NGORONGORO CONSERVATION AND DEVELOPMENT PROJECT

Annual Report of Activities: February 1987 - February 1988

I. PROJECT SUMMARY

1. Title: Ngorongoro Conservation and Development Project

2. Implementing Agencies: International Union for Conservation of Nature
Regional Office for Eastern Africa
P.O. Box 68200
Nairobi
Kenya

in collaboration with Ministry of Lands, Natural Resources & Tourism
P.O. Box 1994
Dar-es-Salaam
Tanzania

and Ngorongoro Conservation Area Authority
P.O. Box 1
Ngorongoro Crater
Tanzania

3. Project Coordinator: Mr. S. Perkin
IUCN
P.O. Box 44
Ngorongoro Crater
Tanzania

4. Project Duration: 18 months
February 1987 - July 1988

5. Project Funding: Norwegian Agency for International Development
Kroner 688,100

Food Aid Counterpart Fund/ EEC
TShs. 1,614,500

II. PROJECT DESCRIPTION

1. Introduction:

This report describes the activities undertaken by the IUCN Ngorongoro Conservation and Development Project (NCDP) during the period February 1987 to February 1988. For the many people who have been involved with the project, it is hoped that this report will help present an overall picture of the ways in which the project is evolving. For those who may not be familiar with the project, it is intended that the report will serve as an introduction to its history and objectives, as well as a summary of the achievements to date.

Comments and suggestions on this report and the activities of NCDP are welcome, and should be sent to the Project Coordinator.

2. Background and Objectives:

The Ngorongoro Conservation Area (NCA) spans a region of some 8,200 square kilometres in northern Tanzania. Established in 1959, the NCA is a multiple land-use area, designed to fulfil the interests of wildlife conservation, pastoralism and archaeology. The NCA is a crucial part of the Serengeti ecosystem, supporting both a resident population of wildlife and a majority of the Serengeti's migratory species during the wet season. In addition, the forests of the highland areas are a vital water catchment for the surrounding agricultural lands. Approximately 23,000 Maasai now reside within the NCA, together with some 285,000 head of livestock. Lastly, a number of archaeological sites, including Olduvai Gorge, are also situated within the NCA.

In recognition of its international significance, Ngorongoro has been made both a World Heritage Site and a Biosphere Reserve. However, land-use pressures within and adjacent to the NCA are growing, and there is escalating conflict between the interests of conservation, archaeology, and the development needs of local communities. As a result, there is mounting concern about the future of the NCA, and the extent to which the area remains capable of meeting its original objectives. The Ngorongoro Conservation and Development Project was established to review the situation, assess the implications of land-use and population trends, and provide recommendations on a long-term management strategy for the area. In particular, the project has been designed to:

-- identify the requirements for long-term conservation of wildlife, forests, archaeological sites and landscape in the Ngorongoro Conservation Area;

-- assess the seriousness of land-use pressures in, and adjacent to, the Conservation Area;

-- identify the development priorities of the resident pastoralists;

-- in light of the above information, review and evaluate the various management options which might be pursued in Ngorongoro;

-- formulate a conservation and development policy, based on the management option which offers the greatest potential for ensuring that the long-term needs of both the Maasai people and conservation are fulfilled.

3. Project History:

The Ngorongoro Conservation and Development Project had its origins in the Serengeti Workshop, convened by the Ministry of Lands, Natural Resources and Tourism (MLNRT) in December, 1985, to examine the long-term future of the Serengeti ecosystem. One of the principal recommendations of the workshop was that the status of the Ngorongoro Conservation Area should be reviewed as a matter of priority, in an effort to better understand the nature and underlying causes of the prevailing land-use conflicts and to develop an effective long-term management strategy for the area.

In response to this recommendation, IUCN began work on a project proposal to undertake the required activities, in collaboration with MLNRT and the Ngorongoro Conservation Area Authority (NCAA). This proposal was formally endorsed by the NCAA Board of Directors in November, 1986, and by the Ministry in December of the same year. Funding was subsequently provided by the Norwegian Agency for International Development (NORAD) and the Food Aid Counterpart Fund of the European Economic Community (FACF).

4. Project Management:

NCDP is managed by the IUCN Regional Office for Eastern Africa, based in Nairobi. Responsiblity for the day-to-day planning and administration of the project rests with the IUCN Project Coordinator, who is stationed at NCAA Headquarters in Ngorongoro.

