1,000,000	1969
19 Niassa		1,500,000	1960
20 Pomene		10,000	1972
Subtotal	5 sites	2,810,000 ha	

Marine National Park

21 Paradise Island		377,000	1972
Subtotal	1 site	377,000 ha	

National Parks

22 Banhine		700,000	1972
23 Bazaruto Marine		15,000	1971
24 Gorongosa		375,000	1960
25 Zinave		500,000	1972
Subtotal	4 sites	1,590,000 ha	

Wildlife Utilization Areas

26 Limpopo Valley		1,200,000	1979
27 Zambezi		1,000,000	1981
Subtotal	2 sites	2,200,000 ha	

Proposed (Marine National Park)

Nacala-Mossuril			
Subtotal	1 site		ha*

Proposed (National Parks)

Primeira and Segunda Islands			
Quirimba Islands			
Rovuma		1,500,000	
San Sebastian Peninsula			
Subtotal	4 sites	1,500,000 ha*	

Totals

Existing conservation areas	27 sites	6,983,200 ha*	
Proposed conservation areas	5 sites	1,500,000 ha*	

* Subtotal is incomplete because of missing data.

¹The areas of individual forest reserves ranges from 1,600ha to 190,000ha (Tello,1986).

NAMIBIA

Game Parks

1	Ai-Ais Hot Springs & Fish River Canyon	346,117	1969
2	Daan Viljoen	3,953	1962
3	Gross Barmen Hot Springs	100	1966
4	Hardap	25,177	1964
5	Kaodom	384,162	1989
6	Mahango	24,462	1990
7	Namib/Naukluft	4,976,800	1979
8	Naute Dam	5	1989
9	Popa Falls Rest Camp	25	1983
10	Skeleton Coast	1,600,000	1967
11	Von Bach	4,285	1972
12	Waterberg Plateau	40,549	1972
13	Western Caprivi	600,000	1968
	Subtotal	8,005,635	ha
	13 sites		

National Parks

14	Etosha	2,227,000	1958
15	Mamili	32,000	1990
16	Mudumu	101,400	1990
	Subtotal	2,360,400	ha
	3 sites		

Natural Monument

17	Duwiseb Castle	50	1979
	Subtotal	50	ha
	1 site		

Nature Reserves

18	Cape Cross Seal	6,000	1967
19	South West African (WHK)	5	1970
	Subtotal	6,005	ha
	2 sites		

Recreation Areas

20	National Diamond Coast	2,900	1977
21	National West Coast Tourist	780,000	1974
	Subtotal	782,900	ha
	2 sites		

Totals

Existing conservation areas	21 site	11,154,990	ha
Proposed conservation areas	0 sites		ha

RWANDA

Hunting Reserve

1 Mutara		30,000	
Subtotal	1 site	30,000	ha

Integral Forest Reserves

2 Gishwati		21,000	
3 Mukura		2,100	
4 Nyungwe		97,000	
Subtotal	3 sites	120,100	ha

National Parks

5 Akagera		312,000	1934
6 Volcans		15,000	1929
Subtotal	2 sites	327,000	ha

Totals

Existing conservation areas	6 sites	477,100	ha
Proposed conservation areas	0 sites		ha

