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GAME RANCHING AREA ASSESSMENT
WORKPLAN
BOTSWANA

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Prepared as part of the National Resources Management
Programme

USAID BOTSWANA

GAME RANCHING AREA ASSESSMENT
WORKPLAN

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GAME RANCHING AREA ASSESSMENT workplan

1. INTRODUCTION

The game farming and game ranching industry in Botswana is in its infancy, but is receiving growing attention. Technologically advanced crocodile farming has developed in the north of the country and some farmers in the Ghanzi and Tuli Blocks have converted their livestock farms into game ranches. The growing awareness of the economic potential of wildlife utilization in Botswana has resulted in private citizens approaching the Ministry of Local Government and Lands to be allocated land for game farming and game ranching projects. During the rezoning of the Controlled Hunting Areas, several zones have been proposed for game farming and/or game ranching, with a limited number of priorities put forward by the Districts. However, there is no information available to indicate what game projects might be suitable for these areas, nor what size such allocations should be to ensure viable farms and ranches.

Firstly, information is required on the habitat type, animal diversity, and carrying capacity of the proposed zones to assess the suitability of the area for particular game farming/ranching projects.

Secondly, guidelines should be drawn up to enable district officers in the future to allocate land use for similar ventures.

The Ministry of Local Government and Lands (MLGL) together with the Department of Wildlife and National Parks (DWNP), through USAID, have recruited two consultants, A. Conybeare, wildlife ecologist and game ranching specialist from Zimbabwe and N. Rozemeijer, Land Use Planner and former DOL Ghanzi, to gather the abovementioned information.

2. OBJECTIVES

(see also appended Terms of Reference)

The main aim of the present study is to assess the viability of game ranching in Botswana by inspecting designated zones in all districts with wildlife potential.

Though the potential for game ranching in Botswana has been evaluated before, it is the first time to materialize on a nation wide scale, in a time when wildlife utilisation has gained momentum and the resource is rapidly increasing in value through promotion of tourism and bans on hunting by people other than Remote Area Dwellers (RADS) in the Wildlife Management Areas.

In accordance with the overall goal of the Wildlife Conservation Policy (1986), the Government of Botswana gives a high priority to the sustainable use of the wildlife resource and game ranching/farming could play a role to achieve that target. A number of factors are considered to be important as a positive influence on possible game ranch/farm development:

1. The availability of a large, undeveloped wildlife resource, with a high proportion of the country set aside for the conservation and management of this resource.
2. Botswana's position on the learning curve for game ranching/farming; much has already been learned the hard way by pioneering wildlife users in similar environments in Zimbabwe, Namibia and South Africa.
3. Comparative advantages particularly related to the presence of tourism quality zones and key wildlife species which are not found in the same abundance elsewhere in the region. (FGU, 1988)

The objectives of the game ranching area assessment are as follows:

1. The assessment of the ecological and economical sustainability of game ranching in proposed zones, determined by MLGL, DWNP and the Districts concerned.
2. Mapping of the natural resources of inspected game ranching zones.
3. In the case the suitability of abovementioned zones for the suggested land use has been shown, a development option, offering the greatest ecological sustainability and economic returns will be determined.
4. The evaluation of presently ongoing game ranching projects to get more insight in the functioning and profitability of these enterprises in Botswana.
5. Guidelines will be drawn up to enable district officers in the future to allocate land use for similar ventures.

3. GAME FARMING AND GAME RANCHING Definitions

A number of slightly different definitions occur in the literature on this type of wildlife utilization.

The Wildlife Conservation Policy (1986), 7.5.5.:

"Game farming/ranching: Freehold and leasehold farmers who elect to farm in game instead of livestock will be allowed to do so. They will be required to practise the range management required to ensure the wellbeing of the game population on their farms. Both domestic and wild animals could be kept on the same ranch. Examples of game ranching are to be found on the Stevensford Ranch in the Tuli Block and the DWNP project at Dithopo in Kweneng. Game farming, which differs slightly from open-ranching in that it often involves the actual physical handling of game, is already being practised. The crocodile farming near Maun and an ostrich and guinea fowl farm in the Tuli Block afford examples. Individual farmers may even "domesticate" some game if conditions permit."