III. PROJECT ACTIVITIES

1. Progress to Date:

Since its inception in February, 1988, the project has undertaken the following activities:

Specialist Studies: A series of specialist studies has been implemented under the project, in the following fields:

-- wildlife ecology;
-- livestock/ wildlife interactions;
-- livestock development: productivity, disease control, extension;
-- water development and management;
-- vegetation change (ongoing);
-- regional conservation and development trends.

Aerial Surveys: Aerial surveys of wildlife and livestock populations were undertaken during both the wet and dry season, in collaboration with the Frankfurt Zoological Society and the Serengeti Ecological Monitoring Programme.

Ground Censuses: With financial, logistical and technical support from the project, NCAA staff carried out wet and dry season ground censuses of Ngorongoro's human and livestock populations. These were timed so as to coincide with the aerial surveys.

Workshop on Extension Techniques: A workshop on extension techniques was organised and sponsored by the project, in order to introduce the latest development education techniques to the newly created Ngorongoro Extension Team.

Coordination of Unesco World Heritage Grants: The project has served as the liaison between Unesco and the NCAA for three grants totalling some $80,000, provided under World Heritage Fund emergency assistance.

International Seminars: NCDP, the British Council and the Elsa Wild Animal Appeal provided sponsorship for the Ag. Conservator to attend the International Symposium on Protected Landscapes, held in the UK from 5-10 October.

Logistical Support: Throughout the year, NCDP has assisted the Conservation Authority with the procurement and delivery of urgently required spare parts and supplies.

Each of these activities is described in greater detail below.

1.1 Specialist Studies:

From its inception, the Ngorongoro Conservation and Development Project was designed to draw upon independent specialist studies, as a means of providing an objective overview of the many different issues related to the resolution of Ngorongoro's land-use conflicts. These studies are intended to complement existing knowledge about the Conservation Area; as such, they rely upon extensive literature searches and upon the involvement and collaboration of NCAA resident staff members, as well as District and Regional officers.

The following studies have been carried out, or are ongoing:

1.1.1 Wildlife Conservation Requirements: Mr. J. Boshe, Deputy Principal of the College of African Wildlife Management, Mweka, was requested to identify those areas of the NCA which are critical to the long-term maintenance of wildlife populations; such areas include grazing and calving grounds, watering points, and migration routes. Mr. Boshe was also asked to ascertain whether conflicts were likely to arise over the future utilisation of these areas, in light of the growing human population and rising development requirements.

Mr. Boshe visited Ngorongoro from 5-19 July 1987, and from 29 February to 12 March, 1988. His initial findings indicate that different areas of the NCA vary markedly in their importance for wildlife; as a result, he suggests that some form of land-use zoning might be a possibility for ensuring long-term wildlife conservation whilst allowing pastoralism and development activities to continue. A full report is in preparation.

1.1.2 Livestock/ Wildlife Interactions: The interactions between wildlife and livestock are a fundamental aspect of Ngorongoro's multiple-use status. Since wildlife and livestock share broadly similar requirements, there is a potential for competition over forage and water, as well as other resources (e.g., salt). Mr. J. Machange, a range scientist and a Senior Instructor at the College of African Wildlife Management, Mweka, was requested to investigate the extent of such competition in the NCA, and its impact upon both wildlife and livestock populations. In keeping with NCDP's planning mandate, Mr. Machange was also requested to consider the likely long-term trends in livestock/ wildlife interactions, and their implications for both conservation and development.

Mr. Machange's preliminary findings indicate that there is relatively little competition between livestock and wildlife, principally because the two populations are often physically separated; the highland areas, which are densely settled and intensively utilised by livestock, support only small populations of wildlife; similarly, the major concentrations of wildlife are found in areas where livestock cannot remain on a permanent basis, because of legal restrictions, the risk of disease, or lack of water and forage. A full report is in preparation.

1.1.3 Livestock Development: Despite social and economic change, livestock continues to play a central role in the livelihood of the Ngorongoro Maasai. The performance of the NCA's livestock population, however, has been poor; milk yields are generally low, disease is widespread, and cattle numbers have failed to keep pace with the growth in the human population. As the

amount of milk available per capita has fallen, the need to intensify livestock development in Ngorongoro has become increasingly acute. However, because of Ngorongoro's special conservation status, there is also a need to consider whether livestock development can be intensified without detriment to the Area's conservation values.

