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THE NGORONGORO CONSERVATION AND DEVELOPMENT PROJECT

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ANNUAL REPORT OF ACTIVITIES

FEBRUARY 1988 - JANUARY 1989



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THE NGORONGORO CONSERVATION AND DEVELOPMENT PROJECT

The Ngorongoro Conservation and Development Project (NCDP) is a collaborative venture between the Ministry of Lands, Natural Resources and Tourism, Tanzania, the Ngorongoro Conservation Area Authority (NCAA), and the International Union for Conservation of Nature and Natural Resources (IUCN). Financial support for the project is provided by the Norwegian Agency for International Development (NORAD) and the EEC Food Aid Counterpart Fund.

The principal objectives of the Project are as follows:

- to identify the requirements for the long-term conservation of wildlife, forests, archaeological sites and landscape in the Ngorongoro Conservation Area (NCA);
- to assess land-use pressures and trends in, and adjacent to, the Conservation Area;
- to identify the development needs of the resident pastoralists;
- to formulate a long-term management policy for the NCA, aimed at reconciling the needs of both conservation and development.
- to prepare a plan for follow-up activities, aimed at ensuring the effective implementation of the management policy.

Comments and suggestions on the Ngorongoro Conservation and Development Project are welcome, and should be sent to:

Scott Perkin
Coordinator, NCDP
P.O. Box 44
Ngorongoro Crater
via Arusha
Tanzania

THE WINDWARD COASTAL AND DEVELOPMENT PROJECT

The Windward Coastal and Development Project (WCDP) is a collaborative venture between the Ministry of Lands, Planning and Survey, the Ministry of Natural Resources and Environment, the Ministry of Health, the Ministry of Education and the Ministry of Labour. The project is a response to the need for a comprehensive coastal management plan for the Windward Coast of Barbados.

The principal objectives of the project are as follows:

- 1. To identify the requirements for the long-term conservation of the coastal environment, including the physical, biological, and cultural resources in the coastal zone.
- 2. To assess the current status of the coastal zone, including the physical, biological, and cultural resources, and to identify the threats to the coastal environment.
- 3. To develop a comprehensive coastal management plan for the Windward Coast, including the physical, biological, and cultural resources, and to implement the plan.
- 4. To establish a coastal management authority for the Windward Coast, including the physical, biological, and cultural resources, and to implement the authority.
- 5. To provide technical assistance and training to the relevant agencies and the public, including the physical, biological, and cultural resources, and to implement the assistance and training.

The project is a response to the need for a comprehensive coastal management plan for the Windward Coast of Barbados. The project is a collaborative venture between the Ministry of Lands, Planning and Survey, the Ministry of Natural Resources and Environment, the Ministry of Health, the Ministry of Education and the Ministry of Labour.

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ANNUAL REPORT OF THE NGORONGORO CONSERVATION & DEVELOPMENT PROJECT
FEBRUARY 1988 - JANUARY 1989

1. Introduction:

This is the second annual report of the Ngorongoro Conservation and Development Project (NCDP). The first report, covering the period February 1987 to February 1988, provided information on the history and development of the project, as well as the preliminary findings of the project's aerial and ground surveys of the human, livestock and wildlife populations of the Area.

The current report summarises the progress of NCDP from February 1988 to January 1989, and also describes the activities which are being planned for the future.

2. Ngorongoro Commission:

In October, the Minister for Lands, Natural Resources and Tourism announced the appointment of an ad hoc Commission on Ngorongoro, with a mandate to advise Government on the adoption of a long-term management strategy for the Conservation Area. The Commission is chaired by Prof. A. Kauzeni, the Director of the Institute for Resource Assessment at the University of Dar-es-Salaam. Other members of the Commission are as follows:

Mr. Kapella	Regional Planning Officer, Arusha Region
Mr. David Babu	Director, Tanzania National Parks
Hon. M.S. Parkipuny	Member of Parliament, Ngorongoro District
Mr. P. ole Kasiaro	Councillor, Ngorongoro Ward
Mr. J. Sawe	Director General, National Land Use Planning Commission.

The Ngorongoro Commission has been appointed in accordance with the terms of the agreement between IUCN and the Ministry of Lands, Natural Resources and Tourism covering the implementation of NCDP. According to that understanding, the Commission has responsibility for reviewing the information provided by the project, for considering the advantages and disadvantages of various future management policies, and for elaborating a final management strategy for Ngorongoro. IUCN is charged with carrying out the detailed technical assessment of land-use conflicts and the various alternative management policies and, in collaboration with the Commission, for developing the management strategy and promoting follow-up activities. In this regard, it is envisaged that the project will work closely with Commission members in the coming months.

3. Specialist Studies:

Following the last report, the programme of specialist studies has continued as planned, and a total of ten studies has now been organised under the auspices of NCDP; the current status of each of these studies is summarised in Table 1. The most recent studies are described below:

1. Introduction

This is the second annual report of the Economic Commission for Africa (ECA) on the progress of the African Development Program (ADP). The ADP was established in 1982, following the adoption of the African Development Bank (ADB) as the main financing institution for the program. The ADP is a multi-year program of economic and social development, covering the period 1982-1992. The program is financed by the ADB and other international organizations. The current report summarizes the progress of the ADP in 1988, and also discusses the activities which are being planned for the future.

2. Economic Situation

In 1988, the African continent continued to experience a period of economic adjustment. The appointment of an ad hoc Commission of Enquiry to study the economic situation in the continent, and the adoption of a long-term development strategy for the continent, were major developments. The Commission of Enquiry, which was established in 1987, has submitted its report to the African Development Bank. The report contains a number of recommendations for the future of the continent. The Commission also conducted a number of studies on various aspects of the African economy. The results of these studies are being used to guide the development of the ADP.