Cumming and Taylor (1989) define game farming as: "intensive management of confined populations of one or two species" and game ranching as "cropping confined or fenced populations". These definitions differ from the ones given by Thresher (1980) in the Kenyan context, whereby game ranching refers to wildlife management where there are associations with herds of domestic stock and the word game farming is used for those operations where the main focus is to derive income entirely from wildlife.

To fit within the proper context of Botswana the following definitions of game farming and game ranching are proposed:

game farming: a wildlife related industry, where one or two species, requiring a high input of capital, know-how and managerial skills, are intensively managed in a relatively small confined area, e.g. crocodile and ostrich farming.

game/livestock ranching: an agricultural enterprise, where livestock/smallstock together with wildlife species are being kept in a fenced area under good husbandry. Game/livestock ranching in Botswana therefore is confined at the moment to freehold and leasehold farm blocks, as defined under TGLP and zoned for such purposes on the redefined Controlled Hunting Area Map.

game ranching: a wildlife enterprise, where wildlife species are being kept in a fenced/unfenced area under good management.

It will be clear that wildlife on farms or ranches could be kept for a number of reasons apart from meat production. Trophy hunting, live capture and game viewing might be a lucrative objective as well.

4. WILDLIFE MANAGEMENT AREAS AND LIVESTOCK RANCHES (See Botswana land use map)

In the context of Land use planning in Botswana, Wildlife Management Areas serve a variety of purposes. They provide migration routes for wildlife, allow commercial and subsistence hunting, promote tourism, provide economic opportunities, facilitate the lifestyles of RADs, allow game harvesting, ranching and farming, protect the landscape and its historical and archaeological interest. WMA's are zoned in seven (7) districts and are indicated on the Land use map.

The second stage after zoning is the management of the area. And because of the widely different conditions and availability of natural resources and human use throughout the districts, it is resolved to draw up management plans for each WMA requiring different approaches and different regulations. A management plan is crucial to the development of the area and will guide the regulations which should follow. (N.D. Hunter in KCS workshop, 1988)

The development of WMA's in Botswana (especially the western part) is closely related to RAD development and in most districts the main function of a WMA is to provide a sustainable natural resources base to the poor of the population. Small scale game harvesting projects have started, subsistence hunting and gathering is promoted and RAD settlements have been created in WMAs. Existing settlements and livestock grazing will be accommodated in a WMA as long as their physical extent is defined in the Land Use Plan/WMA gazettment. (Wildlife Conservation Policy, 1986, 3.3.7.).

In principle, only livestock of RADs can be allowed in a WMA. (N.D. Hunter in KCS workshop, 1988)

At the moment no game ranches exist in WMA's but a number of areas are proposed and will be assessed on their suitability in this study.

Livestock ranches in Botswana are found on state land and tribal land, under leasehold and freehold title. All the Freehold farm blocks and stateland and tribal leasehold farm blocks (commercial areas under TGLP) have been zoned as separate CHAs (see april 1990 map).

A number of game ranches and game/livestock ranches operate at the moment (Southern District TGLP, Ghanzi and Tuli Block) and more ranchers have shown interest in embarking upon game ranching. Some of these ranches will be visited during this study.

Wildlife is a national resource under present Government policy. Game on privately owned land remains therefore the property of Government. However, to encourage a rational use of wildlife resources, DWNP policy facilitates the use of game on private

land. Game farmers will be allowed to request hunting quota from DWNP for wildlife situated on their farms, whether private or leased, and will be given rights to dispose of the game within their properties as long as an animal-specific standard fee (equal for citizens, residents and non-residents) is paid to the Department.

5. AREAS OF INTEREST

In the revision of the CHA boundaries, the country has been divided into 167 CHAs and 51 of them, listed below, have been earmarked as potentially suitable for game ranching/farming amongst other possible uses. Eight CHAs in seven Districts; Kweneng, Southern, Kgalagadi, Ghanzi, Ngamiland, Chobe and Central have been selected by DWNP and MLGL as priorities and the main focus of the study is the assessment of these eight (8) zones.