To address these issues, NCDP initiated studies in three principal areas of livestock development: productivity, disease control, and extension/community involvement. The three studies were undertaken simultaneously, in close collaboration with the District Livestock Development Officer and senior staff of the NCAA's Livestock Development Section. Each of these studies is described in greater detail below:

a. Productivity: Dr. Chris Field, who is currently working with the Development Office of the Diocese of Marsabit, investigated the current status and productivity of the Ngorongoro livestock population. In particular, he was requested to examine a number of performance indicators (including milk yields, age at marketing, calving interval, etc.), and to suggest ways in which productivity could be increased.

Dr. Field proposed that a multi-faceted programme be followed in Ngorongoro to improve livestock productivity. The two key elements of this programme would be:

-- Land-Use Zoning: This would enable different areas of the NCA to be managed according to different objectives, thereby increasing efficiency and reducing land-use conflicts;

-- Livestock Development Education: Dr. Field proposed that a small team of Livestock Development Extension Workers be created under the auspices of the Ngorongoro Extension Programme. Team activities would include the provision of short training courses in all aspects of livestock husbandry; the initiation of small-scale community development projects, with matching funds from the NCAA; and the introduction of appropriate technologies (e.g., simple methods for preparing condensed milk, milk separators for ghee production, etc.).

b. Livestock Disease: Dr. Gerhard Moll, Senior Veterinary Investigation Officer at the Transmara Livestock Research Station, Kenya, investigated the disease situation in Ngorongoro. His study included the identification of the principal livestock diseases, an assessment of their impact on productivity, and the development of recommendations for improving disease control, prevention and treatment.

Tick-borne diseases appear to be the most serious problem; however, Dr. Moll stressed that the classical method of eradicating ticks through intensive control such as dipping cannot succeed in an area where there is close contact between livestock and wildlife, particularly buffalo. Such intensive efforts can also lead to massive losses if the programme is suddenly discontinued, since livestock will have lost their natural immunities. Rather, Dr. Moll advocated that a "disease management" approach be followed, which seeks to control and reduce tick burdens, but which does not aim for eradication. This approach allows natural immunities to be retained.

Following his investigation, Dr. Moll recommended that:

-- further investment in dips be limited to the repair of a few, carefully selected dips in areas where supplies of acaracide and water can be guaranteed;

-- the use of hand sprays be encouraged;

-- additional crushes be built, as time and funding permit. Crushes can be used for hand spraying, as well as for vaccinations;

-- a qualified veterinarian be recruited to the NCAA Livestock Development Section;

-- a one to two year study of the NCA's livestock disease situation be carried out, in conjunction with basic support and improvements to livestock health service facilities.

c. Community Involvement: Mr. Charles ole Sonkoi, Project Manager with the Ilkerin-Loita Integral Development Project, investigated local attitudes toward livestock development, and provided recommendations on approaches to improving productivity which would be culturally appropriate and locally acceptable. His findings played a critical role in defining the overall livestock development strategy for Ngorongoro outlined above. In particular, Mr. Sonkoi stressed the importance of re-gaining the trust of local communities and of re-establishing a working relationship between the NCAA and residents, if NCAA livestock development efforts are to be successful. He proposed that:

-- the Livestock Development Team described above be composed not only of NCAA personnel, but also three resident Maasai chosen by the community;

-- the NCAA re-gain the confidence of local communities by providing some immediate, direct and tangible support to livestock improvement (particularly veterinarian services) and communications (especially roads).

1.1.4 Water Development and Management: The NCAA's mandate to promote both conservation and pastoralism presents unique management challenges, and water development is a case in point. An effective water supply system can significantly raise living standards, through increases in livestock productivity and improvements in human health; however, water development also has the potential to alter land-use patterns, and to lead to increased sedentarisation, over-grazing and erosion.

In light of these concerns, NCDP initiated a study to assess the current status of the NCA's domestic and livestock water supplies, the adequacy of these supplies in the face of present and future demand, and the feasibility of meeting water requirements without significant environmental degradation. The study was undertaken by Dr. Stephen Cobb, a range and wildlife ecologist, and Mr. Ian Aikman, a water development specialist with the engineering consulting firm Babtie, Shaw and Morton, in collaboration with the Regional Executive Water Engineer. Funding was provided by IUCN's Service for the Initiation of Environmental Impact Assessment Procedures, which is supported by the Swedish International Development Agency.