TANZANIA, UNITED REPUBLIC OF

Conservation Area			
1 Ngorongoro		828,800	1959
Subtotal	1 site	828,800 ha	
Game Controlled Areas			
2 Burunge		40,000	1974
3 Chabula Marsh		10,000	1974
4 Endulen		60,000	1974
5 Gombe		300,000	1974
6 Grumeti		200,000	1974
7 Handeni		350,000	1974
8 Igombe Dam		10,000	1974
9 Ikorongo		300,000	1974
10 Kalimawe		30,000	1974
11 Kigosi		700,000	1974
12 Kihirumira Pool		10,000	1974
13 Kilombero		650,000	1974
14 Kitwai		350,000	1974
15 Kongwa		150,000	1974
16 Lake Daramatai		2	1974
17 Lake Kwila		7,000	1974
18 Lake Manka		2,000	1974
19 Lake Natron		300,000	1974
20 Lihogosa		3,000	1974
21 Loliondo		400,000	1974
22 Lolkisale		150,000	1974
23 Longido		150,000	1974
24 Luganzo		250,000	1974
25 Lukwati		200,000	1974
26 Masasi River		18,000	1974
27 Meserani Dam		7,500	1974
28 Mic-wa-Mbu		150,000	1974
29 Mkungunero		70,000	1974
30 Mlele		300,000	1974
31 Msima		200,000	1974
32 Muhuwesi		150,000	1974
33 Mwadui Diamond Mine		1,000	1974
34 Mwambesi		100,000	1974
35 Nchwa-Nkima		5,000	1974
36 Ngeju-Njiro Dam		3,000	1974
37 Ngorongoro		1,500,000	1974
38 Nyonga		3,500,000	1974
39 Rau Forest		10,000	1974
40 Rukwa		40,000	1974
41 Rungwa River		150,000	1974
42 Ruvu Masai		150,000	1974
43 Ruvu Same		100,000	1974
44 Sanya-Lelatema		80,000	1974
45 Simanjiro		200,000	1974
46 Speke Gulf		30,000	1974
47 Ugunda		150,000	1974
48 Umba River		30,000	1974
49 Utengule Swamps		50,000	1974
Subtotal	48 sites	11,616,502 ha	
Game Reserves			
50 Biharamulo		130,000	1959
51 Burigi		220,000	1980
52 Ibanda		20,000	1974
53 Kigosi			
54 Kilimanjaro		90,000	1974
55 Kizigo		400,000	1974
56 Maswa		220,000	1969
57 Mkomazi		100,000	1951
58 Mount Meru		30,000	1974

59 Moyowosi		600,000	1982
60 Rumanyika		80,000	
61 Rungwa		900,000	1951
62 Saadani		30,000	1968
63 Saanane Island		50	1974
64 Selous		5,000,000	1922
65 Ugalla River		500,000	1964
66 Umba		150,000	1974
67 Uwanda		500,000	1971
Subtotal	18 sites	8,970,050	ha*
Marine Reserves			
58 Bongoyo & Pangavini Islands			1981
69 Chole Bay			1981
70 Fungu Yasini			1981
71 Maziwi Island			1981
72 Mbudya			1981
73 Tanga Coral Gardens			1981
74 Tutia Island			1981
Subtotal	7 sites		ha*
National Parks			
75 Arusha		13,700	1967
76 Gombe		5,200	1968
77 Katavi		225,300	1974
78 Kilimanjaro		75,575	1973
79 Lake Manyara		32,500	1960
80 Mahale Mountain		157,700	1985
81 Mikumi		323,000	1964
82 Ruaha		1,295,000	1964
83 Rubondo		45,700	1977
84 Serengeti		1,476,300	1951
85 Tarangire		260,000	1970
Subtotal	11 site	3,909,975	ha
Proposed (Game Reserves)			
Grumeti		200,000	
Ikorongo		300,000	
Kijereshi			
Subtotal	3 sites	500,000	ha*
Proposed (National Park)			
Udzungwa		120,000	
Subtotal	1 site	120,000	ha
Totals			
Existing conservation areas	85 sites	25,325,327	ha*
Proposed conservation areas	4 sites	620,000	ha*

* Subtotal is incomplete because of missing data.

ZAMBIA

Game Management Areas

1	Bangweulu	657,000	1971
2	Bilili Springs	308,000	1971
3	Chambeshi	62,000	1971
4	Chibwika-Ntambu	155,000	1971
5	Chisomo	339,000	1971
6	Chizera	228,000	1971
7	Kafinda	386,000	1971
8	Kafue Flats	517,500	1971
9	Kalaso Mukoso	67,500	1971
10	Kansonso-Busanga	778,000	1971
11	Kaputa	360,000	1971
12	Luano	893,000	1971
13	Lukwakwa	254,000	1971
14	Lumimba	450,000	1971
15	Lunga-Luswishi	1,334,000	1971
16	Lupande	484,000	1971
17	Luwingu	109,000	1971
18	Machiya-Fungulwe	153,000	1971
19	Mansa	207,000	1971
20	Mazabuka	25,400	1971
21	Mulobezi	342,000	1971
22	Mumbwa	337,000	1971
23	Munyamadzi	330,000	1971
24	Musalangu	1,735,000	1971
25	Musele-Matebo	370,000	1971
26	Namwala	360,000	1971
27	Nkala	19,400	1971
28	Sandwe	153,000	1971
29	Sichifula	360,000	1971
30	Tondwa	54,000	1971
31	West Petauke	414,000	1971
32	West Zambezi	3,807,000	1971
	Subtotal	32 sites	16,048,800 ha