The map, defining the boundaries of the Controlled Hunting Areas in Botswana, which is used, is from April 1990 and the information on the proposed uses of the different areas is derived from DWNP, December 1990.

<u>District</u>	<u>CHA</u>	<u>Present land use</u>	<u>Priority</u>	
Kweneng	kw/4	WMA	*	
	kw/8	TGLP		
	kw/9	TGLP		
	kw/11	TGLP		
	kw/13	TGLP		
Southern	so/4	TGLP		
	so/5	TGLP		
	so/6	TGLP		
	so/9	TGLP		
Kgalagadi	kd/1	WMA		
	kd/2	WMA		
	kd/3	Communal grazing		
	kd/5	WMA		*
	kd/7	WMA		*
	kd/8	TGLP		
	kd/9	TGLP		
	kd/10	TGLP		
	kd/11	WMA		**
	kd/16	TGLP		
	kd/17	TGLP		
	kd/18	TGLP		
	kd/19	Freehold farms		
kd/21	TGLP			
kd/22	TGLP			
kd/23	TGLP			

	kd/24	TGLP	
	kd/25	TGLP	
	kd/26	TGLP	
Ghanzi	gh/2	Freehold farms	
	gh/4	TGLP (proposed)	
	gh/5	Freehold farms	
	gh/7	TGLP	
	gh/8	TGLP	
	gh/10	WMA	
	gh/11	WMA	
	gh/12	Leasehold farms	
	gh/13	WMA	*
Ngamiland	ng/29	WMA	
	ng/39	TGLP	
	ng/44	WMA	*
	ng/46	WMA	*
Central	ct/4	WMA/TGLP	
	ct/5	WMA	*
	ct/6	TGLP	
	ct/15	TGLP	
	ct/17	TGLP	
	ct/20	TGLP	
	ct/23	TGLP	
	ct/29	Freehold farms	
	ct/30	Freehold farms	
Kgatleng	kt/3	Communal grazing	

6. REPORTING AND SUPERVISION

The assessment is anticipated to take 70 days from the day the inception report is approved. The subsequent field trip of approximately 50 days will be followed by an interim report, stating the major findings after which the final report will be prepared including the assessment of the proposed game ranching zones and the abovementioned guidelines.

It is intended that the progress of the consultants be supervised by a steering committee composed of representatives of MLGL, MCI and USAID. The MCI representatives will be Mr. K.M. Mogatle, Dr. D. Lawson and Mr. J. Barnes of DWNP and Mr. G.G. Morapedi of the planning unit in MCI. Representatives of MLGL are Mr. V. Rantshabeng and Ms. B. Mathuba. The Agricultural and Natural Resource Development officer, R. McColaugh will represent USAID.

All reports produced by the consultants will be submitted to this committee for approval.

7. REVIEW OF PUBLISHED MATERIAL ON GAME RANCHING AND NATURAL RESOURCES IN THE AREAS OF INTEREST.

7.1. REVIEW OF LITERATURE ON GAME RANCHING IN BOTSWANA

White (1985) assessed the viability of game ranching in Ghanzi District and concluded that a game ranching scheme is technically feasible in Ghanzi District but economically not viable. The non-viability is mainly the result of three factors: high cost of fencing, low carrying capacity and remoteness from the population centres where meat, trophy-hunting and game viewing is to be marketed. In the analysis of White, a game ranch of less than 25 000 ha will lose money, while even a very large game ranch of over 57 000 ha will only earn a return of 5.73% on invested capital. By comparison, a 8 000 ha cattle ranch can earn 9.5% on its invested capital and a 56 000 ha cattle ranch can earn 12.1%. Small-scale village based hunting units and medium-scale mobile game-cropping units are more suited to implementation in Ghanzi District. (White, 1985; Economic Consultancies, 1985).

White (1985) further emphasizes the economic importance of having game populations on livestock farms and encourages farmers to utilise their ranches this way as it will increase employment and income.

Cumming and Taylor (1989), trying to identify viable wildlife utilisation projects more or less agree to White's analysis. Their proposals centre around small-scale game harvesting projects and joint-ventures of local communities and safari companies in Southern, Ghanzi and Kgalagadi Districts and safari-related projects in Chobe and Ngamiland.