A full report of the study is currently in preparation. Initial findings indicate that an extensive water system already exists within the NCA, and that

rangeland degradation resulting from water schemes is localised and relatively unimportant. However, this water system has progressively deteriorated because of design faults, improper building materials, and lack of maintenance. The first priority should be to repair and reactivate this network. This could be achieved at relatively low cost, since a majority of the large-scale earthworks and other infrastructure is still in place.

1.1.5 Vegetation Change: Little information is available on the current status of the NCA's forests, despite their importance as water catchments and wildlife habitat. Although a study of forest and woodland change was undertaken by the University of Dar-es-Salaam in 1981, these results now need to be updated, particularly in light of the continued rise in the human population and the increase in demand for forest products. Similarly, little is known about the extent of bush encroachment in Ngorongoro, although it has a number of important management implications. Bush expansion can be an indication of over-grazing, as well as of inadequate burning; in addition, it can lead to a reduction in grazing resources for both wildlife and cattle, and also allow reinfestation by tsetse flies.

Dr. S.B. Misana, from the Geography Department at the University of Dar-es-Salaam, is currently investigating vegetation changes in the NCA, using the latest Landsat imagery and aerial photography. Her study is expected to determine the extent of change in the NCA's forests since the last investigation, and to pinpoint those forest areas under the greatest threat. In addition, the study will examine the extent and seriousness of bush encroachment, in an effort to determine whether this issue should be of concern to management.

1.1.6 Regional Conservation and Development Trends: The Hon. M.S. Parkipuny, Member of Parliament for Ngorongoro District, was invited to investigate conservation and development issues in the vicinity of Kenya's Amboseli National Park and Maasai Mara National Reserve. The study had two principal thrusts: first, to consider the lessons to be learned from land-use and population trends in the vicinity of the two areas for Loliondo and the NCA; and second, to examine the approaches for integrating conservation and development which have been tried in these areas, and their relevance to the Tanzanian situation. In particular, the Hon. Parkipuny has been examining: agricultural expansion and the increasing alienation of land; wildlife/livestock competition; extension programmes and development education; and local involvement in the management of conservation areas. Mr. Parkipuny has now completed his study tour, and a report is in preparation.

1.2 Aerial and Ground Surveys:

A series of aerial and ground surveys has been carried out under the auspices of NCDP. The principal objectives of these surveys were to:

-- obtain up-to-date information on the size and distribution of the livestock, wildlife and human populations of the NCA;

-- determine trends in these populations;

-- obtain information on seasonal changes in population sizes and distribution;

-- gather detailed information on the age and sex structure of the livestock population.

Each of the surveys undertaken by the project is discussed in greater detail below.

1.2.1 Wet Season Sample Aerial Survey: A wet season aerial survey was undertaken from 12-16 April, in collaboration with the Frankfurt Zoological Society (FZS) and the Serengeti Ecological Monitoring Programme (SEMP). The survey used standard Systematic Reconnaissance Flight (SRF) techniques to estimate wildlife and livestock populations over an area of some 10,000 square kilometres, including the entire Conservation Area and portions of the Serengeti National Park and the Loliondo Game Controlled Area (Salei Plains). Distribution maps based on 5 by 5 kilometre grid squares are being prepared.

Preliminary population estimates for the NCA (excluding Ngorongoro Crater) are given in Table I.

1.2.2 Wet Season Total Count of Livestock: A total count of livestock was also undertaken during the period 12-16 April. This method entails locating and photographing all herds of livestock, and then counting animals from the developed photographs. This was the first total aerial count of livestock to be undertaken in Ngorongoro.

Results of the total count are still being analysed. However, from a preliminary examination of the data, it appears that this technique leads to a considerable under-estimation of livestock populations. This can perhaps be attributed to the varied terrain of Ngorongoro, which leads to dangerous flying conditions and difficulty in locating all livestock herds.

1.2.3 Dry Season Sample Aerial Survey: A dry season aerial survey was carried out between 23-25 October, in collaboration with FZS and SEMP. The results complement those obtained from the wet season survey, and enable comparisons to be made in the seasonal changes which occur in the numbers and distribution of livestock and wildlife (see Table II). A report on the dry season survey has now been prepared by NCDP and SEMP.