Mr. J. K. Njiru	Director General, International Centre for Economic Research
Mr. F. de la Motte	Executive Director, African Development Bank
Mr. A. B. P. P. P.	Member of Parliament, Mauritania
Mr. David John	Director, Economic Research Centre
Mr. K. J. K.	Director, Economic Research Centre

The African continent has been a period of adjustment and development since the late 1970s. The appointment of an ad hoc Commission of Enquiry to study the economic situation in the continent, and the adoption of a long-term development strategy for the continent, were major developments. The Commission of Enquiry, which was established in 1987, has submitted its report to the African Development Bank. The report contains a number of recommendations for the future of the continent. The Commission also conducted a number of studies on various aspects of the African economy. The results of these studies are being used to guide the development of the ADP.

3. Statistical Appendix

Following the first report, the progress of statistical studies has continued to be planned. A list of the studies that have been organized under the auspices of ECA, the current status of each of these studies is summarized in Table 1. The most recent studies are described below.

Table 1: Status of NCDP specialist studies.

Study Title	Status
1. Livestock Development	Completed. Draft report currently being circulated for comment.
2. Multiple Land-Use Planning	Completed. Draft report currently being circulated for comment.
3. Wildlife Ecology	Completed. Draft report currently being circulated for comment.
4. Livestock/Wildlife Interactions	Completed. Draft report currently being circulated for comment.
5. Water Development Impact Assessment	Completed. Report in preparation.
6. Review of NCA Legislation	Completed. Report in preparation.
7. Regional Conservation and Development Trends	Completed. Report in preparation.
8. Forest Conservation and Management	Completed. Report in preparation.
9. Assessment of Forest Produce Needs of Local Communities	Completed. Report in preparation.
10. Analysis of Vegetation Change	Ongoing. Expected completion date is February 1989.
11. Nutritional Status and Food Security	Planned for February 1989.

Table 1: Status of NEM research studies

Study Title	Status
1. Economic development	Completed. Draft report currently being circulated for comment.
2. Political and social financing	Completed. Draft report currently being circulated for comment.
3. Wildlife ecology	Completed. Draft report currently being circulated for comment.
4. Historical Wildlife-forest link	Completed. Draft report currently being circulated for comment.
5. Forest development impact assessment	Completed. Report in preparation.
6. Status of NEM legislation	Completed. Report in preparation.
7. National Conservation and Development Funds	Completed. Report in preparation.
8. Forest Conservation and Management	Completed. Report in preparation.
9. Assessment of forest products needs of local communities	Completed. Report in preparation.
10. Analysis of vegetation types	Planning. Detailed completion date is February 1992.
11. Historical Status and Forest Security	Planning for February 1992.

3.1 Multiple Land-Use Planning and Management:

Dates: 7-18 April 1988

Specialist: M. Taylor, Head, Conservation Branch, Countryside Commission of England and Wales

Objectives: The principal objective of the study was to examine the relevance to the Ngorongoro situation of the management systems, administrative structures, legislation and programmes used in the national parks of England and Wales. Particular attention was paid to:

- the control of land-use and human activities;
- the protection of landscape, cultural sites, flora and fauna;
- the design of extension programmes, and the involvement of local communities in management;
- the channeling of benefits from conservation areas to local communities;
- tourism.

Background: National parks in England and Wales share a number of important similarities with the Ngorongoro Conservation Area. Like the NCA, British national parks have been founded on a multiple-use philosophy, and they contain many areas of human settlement and economic activity. Like Ngorongoro, they also seek to promote the interests of both conservation and local communities.

The Countryside Commission of England and Wales is responsible for advising Government on national park policy and management. Since its establishment, the Commission has gained considerable experience of ways to reconcile conservation and development in national parks. To examine the possible relevance of these approaches to the Ngorongoro situation, Mr. Michael Taylor, Head of the Countryside Commission's Conservation Branch, visited Ngorongoro in April.

During his stay, Mr. Taylor developed a broad overview of the structure and operation of the Conservation Authority, through meetings with many of the NCAA's senior staff, and visits to all of the major ecological zones of the Area. In addition, he travelled to several of the principal settlement areas, and attended an organised meeting of elders at Oloirobi Village.

Major Findings and Recommendations: A full report of Mr. Taylor's findings and conclusions has now been prepared and circulated (NCDP Technical Report No. 2). Among the major points raised by Mr. Taylor's report were the following:

3.1. Initial Studies (1961-1962)

1-15 April 1962

Chairman: Mr. Taylor, Head, Conservation Branch, Comptroller's Commission of Enquiry into the

History: The primary objective of the study was to examine the operation of the various systems, administrative, legislative and financial, and to identify the main areas of concern.

- the control of land-use and other matters;
- the protection of industry, cultural sites, flora and fauna;
- the design of regional government, and the involvement of local communities in management;
- the channeling of public law conservation areas to local authorities.

Conclusion.

Summary: National parks in the United Kingdom have a number of characteristics which distinguish them from other parks. They are not only areas of natural beauty, but also areas of scientific and historical interest. It is therefore essential that they should be protected in a way which will ensure their preservation for the benefit of the nation.

The Comptroller's Commission of Enquiry into the Conservation of the National Parks in the United Kingdom was set up in 1961. Its terms of reference were to examine the operation of the various systems, administrative, legislative and financial, and to identify the main areas of concern. The Commission's report was published in 1962.

During its study, the Commission held a number of public hearings and received many suggestions from the public. It also conducted a wide range of inquiries into the various aspects of the parks. The Commission's report was published in 1962.

Major findings and recommendations: A full report of the Commission's findings and recommendations has been published and is available from the Comptroller's Commission of Enquiry into the Conservation of the National Parks in the United Kingdom.