National Parks

33	Blue Lagoon	45,000	1973
34	Isangano	84,000	1972
35	Kafue	2,240,000	1951
36	Kasanka	39,000	1972
37	Lavushi Manda	150,000	1972
38	Liuwa Plain	366,000	1972
39	Lochinvar	41,000	1972
40	Lower Zambezi	414,000	1983
41	Luambe	25,400	1972
42	Lukusuzi	272,000	1972
43	Lusenga Plain	88,000	1972
44	Mosi-Oa-Tunya	6,600	1972
45	Mweru-Wantipa	313,400	1972
46	North Luangwa	463,600	1972
47	Nsumbu	202,000	1972
48	Nyika (Zambia)	8,000	1972
49	Sioma Ngwezi	527,600	1972
50	South Luangwa	905,000	1972
51	West Lunga	168,400	1972
	Subtotal	19 sites	6,359,000 ha

Natural Monument

52	Victoria Falls	1,900	1948
	Subtotal	1 site	1,900 ha

Totals

	Existing conservation areas	52 sites	22,409,700 ha
	Proposed conservation areas	0 sites	ha

ZIMBABWE**Botanical Reserves**

1 Bunga Forest	40	1975
2 Chisekera Hot Spings	95	
3 Haroni Forest	20	
4 Mazowe	43	
5 Mwari Raphia Palm	34	
6 Pioneer	38	
7 Rusitu Forest	150	
8 Sebakwe Acacia Karoo	60	
9 Sebakwe Great Dyke	165	
10 Sebakwe Mountain Acacia	53	
11 South Camp	26	
12 Tingwa Raphin Palm	290	
13 Tolo River	44	
14 Vumba	42	
Subtotal	14 sites	1,100 ha

National Parks

15 Chimanimani	17,100	1950
16 Chizarira	191,000	1975
17 Gonarezhou	505,300	1975
18 Hwange (Wankie)	1,465,100	1949
19 Kazuma Pan	31,300	1975
20 Mana Pools	219,600	1975
21 Matobo (Matopos)	42,500	1926
22 Matusadona	140,700	1975
23 Nyanga	33,000	1950
24 Victoria Falls	2,000	1952
25 Zambezi	56,300	1979
Subtotal	11 site	2,703,900 ha

Recreation Parks

26 Bangala	2,700	1975
27 Chibwatata Hot Springs	10	
28 Chinhoyi Caves	148	1975
29 Kariba	283,000	1979
30 Kavira Hot Springs	50	
31 Kyle	16,910	1975
32 Lake Robertson (Darwendale)	11,200	
33 Manjirenji	3,400	
34 Mayfair and Palawan	150	
35 McIlwaine	6,100	1975
36 Mufuli	12,700	
37 Muzingwane	1,233	1975
38 Ngezi	5,800	1975
39 Sebakwe	2,600	1975
40 Umfuli (Hartley A)		
Subtotal	15 sites	346,001 ha*

Safari Areas

41 Charara	169,400	1975
42 Chegutu (Hartley A)	44,500	1975
43 Chete	108,100	1975
44 Chewore	339,000	1964
45 Chipinge	26,100	1975
46 Chirisa	171,300	1975
47 Dande	52,300	1975
48 Deka	51,000	1975
49 Doma	94,500	1975
50 Hurungwe	287,800	1975
51 Island 52	4	
52 Malipati	15,400	1975
53 Matetsi	295,500	1975
54 Mfurundzi	76,000	1976
55 Sapi	118,000	1975