1.2.4 Wet Season Total Ground Census: A wet season ground census of human and livestock populations was undertaken by NCAA personnel from 23 April to 27 June, with the financial, logistical and technical support of NCDP. This was a total count, in which teams of enumerators were sent to all known permanent and temporary bomas in the Conservation Area. Counting was done in the mornings and evenings, when livestock was leaving or entering the corrals.

A preliminary report on this census has now been prepared by NCDP. Results are presented in Table III, and compared with previous census data.

1.2.5 Dry Season Sample Census: A dry season sample census was undertaken by the NCAA and NCDP from 22 October to 17 November, in order to obtain more detailed information on the structure and composition of the livestock population, and seasonal movements of people and animals. Because of the inherent intrusiveness of ground census work, as well as the considerable staff and time commitments entailed, it was felt unnecessary and impractical to carry out an additional total count; instead, 81 permanent bomas were selected from the principal localities in the Conservation Area for detailed enumeration. This was slightly less than a ten percent sample of the known permanent bomas in the NCA.

A preliminary report on this census has now been prepared by NCDP. It draws particular attention to the age and sex structure of the cattle population, details of which are given in Table IV.

Each of the surveys undertaken by the project is discussed in greater detail below.

1.2.1 Wet Season Sample Aerial Survey: A wet season aerial survey was undertaken from 12-19 April, in collaboration with the Frankfurt Zoological Society (FZS) and the Serengeti Ecological Monitoring Programme (SEMP). The survey used standard Systematic Reconnaissance Flight (SRF) techniques to estimate wildlife and livestock populations over an area of some 16,000 square kilometres, including the entire Ngorongoro Conservation Area and portions of the Serengeti National Park and the Loliondo Game Controlled Area (Salei Plains). Distribution maps based on 5 by 5 kilometre grid squares are being prepared.

Preliminary population estimates for the NCA (excluding Ngorongoro Crater) are given in Table I.

1.2.2 Wet Season Total Count of Livestock: A total count of livestock was also undertaken during the period 12-19 April. This method entails locating and photographing all herds of livestock, and then counting animals from the developed photographs. This was the first total aerial count of livestock to be undertaken in Ngorongoro.

Results of the total count are still being analysed. However, from a preliminary examination of the data, it appears that this technique leads to a considerable under-estimation of livestock populations. This can perhaps be attributed to the varied terrain of Ngorongoro, which leads to irregular flying conditions and difficulty in locating all livestock herds.

1.2.3 Dry Season Sample Aerial Survey: A dry season aerial survey was carried out between 13-18 October, in collaboration with FZS and SEMP. The results complement those obtained from the wet season survey, and enable comparisons to be made in the seasonal changes which occur in the numbers and distribution of livestock and wildlife (see Table II). A report on the dry season survey has now been prepared by [illegible] and [illegible].

1.2.4 Wet Season Total Ground Census: A wet season ground census of human and livestock populations was undertaken by NCAA personnel from 25 April to 17 June, with the financial, logistical and technical support of NCDP. This was a total count, in which teams of enumerators were sent to all known permanent and temporary bomas in the Conservation Area. Counting was done in the evenings and mornings, when livestock was leaving or entering the bomas.

A preliminary report on this census has now been prepared by NCDP. Results are presented in Table III, and compared with previous census data.

1.2.5 Dry Season Sample Census: A dry season sample census was undertaken by the NCAA and NCDP from 23 October to 17 November, in order to obtain more detailed information on the structure and composition of the livestock population, and seasonal movements of people and animals. Because of the inherent inaccuracies of ground census work, as well as the considerable staff and time commitments entailed, it was felt unnecessary and impractical to carry out an additional total count; instead, 50 permanent bomas were selected from 10 different localities in the Conservation Area for detailed examination. This was slightly less than a ten percent sample of the known permanent bomas in the NCA.

A preliminary report on this census has now been prepared by NCDP. It gives particular attention to the age and sex structure of the cattle population, details of which are given in Table IV.