- Although there are clear differences between national parks in the UK and Ngorongoro, the underlying dilemma of trying to achieve a balance between conservation and development is the same;
- The NCAA is in a much stronger position than UK national parks to control land-use and development within its boundaries, and this is cause for considerable optimism about the long-term future of the area;
- National parks in the UK are required by law to prepare five-year management plans, as well as annual workplans. These are used to establish the objectives of the national parks, the activities which will be used to meet these objectives, the necessary budgets, and tangible measurements by which progress can be monitored. The adoption of such a system in Ngorongoro would help clarify management objectives and ensure a unified approach between all departments;
- As in the UK, the long-term success of the Conservation Area will rely on the goodwill and support of the local people. In this regard, the NCAA should commit itself to maintaining and improving livestock services, water supplies, the road network, and other rural development programmes. The role of the rangers should be expanded to include not only anti-poaching, but also the interests of local communities (eg., protection from cattle raiding and predators). The NCAA should also consider ways of increasing formal representation of local communities in Ngorongoro's management;
- In order to increase revenue, efforts should be made to increase the amount of time which tourists spend in the NCA. This would involve placing greater emphasis on interpretive and information services, including the creation of visitor centres and the production of guidebooks and other materials such as brochures. Tourists should also be encouraged to visit other areas in the NCA, aside from the Crater, and the possibility of walking safaris in scenic areas with low wildlife populations should be explored.

3.2 Review of NCA Legislation:

Dates: 15-26 August 1988

Specialists: Prof. M. Forster, Director, Environmental Law Centre, University of Southampton, UK (also Vice-Chairman, IUCN Environmental Law Commission).

Mrs. E. Malecela, Senior State Attorney, Ministry of Justice, Dar-es-Salaam.

Objectives: The major objectives of the study were to review the principal and subsidiary legislation governing the management of the NCA, and to prepare draft legislation which is more relevant to present conditions and likely future trends. Such legislation should:

Although there are clear differences between national parks in the UK and elsewhere, the underlying balance of policy to achieve a balance between conservation and development is the same.

The NPS is in a much stronger position than the national parks to control land-use and development within its boundaries, and this is cause for considerable concern about the long-term future of the area.

National parks in the UK are created by law to protect landscape, scientific and historic interest, as well as natural wilderness. There are used to provide the objectives of the national parks, the activities which will be used to meet these objectives, the necessary budget, and specific arrangements by which progress can be monitored. The adoption of such a system in Singapore would help clarify management objectives and ensure a unified approach between all departments.

In the UK, the long-term success of the Conservation Area will rely on the goodwill and support of the local people. In this regard, the NPS should commit itself to maintaining and improving livestock services, water supply, the road network, and other vital development programmes. The role of the NPS should be expanded to include not only land-use planning, but also the interests of local communities (e.g., protection from cattle raiding and predators). The NPS should also consider ways of increasing local representation of local communities in Singapore's development.

In order to increase tourism, efforts should be made to increase the amount of time which tourists spend in the NPS. This would involve giving greater emphasis on interpretation and information services, including the creation of visitor centres and the production of guidebooks and other materials such as brochures. Visitors should also be encouraged to visit other areas in the NPS, such as the forest, and the possibility of selling tickets for visits to these areas with low wildlife opportunities should be explored.

1.7 Review of NPS Legislation

19-20 January 1988

Prepared by: M. Tanaka, Director, Environmental Law Centre, University of Southampton, 90-91 High Street, Southampton, SO9 4NU

Mrs. A. K. Tanaka, Senior Lecturer, Faculty of Law, University of Southampton, Southampton, SO9 4NU

Summary: The major objectives of the study were to review the physical and biological features of the NPS, and to propose draft legislation which is more relevant to present conditions and likely future trends. Such legislation should:

- be up-to-date and internally consistent;
- provide clear goals for the management of the Conservation Area;
- promote the maintenance of a balance between the Area's conservation objectives and human development requirements;
- provide a strong yet flexible framework for the implementation of management objectives.

Background: Over the last decade, many countries have been reviewing and re-designing their environmental legislation, in an effort to make these laws more effective and relevant to present-day conditions. As a result of this process, environmental legislation has become increasingly sophisticated, and a "second generation" of environmental law is now emerging. For example, early protected area legislation dealt mainly with the legal status of the reserves, the powers of the management authority, and rules and regulations. More recent legislation, on the other hand, might include the goals of the protected area (in a national context), a clearly-defined set of management objectives, and guidelines, mechanisms and structures to help ensure that such objectives are met.

While the early environmental legislation has often been very effective where there are no internal land-use conflicts or competing interests, first generation legislation falls short of providing an adequate foundation for the management of more complex sites. The management of multiple-use areas, for example, is a matrix of interacting considerations, in which the needs of conservation and human development must be continually re-appraised and carefully balanced. If the law is unclear, the management authorities are unlikely to receive the guidance and legal support they require. At the same time, however, the legislation must be sufficiently flexible to enable management to adapt to the changing conditions brought about by increasing human populations and rising aspirations. Amongst protected areas, multiple-use systems stand to gain the most from the increasing sophistication of environmental law.

The legislation governing Ngorongoro has guided the NCAA through a lengthy and successful period of conservation and development. However, it is now 14 years since the principal legislation was last revised, and the Conservation Authority has thus been unable to capitalise upon the more recent developments in the field of environmental law. The 1975 Amendment to the Ngorongoro Ordinance, for example, provides little in the way of guidelines to underpin the management objectives of the area, focusing more on such issues as finance, law enforcement and appeals. Indeed, in certain respects, the Ordinance is internally contradictory in regard to management objectives. As a result, it contributes to the difficulty which the NCAA has sometimes experienced in reconciling conservation and development needs.

The effectiveness of Ngorongoro's future conservation and management programmes will, of necessity, hinge upon the flexibility and guidance provided by the legislation. For this reason, NCDP identified a review of the NCAA's legislation as a high priority.

Major Findings and Recommendations: A full report of the study is currently in preparation, and will be circulated shortly. Initial and as yet provisional suggestions from the study team were that:

- Minor amendments should be made to a number of existing pieces of legislation, where there are overlapping responsibilities between the NCAA and other bodies (such as the Forest Division, the Ministry of Mines, and the Antiquities Division). The primary goal of these amendments would be to consolidate control of land-use activities within the Conservation Area firmly under the Authority;
- A number of major amendments should be made to the Ngorongoro Ordinance, including:
 - a) making the preparation and regular review of a management plan a statutory requirement;
 - b) increasing public awareness and participation by creating a Local Liaison Committee, and by publishing an annual report of the Authority's activities;
 - c) clarifying the Authority's objectives. This would include the addition of a further objective to encompass archaeological concerns, and the stipulation that all objectives shall be promoted equally;
 - d) the preparation of a policy statement, perhaps in the form of an Ngorongoro Charter, to guide the Authority in meeting its objectives.