56 Sibilobilo Islands		2,270	1979
57 Tuli		41,600	1975
Subtotal	17 sites	1,892,774	ha
Sanctuaries			
58 Boulton Atlantica		57	
59 Chimanimani Eland		1,800	1975
60 Manjinji Pan		300	1975
61 Mbaze Pan		40	1975
62 Mushandike		12,900	1975
63 Nyamaneche		2,480	
64 Tshabalala		1,100	
Subtotal	7 sites	18,677	ha
State Forests			
65 Banti		2,212	
66 Chirinda		950	
67 Gungunyana		1,700	
68 Martin (i)		700	
69 York		1,455	
Subtotal	5 sites	7,017	ha
Proposed (National Park)			
Greater Nyanga			
Subtotal	1 site		ha*
Totals			
Existing conservation areas	69 sites	4,969,469	ha*
Proposed conservation areas	1 site		ha*

* Subtotal is incomplete because of missing data.

Annex 10.2 Extent of notified forests by forest origin and forest function. Non-forest includes both degraded forest and lands not forested at the time of their reservation.

Region: Africa

Sub-region: Tropical Southern Africa

Name of country/state: Angola

Total area (sq.km): 1246700

Land area (sq.km): 1246700

Month/year of reference: 1981

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	1856000					
Non-forest						
Plantation						
TOTAL	1856000	0	0	0	0	0

Notes: Data provided by FAO, 1981.

In 1981, there were 18 forest reserves covering 1,856,000 ha, but these have received little attention (FAO, 1981).

Conservation areas are the responsibility of the Wildlife Department within the Forestry Development Institute and are not included in the above table.

Annex 10.2 (continued)

Region: Africa

Sub-region: Tropical Southern Africa

Name of country/state: Botswana

Total area (sq.km): 581730

Land area (sq.km): 566730

Month/year of reference: March, 1991

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	391750					63750
Non-forest						
Plantation						
TOTAL	391750	0	0	0	0	63750

Notes: Data provided by the Forestry Division, 1991.

Of the six forest reserves (455,500 ha) in the country, four are still being logged and are therefore considered to be production forests as per FAO definitions.

Annex 10.2 (continued)

Region: Africa

Sub-region: Tropical Southern Africa

Name of country/state: Burundi

Total area (sq.km): 27830

Land area (sq.km): 25650

Month/year of reference: 1989

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	0	0	43000	20000	0	0
Non-forest	2500	3000	56000	76000	0	0
Plantation	50020	10135	29540	3000	0	0
TOTAL	52520	13135	128540	99000	0	0

Notes: Data provided by the Institut National pour l'Environnement et la Conservation de la Nature Département des Forêts (Rapport 1989).

All conservation forests in the country are listed as national parks and nature reserves, and as they do not fall under the jurisdiction of the Département des Forêts, are therefore not included in the above table.

Annex 10.2 (continued)

Region: Africa

Sub-region: Insular Africa

Name of country/state: Madagascar

Total area (sq.km): 587040

Land area (sq.km): 581540

Month/year of reference: 1991

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	1570044					4627278
Non-forest						
Plantation						
TOTAL	1570044	0	0	0	0	4627278

Notes: Data provided by WCMC database, 1991; Direction des Eaux et Forêts, 1969.

All protected areas fall under the jurisdiction of the Direction des eaux et forêts. Production forests include forest reserves (124) and forest stations (1). Conservation forests include national parks (6), strict nature reserves (11), special reserves (23), hunting reserves (4), reforestation and restauration areas (77), and classified forests (158).

Annex 10.2 (continued)

Region: Africa

Sub-region: Tropical Southern Africa

Name of country/state: Malawi

Total area (sq.km): 118480

Land area (sq.km): 94080

Month/year of reference: September 1991.

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural			617984	1267079		
Non-forest						
Plantation	98924					
TOTAL	98924	0	617984	1267079	0	0

Notes: Data provided by the Department of Forestry, 1991.

The forest reserve network is comprised of 49 production reserves, 70 protection reserves, and 88 proposed protection reserves.

All production forests (plantations) have conservation working circles within them which are either selectively felled or left undisturbed. No data is currently available on the area of working circles left unexploited.

Protection forests serve protection and conservation functions. A breakdown of this by area has not however been provided.