Table I: Results of the 1987 Wet Season Sample Aerial Survey

Species	Estimate	95 % Confidence Limits
Bomas (occupied)	1,586	39.5
Cattle (corrected*)	139,516	45.3
Donkeys	4,870	28.9
Huts (occupied)	7,491	37.0
Sheep & goats	183,622	27.3
Buffalo	388	175.0
Eland	5,372	16.2
Elephant	0	-
Giraffe	1,666	8.6
Grant's Gazelle	6,715	7.4
Thomson's Gazelle	145,373	27.9
Impala	3,301	66.5
Kongoni	275	87.2
Ostrich	2,217	42.7
Wildebeest	(not counted)	-
Zebra	59,832	48.5

Table II: Results of the 1987 Dry Season Sample Aerial Survey

Species	Estimate	95 % Confidence Limits
Bomas (occupied)	1,774	58.7
Cattle (corrected*)	133,680	42.5
Donkeys	6,032	32.8
Huts (occupied)	13,791	59.8
Sheep & goats	145,164	42.7
Buffalo	629	168.8
Eland	161	110.1
Elephant	16	189.2
Giraffe	1,226	52.8
Grant's Gazelle	6,452	73.7
Thomson's Gazelle	1,484	76.8
Impala	452	116.1
Kongoni	48	154.0
Ostrich	613	25.4
Wildebeest	903	155.2
Zebra	2,855	57.1

* Corrections based on comparisons between observer estimates and oblique photographs taken of livestock herds.

Table III: Human and Livestock Population Trends in the NCA

	1980	1987
Cattle	126,319*	137,398
Smallstock	135,337*	137,389
People	17,982**	22,637

* Figures obtained from NCAA records.
** Figure obtained from 1978 National Population Census.

Table IV: Age and Sex Structure of the NCA Cattle Population (Oct. 1987)

Category	Percentage of Population
Suckling Calves	14.7
Immatures	21.3
Cows	50.9
Bulls	3.6
Steers	9.5

A number of important observations can be made, based on the preliminary results of the aerial and ground surveys:

-- the human population of the NCA has increased rapidly since the National Census in 1978, rising from approximately 18,000 people in that year to over 22,600 in 1987 (a 26 percent increase);

-- livestock populations have shown only a moderate increase since the NCAA's 1980 census, and have failed to keep pace with the growth in the human population. Despite the increases, total grazing pressure falls well within previously recorded limits;

-- the number of cattle per capita is now less than half of the 1966 figure, indicating that the Maasai of Ngorongoro are becoming increasingly unable to meet their subsistence needs from livestock alone. Grain is now an essential component of the diet;

-- the figure for suckling calves recorded in the dry season sample ground survey appears to be one of the lowest ever recorded for the Conservation Area, and seems to have declined markedly since earlier studies. Calves are particularly sensitive to disease, and, as such, are an indicator of the disease situation in a given area. There can be little doubt that disease is now acting as a severe contraint on livestock productivity in the NCA;

-- from a comparison of the wet and dry season aerial survey figures, it is evident that a majority of Ngorongoro's wildlife population is migratory. Livestock numbers appear to be more stable, suggesting continuous year-round utilisation of the NCA;

-- the short-grass plains appear to be under-utilised by livestock, especially cattle. One of the striking observations to emerge from the wet season surveys was the low density of cattle on the plains, despite ample grazing and water. This is an avoidance strategy adopted by the Maasai to reduce contact between cattle and calving wildebeest, which transmit Malignant Catarrhal Fever;

-- there is little overlap between wildlife populations and pastoral settlement and livestock;

-- a preliminary and as yet incomplete comparison of the wet season aerial survey results with those obtained by the EcoSystems survey in 1980 suggests that that there has been little change in wildlife populations. Possible exceptions are buffalo and elephant, both of which appear to have decreased. Buffalo numbers may have dropped because of an outbreak of rinderpest in 1982. Elephant decreases are likely to be attributable to poaching, as has been reported from Serengeti.

1.3 World Heritage Grants:

NCDP has served as the liaison between Unesco and the Ngorongoro Conservation Area Authority for three World Heritage grants totalling some $80,000. NCDP has arranged the purchase and shipping of three Landrovers, a comprehensive vehicle spares package, radios, solar panels, audio-visual equipment, and additional supplies.

1.4 Workshop on Extension Techniques:

In 1987, the NCAA established the Ngorongoro Extension Team, which has been charged with the following responsibilities:

-- to provide a mechanism for dialogue between the Conservation Authority and local residents;

-- to educate local residents about the NCAA's rules and regulations, and the ways in which these safeguard the Conservation Area and the well-being of local communities;

-- to enable the Conservation Authority to better understand and react to the needs, constraints and viewpoints of the local communities;

-- to enable the Authority to work together with local communites toward the fulfillment of development needs.