3.3 Forest Conservation and Management:

Dates: 18 October - 5 November

Specialists: Dr. T. Struhsaker, Senior Staff Member, Wildlife Conservation International (New York Zoological Society).

Mr. A. Odegaard, Manager, International Forestry Development Section, Norwegian Forestry Society.

Mr. C. Ruffo, Senior Forester, Lushoto Silvicultural Research Station.

Mr. R. Steele, Treasurer, IUCN (until 1988, Director General, UK Nature Conservancy Council).

Objectives: The study team was requested to:

- undertake a field reconnaissance of Ngorongoro's major natural forest areas;
- assess the current and likely future impact of livestock grazing, burning and wood collection;

Major findings and recommendations. A full report of the study is currently in preparation, and will be distributed shortly. Initial and subsequent suggestions from the study team were that:

- 1) Major recommendations should be made to a number of existing pieces of legislation, where there are overlapping responsibilities between the HSE and other bodies such as the Police, the Ministry of Health and other bodies (such as the Police, the Ministry of Health, and the Agriculture Department). The primary goal of these recommendations would be to ensure that the relevant activities within the Construction Area clearly define the authority;
- 2) A number of major amendments should be made to the Regulations (including:
 - a) Making the provisions and transfer of a management plan a statutory requirement;
 - b) Introducing public awareness and participation by creating a local Liaison Committee, and by publishing an annual report of the Authority's activities;
 - c) Clarifying the Authority's objectives. This would include the addition of a further objective to manage environmental concerns, and the stipulation that all objectives shall be presented annually;
 - d) The preparation of a policy statement, perhaps in the form of an Executive Order, to guide the Authority in future legislation.

5.2 - Final conclusions and summary

Date: 15 October - 5 November

Prepared by: Dr. J. O'Connell, Senior Staff Member, Health Commission, International Labour Office, Geneva.

Mr. A. O'Connell, Director, International Labour Office, Geneva, Switzerland.

Mr. J. O'Connell, Director, Health Commission, International Labour Office, Geneva, Switzerland.

Dr. J. O'Connell, Director, Health Commission, International Labour Office, Geneva, Switzerland.

6. Summary: The study team was requested to:

- undertake a field examination of the proposed major activities;
- assess the current and likely future impact of legislative proposals on the construction industry.

- determine the extent of, and apparent trends in, encroachment;
- identify those forest sections which appear to be most important for maintaining catchment, wildlife and botanical values;
- provide recommendations on the long-term conservation and management of the NCA's natural forest areas.

Background: The natural forests of the Ngorongoro Conservation Area are important as water catchment areas, as botanical reserves, and as wildlife habitat. The Northern Highlands Forest Reserve is particularly critical, in that it protects the water supplies of the densely settled, agricultural communities of Karatu, Oldeani and Mbulumbulu. Ngorongoro's forests also fulfill a wide variety of local community needs. They are used as dry season grazing areas by livestock, and as sources of fuelwood, building poles and other forest products.

Despite the importance of the forests to both conservation and local communities, a field examination of the status of Ngorongoro's forests has not been undertaken for many years. As a result, little is known about the current condition of the forests, or the impact of utilisation. The forest study team was recruited by NCDP to address these concerns.

Major Findings and Recommendations: The group confirmed the importance of the forests for both water catchment and wildlife conservation purposes. The role of the forest in providing water to all of the people living along the southern boundary of the Northern Highlands Forest Reserve was particularly striking. Elephants and buffalo were widespread, and appeared to be abundant in the Northern Highlands Forest Reserve; leopards also appeared to be relatively common.

Human activities, however, were also widespread. Grazing and burning were adversely affecting many areas of the forest visited by the group. This was particularly true on Lemagarut, Olmoti and Empakaai, where some portions of the forest have been destroyed by fire. The cutting of poles and the collection of firewood by agricultural communities was occurring along many sections of the eastern boundaries of the Northern Highlands Forest Reserve, and this would appear to constitute a more immediate threat to the integrity of the forest than the activities of the resident pastoralists. No signs of pit sawing were detected, nor (with one possible exception) was agricultural encroachment noted.

A full report of the study is currently in preparation. Provisional recommendations were that:

- The NCA should be zoned so as to more fully reflect the Area's status as a Biosphere Reserve, by establishing a core protected area in which no human utilisation would be permitted. Such a core area is considered to be an integral component of all Biosphere Reserves, yet at present, no completely protected area exists within the NCA.

- determine the extent of, and apparent trends in, encroachment;
- identify those forest reserves which appear to be most important for maintaining watershed, wildlife and botanical values;
- provide recommendations on the long-term conservation and management of the BNA's natural forest areas.

Background: The natural beauty of the Bighorn National Forest area is important to many citizens, as a recreational resource, and as wildlife habitat. The Bighorn National Forest Reserve is particularly critical, as it provides the water supply of the Bighorn Valley, agricultural communities of eastern, central and southern Montana. The area is also a source of local timber products. They are used as dry season grazing areas by livestock, and as sources of fuelwood, building poles and other forest products.

During the past several years the Bighorn National Forest has not been under the same level of management as in the past. The current condition of the forest, as the result of neglect, is the subject of this report. The forest study was conducted by BNA in order to determine these conditions.

Major findings and recommendations: The study confirmed the importance of the forest for both water production and wildlife conservation purposes. The loss of the forest in providing water to all of the people living along the eastern boundary of the Bighorn National Forest Reserve was particularly disturbing. Riparian and wildlife values were also noted to be significant in the Bighorn National Forest Reserve. Recommendations are given to be relatively common.

These activities, however, were also interrupted. Grazing and burning were severely affecting many areas of the forest owned by the BNA. This was particularly true in the Bighorn, Grand and Bannock, where some portions of the forest have been destroyed by fire. The extent of water and the collection of timber by agricultural communities was restricted along some sections of the eastern boundary of the Bighorn National Forest Reserve, and this would appear to constitute a major barrier to the integrity of the forest. The activities of the various governmental agencies, as well as the activities of the Bighorn National Forest Reserve, are being severely restricted, and this has a detrimental effect on the Bighorn National Forest Reserve.