Annex 10.2 (continued)

Region: Africa

Sub-region: Tropical Southern Africa

Name of country/state: Mozambique

Total area (sq.km): 799380

Land area (sq.km): 781880

Month/year of reference: 1981

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural					1940000	
Non-forest						
Plantation						
TOTAL	0	0	0	0	1940000	0

Notes: Data provided by the African Forestry Commission: Progress Report on Forestry 1983/85.

According to legislation, the 14 forest reserves in the country serve mainly a conservation function.

An earlier estimate (FAO, 1981) stated that there were 11 forest reserves covering a total area of 410,300 ha.

Annex 10.2 (continued)

Region: Africa

Sub-region: Tropical Southern Africa

Name of country/state: Namibia

Total area (sq.km): 824290

Land area (sq.km): 823290

Month/year of reference: 1990

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural		0		0		0
Non-forest						
Plantation						
TOTAL		0		0		0

Notes: Data provided by Hilbert, 1990; Erkkilä & Siiskonen, 1992; Finne, 1992.

The recently approved National Forest Policy states that 10% of the country's land area will be managed as state forests. Some areas have already been demarcated and are treated as forest reserves (Finne, 1992). Further information on these areas is, however, not available.

Annex 10.2 (continued)

Region: Africa

Sub-region: Tropical Southern Africa

Name of country/state: Rwanda

Total area (sq.km): 26340

Land area (sq.km): 24950

Month/year of reference: 1990

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	138000		76000		120100	
Non-forest						
Plantation						
TOTAL	138000	0	76000	0	120100	0

Notes: Data provided by Le Ministre de l'Agriculture, de l'Elevage et des Forêts, 1990.

Annex 10.2 (continued)

Region: Africa

Sub-region: Tropical Southern Africa

Name of country/state: Tanzania

Total area (sq.km): 945090

Land area (sq.km): 886040

Month/year of reference: 1991

FOREST ORIGIN	FOREST FUNCTION					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	11800000					1600000
Non-forest						
Plantation						
TOTAL	11800000	0	0	0	0	1600000

Notes: Data provided by Mlowe (pers. comm.), Forest Division, 3 September 1991.

IUCN (1992) has stated that about 45% of forest reserves are closed to timber production. This is not reflected in the above table.

The 1,600,000 ha of conservation forest are primarily water catchments.

A number of forest reserves are located in game reserves. The total area for conservation areas in the country may, therefore, be inflated (Table 10.3).

Annex 10.2 (continued)

Region: Africa

Sub-region: Tropical Southern Africa

Name of country/state: Zambia

Total area (sq.km): 752610

Land area (sq.km): 743390

Month/year of reference: January 1991

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	7255341					
Non-forest						
Plantation	804					
TOTAL	7256145	0	0	0	0	0

Notes: Data provided by Chakanga (Forest Department), pers. comm., 11 July 1991.

'Protected' and 'commercial' forests may be either national or local forests.

'Protected' forests (5,884,516 ha natural, 512 ha plantation) are mostly productive forests protecting sources of streams or rivers, or located on hilly terrain to guard against soil erosion (Chakanga, pers. comm., 1991). In the above table, therefore, these forest are considered to be production forests.

Annex 10.2 (continued)

Region: Africa

Sub-region: Tropical Southern Africa

Name of country/state: Zimbabwe

Total area (sq.km): 390580

Land area (sq.km): 386670

Month/year of reference: 1990

FOREST ORIGIN	F O R E S T F U N C T I O N					
	Production forests		Protection forests		Conservation forests	
	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)	Existing (ha)	Proposed (ha)
Natural	895698		2155		4862	
Non-forest						
Plantation	96317					
TOTAL	992015	0	2155	0	4862	0

Notes: Data provided by Gondo (Forestry Commission), pers. comm., 13 July 1990.

Most forest reserves are managed on a multiple use basis for the production of exploitable timber, for the management and utilisation of wildlife, and for the protection of soils and water catchment areas. They have therefore been placed under the production forest category.

The total for natural production forest includes 60,855 ha which are communal forests.

Eastern District forest reserves have been entered as protection or conservation reserves in the above table.