At the request of the NCAA, the Ngorongoro Conservation and Development Project organised and sponsored a training workshop, to introduce the members of the newly-created Team to extension techniques and development education approaches that are being used elsewhere in East Africa. The workshop was held at Ngorongoro, from 12-14 October. Participants included senior staff of the NCAA, members of the community, and extension education experts from the Arusha Diocesan Development Organisation, the Monduli Training Centre, the Wildlife Extension Project in Loitokitok, Kenya, and the Office of the District Commissioner, Marsabit.

The workshop examined at length the extension approaches that have proved to be successful in these areas, and organised a series of training exercises to demonstrate effective communication techniques. The workplan and objectives for the initial start-up phase of the programme were designed in detail. A report on the background and recommendations of the workshop has now been prepared by the NCAA.

The Frankfurt Zoological Society has provided support for the the first three month phase of the programme, including a Landrover and funds for night allowances, camping equipment and running expenses. NCDP is assisting with the design of field questionnaires, and has approached a number of institutions to arrange for further training of Extension Team members.

1.3 World Heritage Grants

WCNP has served as the liaison between Unesco and the Ngorongoro Conservation Area Authority for three World Heritage grants totalling some $80,000. WCNP has arranged the purchase and shipping of three Land-Rovers, a comprehensive vehicle spares package, radios, solar panels, audio-visual equipment, and additional supplies.

1.4 Workshop on Extension Techniques

In 1987, the NCAA established the Ngorongoro Extension Team, which has been charged with the following responsibilities:

-- to provide a mechanism for dialogue between the Conservation Authority and local residents;

-- to educate local residents about the NCAA's rules and regulations, and the ways in which these safeguard the Conservation Area and the well-being of local communities;

-- to enable the Conservation Authority to better understand and react to the needs, concerns and viewpoints of the local communities;

-- to enable the Authority to work together with local communities toward the fulfillment of development needs.

At the request of the NCAA, the Ngorongoro Conservation and Development Project [illegible] sponsored a training workshop, to introduce the members of the newly-created Team to extension techniques and development education approaches that are being used elsewhere in East Africa. The workshop was held at Ngorongoro, from 12-16 October. Participants included senior staff of the NCAA, members of the community, and extension education experts from the Kenya Livestock Development Organisation, the Ngulia Training Centre, the Wildlife Extension Program in [illegible], Kenya, and the Office of the District Commissioner, [illegible].

The workshop explained at length the extension approaches that have proved to be successful in these areas, and organised a series of training exercises to demonstrate effective communication techniques. The goals and objectives for the initial start-up phase of the programme were designed in detail. A report on the background and recommendations of the workshop has now been prepared by the NCAA.

The Frankfurt Zoological Society has provided support for the the first three month phase of the programme, including a Landrover and Team [illegible] allowances, camping equipment and running expenses. WCNP is assisting with the design of field questionnaires, and has approached a number of Institutions to arrange for further training of Extension Team members.

1.5 International Seminars:

With sponsorship from NCDP, the British Council and the Elsa Wild Animal Appeal, the Ag. Conservator attended the International Symposium on Protected Landscapes, held in the UK from 5-10 October 1987. This symposium was organised by the Countryside Commission, specifically to introduce conservation professionals from other countries to British approaches to national park management. This topic is particularly relevant to Ngorongoro, since national parks in Britain are managed as multiple-use areas, containing areas of settlement, farming and livestock grazing. In this regard, the Ag. Conservator's visit was seen as the first part of an exchange programme between the Countryside Commission and the Ngorongoro Conservation Area Authority; as the second phase of this programme, the Head of the Countryside Commission's Conservation Branch will visit Ngorongoro for a two week period in April (see Section 2.1.1 below).

Sponsorship was also obtained from the British Council for the Ag. Conservator to participate in the post-symposium study tour of several national parks, during which participants were shown examples in the field of the different approaches to landscape management being implemented by the Countryside Commission. Arrangements were also made for the Ag. Conservator to visit the International Centre for Conservation Education, a leading non-profit organisation in the field of environmental education and audio-visual techniques.

1.6 Logistical Support:

Throughout the course of the year, NCDP has assisted with the procurement and delivery of small but urgently required spares and supplies. These have included vehicle spares, parts for the Headquarters water pump, and spares for the repair of the central generator.