A full report of the study is currently in preparation. Recommendations were given.

The BNA should be asked to do a study to determine the area's status as a Bighorn National Forest Reserve, by establishing a core protected area in which no other activities could be permitted. Such a core area is considered to be an integral component of all Bighorn National Forest Reserve, as completely protected areas exist within the BNA.

- This core area should consist of the entire Northern Highlands Forest Reserve, together with Ngorongoro Crater and Empakaai. However, within this core, at least two major glades would be excluded, because of their importance for dry season grazing by livestock. Olmoti and Lemagarut would also be excluded, because of the importance of these areas as sources of forest produce for residents; however, the management of these two areas should be guided by detailed management plans;
- Law enforcement within the NCA's forests should be strengthened. In this regard, the boundaries of the Northern Highlands Forest Reserve should be re-surveyed, and beacons re-established (especially in the south, east, and northeast);
- Firebreaks should be established around key forests, in collaboration with local pastoralists;
- The NCAA should initiate a number of research activities, aimed at providing a better understanding of basic forest ecology, patterns of regeneration, forest dynamics and catchment functions. Activities could include the preparation of a vegetation map, the establishment of exclosures to monitor the effects of large grazers, the construction of weirs along critical streams to obtain information on water flow and quality, and an investigation into the impact of fire on tree mortality and regeneration.

3.4 Community Needs for Forest and Tree Produce:

Dates: 18 October - 5 November

Specialists: Dr. S. Chamshama, Head, Dept. of Forest Biology, Sokoine University of Agriculture.

Mr. P. Kerkhof, social forestry expert.

Mr. W. Singunda, Regional Natural Resources Officer, Arusha.

Objectives: This study was carried out in conjunction with the forest conservation and management study. It arose out of concern that the NCA's rising human population might be leading to unsustainable utilisation of forest resources. In this regard, the study attempted to assess the current and projected levels of forest produce use amongst the pastoral communities of the NCA, and the extent to which these needs can be met from the NCA's natural forest areas.

Provisional Findings and Recommendations: The team concluded that, in general terms, the fuelwood and construction needs of the resident pastoral population do not appear to be posing a threat to the forests of the NCA. There is evidence that several fuelwood species, as well as those species commonly used in house construction, are expanding their range, into areas which were formerly valued for pasture. In addition, there is a fair correlation between those species favoured by survey respondents as fuelwood, and those which are actually being used; this is an indication that fuelwood

This core area would consist of the entire Northern Highlands Forest Reserve, together with Westmoreland Forest and Bannockburn. However, within this core, at least two major glades would be excluded, because of their importance for dry heath growing by limestone. Glacis and Langmuir would also be excluded, because of the importance of these areas as sources of forest produce for residential houses. The management of these two areas should be guided by detailed management plans.

The enforcement within the NCA's forests should be strengthened. In this regard, the boundaries of the Northern Highlands Forest Reserve should be re-surveyed, and houses re-located wherever possible in the north, east, and northeast.

Research should be established around key forests, in collaboration with local naturalists.

The NCA should initiate a number of research activities, aimed at providing a better understanding of basic forest ecology, patterns of regeneration, forest dynamics and natural functions. Activities would include the preparation of a vegetation map, the establishment of exclosures to monitor the effects of large grazers, the construction of water traps along critical streams to obtain information on water flow and quality, and an investigation into the impact of fire on tree mortality and regeneration.

1.4 Research Needs for Forest and Wetland Protection

Dr. J. G. ...
 Dr. P. ...
 Dr. W. ...

Objectives: This study was carried out in conjunction with the forest conservation and management study. It arose out of concern that the NCA's existing management might be leading to unsustainable utilization of forest resources. In this regard, the study attempted to assess the current and projected levels of forest produce and compare the potential sustainability of the NCA and the extent to which these needs can be met from the NCA's natural forest areas.

Functional Analysis and Recommendations: The team concluded that, in general terms, the forest and wetland resources of the Northern Highlands Forest Reserve do not appear to be under a threat to the forests of the NCA. There is evidence that several wetland forests, as well as other smaller forests, are in better condition, and remaining forest types, large areas which were formerly used for pasture. In addition, there is a clear distinction between those species favored by heavy trampling as indicated and those which are usually being overgrazed. This is an indication that forests

scarcity has not become a major problem in the Conservation Area. Survey respondents consistently rated other problems - such as the availability of food, water and veterinary drugs - well above concern over the availability of forest produce. Given this situation, the study team felt that outside interventions aimed primarily at increasing fuelwood supplies would be likely to fail.

The situation in respect of boma construction wood, and particularly cedar, is different. Although large quantities of cedar are used in the construction of individual bomas, the lifespan of the wood from this species is very long (c. 50 years). In addition, the utilisation of cedar appears to be a function of socio-economic factors: the construction of a cedar fence is an expensive, long-term investment, affordable only by the more wealthy families in the community. Poorer families must resort to the use of species such as Acacia lahai - one of the species which appears to be expanding. These factors serve to make the annual estimated use of cedar relatively modest; given the growing impoverishment of the Ngorongoro Maasai, the study team did not expect this estimate to increase greatly in the foreseeable future.

Analysis at a smaller scale, however, revealed that villages in several areas are suffering from local shortages of wood. Residents at Nainokanoka, for example, expressed concern over the disappearance of favoured fuelwood species, whilst villagers at Alaililai reported that cedar is now very scarce; in these areas, the utilisation of forest resources appears to have been carried out in an unsustainable fashion.

The value of the NCA's forests - at least as sources of produce - was generally recognised by the local community. Several villages expressed an interest in protecting their cedar groves, in planting cedar seedlings, and in learning how to manage their forest areas more actively and effectively. In this connection, the team recommended that the NCAA explore the possibility of setting up a small-scale forest protection and tree planting programme. This programme would be characterised primarily by its flexibility: all activities would be planned at a local level, and more emphasis would be placed on the approach of the project than on achieving target outputs, etc. For example, if one community expresses greater interest in protecting its cedar forest than in planting seedlings, the project should be capable of providing assistance with the establishment of firebreaks and other protective measures.