2. Future Activities:

2.1 Specialist Studies:

A number of additional specialist studies are being planned, in the following areas:

2.1.1 Multiple Land-Use Planning and Management: Like Ngorongoro, national parks in the United Kingdom have been founded on a multiple-use philosophy, and combine conservation and the protection of landscape with a wide range of human activities, including farming, livestock rearing and settlement. To conserve and develop these complex areas, an intricate system of management has taken shape in the UK, involving specific legislation, voluntary land-owner participation, and extensive public awareness and education programmes. Primary responsibility for overseeing the management of the national parks is vested with the Countryside Commission.

While it is clear that day-to-day conditions in the UK national parks differ markedly from those faced in Ngorongoro, it is also evident that the two management systems share a common challenge: both the Countryside Commission and the NCAA have been charged with the management of complex areas, in which conservation and development proceed side by side. This necessitates systems for controlling land-use, for monitoring changes, and for achieving a balance between long-term conservation requirements and the needs of local communities.

Both the NCAA and the Countryside Commission have accumulated lengthy experience in tackling these issues, and it is IUCN's belief that a number of important lessons stand to be gained from both organisations' approaches to the integration of conservation and development. To facilitate an exchange of ideas between the UK and the NCA, the IUCN Ngorongoro Conservation & Development Project has arranged for Mr. Michael Taylor, Head of the Countryside Commission's Conservation Branch, to visit Tanzania for a two week period in April. This visit is seen as the second part of an "exchange programme" between the Countryside Commission and Ngorongoro; the first phase of this programme was the recent attendance of the Ag. Conservator at the International Symposium on Protected Landscapes, organised by the Countryside Commission, and his subsequent participation in a study-tour of several UK national parks (see Section 1.5 above).

Mr. Taylor's visit is being funded by the Countryside Commission and NCDP. During his stay in Tanzania, he has been invited to:

a. Examine both the parallels and the differences which exist between the Ngorongoro Conservation Area and national parks in the United Kingdom;

b. Examine the relevance to the Ngorongoro situation of the management systems, administrative structures, legislation and programmes used in UK national parks, paying special attention to:

   -- the control of land-use and human activities;

   -- the protection of landscape, archaeological/ cultural sites, flora nad fauna;

   -- the design of extension and liaison programmes, and the involvement of local communities in management and decision-making;

   -- the channeling of benefits from conservation areas to local communities, and other forms of compensation for restrictions on land-use;

   -- tourism control and education.

c. Advise on areas and ways in which UK approaches to the integration of conservation and development might be adapted and introduced by the NCAA in its own long-term management strategies for Ngorongoro.

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   — tourism control and education.

c. Advise on areas and ways in which UK approaches to the integration of conservation and development might be adapted and introduced by the NCAA in its own long-term management strategies for Ngorongoro.

2.1.2 Forest Conservation and Management: The Northern Highlands Forest Reserve, and other forest areas in Ngorongoro, are important both as water catchment areas and as wildlife habitat. They are also important for dry season grazing by livestock, and as a source of fuelwood, building poles and other forest produce. However, a field assessment of the status of these forest areas has not been undertaken for many years; as a result, little is know about the impact of pastoralism, and forest management strategies are unclear.

To address these concerns, a forest ecologist will be recruited by NCDP to:

-- undertake a field reconnaissance of the major forest areas. It is intended that this will complement the broader investigation being undertaken by the University of Dar-es-Salaam, and that the latter study will, in particular, identify priority areas which should be visited on the ground;

-- assess the current impact of livestock grazing, burning, wood collection and encroachment;

-- assess the current and projected demand for forest products, and the feasibility of continuing to meet such demand from the NCA's natural forests without adverse environmental effects;

-- 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 forest areas, including an assessment of the need to develop alternative sources of fuelwood and poles, and the ways in which this might be done.

2.1.3 Studies Under Consideration: A number of other studies are being considered, including:

-- a preliminary review of legislation affecting management of the NCA;

-- an assessment of archaeological conservation requirements;

-- an assessment of land potential, taking into consideration soil type, slope, rainfall, temperature, and additional evironmental factors.

2.2 Ngorongoro Workshop:

NCDP is planning to convene a workshop in Ngorongoro toward the end of the year. The workshop will review the information gathered during the course of the project; it will also provide a forum for the many parties concerned with the future of Ngorongoro to contribute to the design of the new management policy, and to interact with consultants who have contributed to the project.