The study team felt that dry season grazing is the most problematic issue related to the utilisation of forest resources by resident pastoralists. Although virtually all survey respondents stated that the forest has expanded, there is considerable ambiguity within the Maa language over the meaning of the term "forest", which can refer to woodland, bush, or closed montane forest. Many respondents reported that they use fire as a management tool to open and clear glades to improve grazing conditions within the forest; the potential of such activity to destroy the integrity of the forest is evident, particularly when carried out repeatedly over many years.

Although no conclusions on the sustainability of dry season grazing practices could be reached, the team stressed that the catchment and wildlife values of the NCA's forests must be conserved. It was recommended that the glades used for grazing be monitored and managed so as to ensure that forest deterioration is kept to a minimum. From the interviews undertaken by the study, it appears that it might be possible to make individual communities

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responsible for the management of specific glades within the forest. Rewards and sanctions could be applied to these communities in relation to the way in which they manage "their" dry season grazing. However, such a system would have to be clear and straightforward, depersonalised, and understood by all parties concerned. As a first step in this direction, the team recommended that the present permit system controlling grazing within the forests be reviewed.

3.5 Additional Specialist Studies: In addition to the studies described above, NCDP also organised the second (wet season) portions of studies on:

- wildlife conservation requirements;
- livestock development;
- livestock/wildlife interactions.

An assessment of vegetation change, using aerial photographs and Landsat imagery, is ongoing. All of these studies have been described in previous NCDP progress reports, and so are not repeated here.

4. Additional Activities:

4.1 Support to the NCAA Extension Team:

Following the training workshop on extension techniques organised by NCDP in 1987, the Ngorongoro Extension Team has made considerable progress: a Steering Committee, composed of NCAA Heads of Department, has been formed; village-level Extension Committees have been established at six of the major settlement areas; and a preliminary survey of community needs and priorities has been undertaken.

NCDP has continued its support to the Extension Team in 1988, and sponsored the team's attendance at a workshop organised by the Diocese of Marsabit in Kenya. The workshop was designed to introduce Samburu pastoralists to improved livestock husbandry and environmental management techniques, and included the following topics:

- the environment, and the linkages between pasture, water, climate, forests, fire, soil and animals;
- animal nutrition;
- animal husbandry;
- animal health: the parasite cycle, disease diagnosis, treatment of disease, and correct choice of drug, dosage and administration.

As a result of their participation in the workshop, team members were able to see extension techniques and methods in action, amongst a group of pastoralists who are very similar to the pastoralists of Ngorongoro. The team is now designing its own programme of activities for the Conservation Area, drawing on the results of their initial community needs survey and their experiences at the workshop.

responsible for the management of wildlife species within the forest. Wildlife and resources could be applied to these communities in relation to the way in which they manage their own lands. However, such a system would have to be clear and straightforward, developed, and endorsed by all parties concerned. As a first step in this direction, the following recommendations are made:

3.2. Additional/Supporting Projects: In addition to the studies described above, WFP also organized the second (and second) projects of studies on:

- Wildlife conservation experiments;
- Livestock development;
- Livelihoods/Income generation.

An assessment of vegetation change, using aerial photographs and Landsat imagery is being. All of these studies have been described in previous WFP progress reports, and to the not repeated here.

4. Additional Activities:

4.1. Support to the WFP Wildlife Team:

Following the meeting, several activities were organized by WFP in 1997. The Wildlife Team has been reorganized to support the Wildlife Team, composed of WFP staff of Department, and other staff. Wildlife Team's activities have been organized at the of the major wildlife areas; and a preliminary survey of community needs and priorities has been undertaken.

WFP has continued its support to the Wildlife Team in 1998, and continued the team's activities as a working group. The Wildlife Team's activities in 1998 were organized in three main areas: wildlife conservation, livelihoods, and income generation. The following list includes the following projects:

- The environment, and the impact of human activities, water, climate, forests, fish, and wildlife;
- Wildlife conservation;
- Wildlife livelihoods;
- Wildlife management: the Wildlife Team, Wildlife Team's activities in 1998, and current status of their projects and administration.

As a result of their participation in the workshop, team members were able to see national policies and actions in relation to wildlife. The team members who were unable to attend the workshop, the team is now working to see progress of activities for the Wildlife Team, based on the results of their initial community needs survey and their reports to the workshop.

4.2 Land Degradation Appraisal:

Dr. Michael Stocking, from the School of Development Studies at the University of East Anglia in England, visited Ngorongoro to advise on techniques to be used by NCDP in the assessment of the severity of land degradation within the Conservation Area. This is an issue which has frequently been raised in discussions on a long-term management strategy for Ngorongoro, and one which has important implications for land-use planning within the Area. Dr. Stocking recommended that NCDP initiate the following activities:

- regular measurement of land degradation features such as erosion gullies and terraces;
- regular measurement of vegetative cover and grazing pressure along transects in three major ecological zones of the NCA;
- measurement of infiltration rates in the wet and dry seasons at selected sites along the three transects;
- establishment of simple sediment traps at several critical sites, in order to provide information on erosion resulting from rainfall run-off.

These activities have now been started, and are being carried out by the Project Coordinator.

5. Plan of Future Activities:

The first phase of the Ngorongoro Conservation and Development Project is now drawing to an end. During the coming months, emphasis will be placed on completing the series of specialist studies, finalising reports, and distributing information obtained during the course of the project for reaction and comment. An Ngorongoro Workshop is being planned, after which attention will be given to the design of follow-up activities. Each of these activities is discussed in greater detail below.

5.1 Specialist Studies:

5.1.1 Nutritional Status and Food Security:

Planned Dates: February/ March 1989

Specialists: An inter-disciplinary team, composed of a nutritionist, a post-harvest food storage expert, a road engineer, a sociologist, and an agricultural economist, in collaboration with NCAA staff.

Objectives: The major objective of this study will be to examine the feasibility of establishing a viable food supply system to bring agricultural produce from outside the Conservation Area, for purchase by residents of the NCA. The study is needed in light of the fact that:

4.3. Land Degradation Assessment

The initial tracking, from the School of Development Studies at the University of East Anglia in England, visited Norfolk to assist in the assessment of the severity of land degradation within the Conservation Area. This is an issue which has recently been raised in discussions on a long-term management strategy for the area, and one which has important implications for food and planning. The area, Dr. Gordon recommended that WDA initiate the following activities:

- regular assessment of land degradation features such as erosion gullies and contours;
- regular assessment of vegetative cover and ground pressure along contours in those major ecological zones of the WCA;
- assessment of infiltration rates in the wet and dry seasons at selected sites along the main drainage;
- establishment of simple erosion traps at several critical sites, in order to provide information on erosion resulting from rainfall events;
- These activities have now been started, and the findings compiled by the Project Coordinator.

4. The Conservation Area

The first phase of the Norfolk Conservation and Development Project is now drawing to an end. During the course of the project, reports will be prepared on the various activities undertaken, including reports on the monitoring and assessment of vegetation cover, the monitoring of erosion and ground pressure. An important feature of the project has been the regular exchange of information between the project and the Conservation Area. It is hoped that the findings of the project will be given to the Conservation Area, and that these activities will be discussed in greater detail below.

4.1. Conservation Area

4.1.1. Conservation Area and Land Use

Conservation Area (formerly) March 1987

Introduction: An inter-disciplinary team, composed of a geographer, a biologist, and an agricultural economist, in collaboration with WDA staff.

Objectives: The major objective of this study will be to examine the possibility of establishing a viable food supply system in the Conservation Area, for purchase by residents of the area. The study is needed in light of the fact that...

- cultivation within the Conservation Area is currently prohibited;
- demand for grain and other agricultural produce amongst the NCA's residents appears to be rising, and it is unclear how this demand is to be met.

Detailed terms of reference for the study are presented in Annex 1.

Background: An expanding human population and a relatively static cattle population have led to a situation in which the local communities of Ngorongoro are increasingly dependent on grain to meet their nutritional needs. As a result of this growing dependency, many residents have taken up illegal cultivation within the Conservation Area; this has created a serious conflict with the NCAA, which is bound by law to prevent such cultivation, and local communities, who say that they have no option.

The feasibility of meeting nutritional requirements through alternatives to local cultivation has thus become one of the central issues in the NCA, and one that will have important implications for the future management of the Area. If it is not feasible - technically, socially, economically, or logistically - to establish a system which can provide a reliable and affordable source of agricultural products to residents, then the current management regime will need to be carefully reconsidered. It is for these reasons that the study has been identified as a high priority by NCDP.

5.1.2 Additional Studies: The need for additional studies is currently being evaluated in light of the information obtained to date. Two topic areas in particular are being considered for attention: land evaluation, and rangeland ecology.

5.2 Ngorongoro Extension Programme:

With the financial assistance of NORAD and the EEC Food Aid Counterpart Fund, NCDP is working closely with the Conservation Area Authority to strengthen the capability of the Ngorongoro Extension Team. A Suzuki jeep is being purchased, and training sessions at other institutions - such as the Arusha Diocesan Development Organisation in Tanzania, and the Ilkerin-Loita Integral Development Programme in Kenya - are being arranged.

5.3 Ngorongoro Workshop:

The Ngorongoro Workshop will serve as the venue at which the preliminary recommendations of NCDP will be discussed and reviewed. The workshop is seen as an important step in ensuring that the input from the many parties concerned with Ngorongoro is received in the design of the new management policy and follow-up activities. It is anticipated that participants will include the Ngorongoro Commission, local leaders, NCAA staff, District and Regional officers, Party officials, representatives from the Ministry of Lands, Natural Resources and Tourism, government agencies, and specialists who have undertaken studies for NCDP.

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... reasons that the study has been identified as a high priority by WFP.

2.1.1 Additional Studies: The need for additional studies is currently ...

... being contacted in light of the information obtained to date. The topic areas ...

... in particular are being considered for vegetation, land evaluation, and ...

... ecological biology.

2.2 Research Objectives

With the financial assistance of WFP and the NCA Food and Nutrition ...

... Unit, WFP is working closely with the Conservation Area Authority to ...

... strengthen the capabilities of the Government Extension Team. A major step is ...

... being taken to establish a system of grain production - such as the ...

... Intensive Grain Production Experiment in Tanzania, and the Intensive ...

... Intensive Development Program in Kenya - are being reviewed.

2.3 Research Methods

The Ngorongoro District will carry out the study at the same time as which the preliminary ...

... recommendations of WFP will be discussed and reviewed. The emphasis is on ...

... an important step in ensuring that the local food and nutrition committee ...

... will be involved in the design of the study and in the implementation of ...

... the study. It is anticipated that participants will include the ...

... Government Extension, local leaders, WFP staff, District and Regional ...

... officers, Party officials, representatives from the Ministry of Lands, Natural ...

... Resources and Tourism, Government extension, and specialists who have undertaken ...

... studies for WFP.

Annex 1: Terms of Reference for Nutritional Status and Food Security Study

To examine the feasibility of establishing a viable food supply system to bring agricultural produce from outside the Conservation Area to Ngorongoro residents, an inter-disciplinary study team will be formed under the auspices of NCDP. Through consultations with district and regional authorities, livestock officers, agricultural officers, local communities and others, and in close collaboration with personnel from the Ngorongoro Conservation Area Authority, this study team will:

Nutritionist:

- assess the current and likely future nutritional status of the NCA's pastoral communities;
- assess the present and projected shortfall of livestock products relative to nutritional needs in each of the major settlement areas of the NCA;
- determine the type of agricultural produce that could best be used to supplement livestock products, and the volume that would be required. This should include a consideration of cultural food preferences, likely seasonal fluctuations in demand, logistical issues, and availability.

Storage Expert:

- assess the need for storage facilities as an element of a supplementary food supply system in Ngorongoro;
- should stores appear to be a necessary component of a food supply system in Ngorongoro, identify the type of storage facilities which would be most appropriate for prevailing local conditions;
- assess the number and size of stores needed, and their optimal location;
- provide an estimate of the cost of constructing stores, as well as information on the amount and type of materials needed;
- assess the difficulties which might be associated with food storage (eg., theft, spoilage, losses to pests, etc.), and provide recommendations on the ways in which these might be overcome;
- in collaboration with the other study team members, consider who would be responsible for financing, constructing and maintaining storage facilities.

Trade and Marketing Economist:

- develop an overview of the current practice of selling livestock in exchange for grain. Investigate the economics of this trade, and likely future trends, particularly with respect to the relative value of grain and livestock;

Annex 1: Study of Feasibility for Irrigation Schemes and Food Security Study

The purpose of the study is to determine the feasibility of establishing a viable food supply system to bring agricultural produce from outside the Government Area in Ibadan. The study will be carried out under the supervision of the Ministry of Agriculture and Rural Development, Ibadan. The study will be carried out in Ibadan, Oyo State, and the results will be used to guide the Government in the development of a viable food supply system.

Objectives

- 1. To determine the current and likely future nutritional status of the G.A.'s population.
- 2. To assess the present and projected shortfall of livestock products relative to nutritional needs in each of the major districts of the G.A.
- 3. To determine the type of agricultural produce that could best be used to supplement livestock products, and the volume that would be required. This should include a consideration of cultural food practices, likely seasonal fluctuations in demand, logistical issues, and availability.

Methods

- 1. Assess the need for animal facilities as an element of a supplementary food supply system in Ibadan.
- 2. Identify areas where a supplementary system of livestock production would be most appropriate for growth in local conditions.
- 3. Assess the quality and size of water bodies, and their potential for use.
- 4. Review the status of the cost of transporting produce, as well as investment in the market and type of suitable market.
- 5. Assess the difficulties which might be associated with food storage (e.g., theft, spoilage, losses to pests, etc.) and provide recommendations on the way in which these might be overcome.
- 6. In collaboration with the other study team members, consider the need for arrangements for financing, construction and maintenance of facilities.

Tasks for Irrigation Development

- 1. Develop an overview of the current practice of selling livestock in markets for grain. Investigate the economics of this trade, and identify factors which, particularly with respect to the relative value of grain and livestock.

Annex 1 (continued)

- identify the areas from which agricultural produce would be obtained. Consider who would be responsible for procurement, and assess the security of the supply. For example, during a year of poor rains, would "panic buying" in the agricultural areas undermine a supply system for Ngorongoro?
- provide an estimate of the overall cost of establishing and running a supplementary food supply scheme. Consider the ways in which the scheme would be financed, and its viability in the long-term.

Sociologist:

- investigate attitudes toward the supply of agricultural produce. Are current supplies meeting demand in a satisfactory manner?
- investigate the factors underlying the apparent increase in the demand for grain. Is this purely a function of population increase, or are other factors - such as changing food preferences - at play?
- in conjunction with the economist, assess the willingness and economic ability of local communities to participate in a supplementary food supply scheme. For example, will the livestock population be able to sustain the level of offtake required to raise funds for the purchase of agricultural supplies?
- determine the probable equitability of a supplementary food supply system. For example, what percentage of the population might be too poor to afford to buy supplementary food?

Road Engineer:

- identify the transportation requirements of a supplementary food supply system for the NCA;
- estimate the financial cost of purchasing, maintaining and operating the necessary transportation;
- consider to whom such transportation would belong, and who would be responsible for its operation;
- determine whether the current road network is adequate to ensure that supplies reach major settlement areas, at the correct time of year. Assess the need for upgrading existing roads, or for constructing new ones;
- provide recommendations on the roadworks needed to ensure the maintenance of an effective and reliable food supply system. This should include details of siting, approximate costs, equipment needs, etc. Consider who would be responsible for constructing and maintaining such roadworks.

Part 1 (continued)

Identify the areas from which agricultural products would be obtained. Consider the need for responsibility for production, and assess the security of the supply. For example, during a year of poor yields, would "extra buying" in the agricultural areas maintain a supply system for the country?

Provide an estimate of the overall cost of establishing and running a supplementary food supply system. Consider the ways in which the system would be financed, and its viability in the long-term.

Part 2

Investigate the factors affecting the supply of agricultural products. Are current supplies meeting demand for a satisfactory standard?

Investigate the factors affecting the apparent increase in the demand for grain. Is this merely a function of population increase, or are other factors - such as changing food preferences - at play?

In conjunction with the economist, assess the efficiency and economic ability of local communities to participate in a supplementary food supply system. For example, will the local population be able to maintain the level of efficiency required to raise funds for the purchase of agricultural equipment?

Determine the possible availability of a supplementary food supply system. The major question is whether the population might be too poor to allow to buy supplementary food.

Part 3

Identify the production requirements of a supplementary food supply system for the area.

Estimate the financial cost of purchase, maintenance and operating the necessary equipment.

Consider to whom such responsibilities should belong, and who would be responsible for the operation.

Determine whether the current food network is adequate to ensure that supplies reach their destination areas, at the current time of year. Assess the need for special marketing needs, or for stockpiling and storage.

Provide recommendations by the committee needed to ensure the maintenance of an efficient and reliable food supply system. This should include details of staff, equipment needs, transport needs, etc. Consider who would be responsible for construction and maintaining such systems.

Annex 1 (continued)

General:

All members of the study team will collaborate in the production of a final report, aimed at assessing the feasibility and desirability of establishing a supplementary food supply system in the NCA. In drawing up its report, the team will also consider the likely environmental implications of a food supply system. For example, would problems arise through increased sedentarisation around food storage and distribution points?

In the event that the team's conclusions are favourable, the final report should include recommendations on all aspects of the establishment, operation and maintenance of a supplementary food supply system, including guidelines on procurement, transportation, marketing and distribution, and the respective responsibilities of the NCAA, local communities, and District and Regional authorities.