Barnes (FGU, 1988) compared eighteen (18) conceptual economic/financial models for wildlife use and related enterprises in Botswana. The models were based on financial costing of technical concepts which took into account the nature of resources present in a chosen setting. The first conclusion was that, in general, small-scale enterprises were more efficient than medium-scale enterprises in terms of capital use and job creation.

Secondly, that harvesting or cropping systems in Botswana were more efficient in terms of use of capital than wildlife ranching or farming systems. The first had an average return on investment of 87% (59% without large scale elephant cropping) while the latter had an average of return on investment of 44%:

Game ranching (Limpopo)	1%
Ostrich Breeding/rearing	
Intensive (Okavango/Chobe)	27%
Extensive (Kgalagadi)	61%
Ostrich Rearing	
Intensive (Okavango/Chobe)	114%

Cattle Ranching (Kgalagadi)	3%
Crocodile Breeding/rearing (Okavango/Chobe)	59%

The table shows very low returns on investments for game ranching, but could be improved if high-valued species are introduced on the ranches (FGU, 1988).

In the Ministry of Agriculture's Western Region Study, reviewing the development potential of Ghanzi and Kgalagadi Districts, the conclusions from White and Barnes are repeated.

7.2. REVIEW OF WILDLIFE CENSUS DATA AND DWNP REGULATIONS REGARDING GAME RANCHES

Data on aerial surveys from the last five (5) years have been analysed (FGU, 1988; Cumming and Taylor, 1989; Graig, 1990) to match with expected available data in the districts and field counts to enable the consultants to make an estimate of present wildlife densities in the areas concerned. Census data from relatively undisturbed areas, such as game reserves and national parks, will be analysed to extrapolate potential wildlife densities. Government regulations concerning game ranching/game farming such as the Fauna Conservation Act (Chapter 38:01), 1982 (including amendments of the 8th of July, 1988) and Wildlife Conservation Policy, 1986 have been studied, as well as the reports from FGU (1988; 1989) on the evaluation of wildlife utilization in Botswana, the draft of live capture quotas 1991 and files on applications for game ranches in Botswana.

7.3. REVIEW OF VETERINARY IMPLICATIONS FOR GAME RANCHING IN BOTSWANA

Information has been gathered on veterinary legislation and regulations in Botswana regarding wildlife utilisation in general and game ranching/farming in particular (FGU, 1989). Especially, the impact of existing foot and mouth disease regulations and respective zoning (see map on Botswana foot and mouth veterinary control fences, June 1987) on transporting live captured animals, fresh meat, hiltong and by-products of game ranching in the districts is an important factor to be considered.

To assess the economic viability of game ranching, it is equally important to take veterinary restrictions imposed by neighbouring countries and the EC into account.

In this context, the need to develop a wildlife-quarantine camp and its possible location will be evaluated.

7.4. REVIEW OF RELEVANT METEOROLOGICAL DATA

General information on temperature and rainfall in Botswana has been gathered, with emphasis on rainfall data recorded over the last 20 years in meteorological stations in the vicinity of the areas of interest.

7.5. REVIEW OF DATA ON VEGETATION, SOILS AND CARRYING CAPACITY

Data on vegetation and soils of the areas of interest are to some extent available in the Ministry of Agriculture. FAO soils unit mapped soils and vegetation on a 1:250 000 scale for the northern and eastern part of the country and on a 1:1 000 000 scale for the west. Detailed information on the respective survey sites is available in a data-base.

Data and maps compiled by DHV (1980) have been studied and a map (1:2 000 000) on potential carrying capacity in Botswana has been made available by the Ministry of Agriculture. The Range Ecology Unit did carrying capacity studies in the Matsheng CFDA in Kgalagadi District, the Ncojane Ranches, Nata Ranches and Makalamabedi A.I-camp, all relevant to the consultants.

Further information on vegetation in the Nata and Ngamiland Statelands is available in respective Land Use Plans.

8. METHODS TO BE USED

- A. The largest scale maps for the demarcated areas available from the Department of Surveys and Lands (DSL) are 1:250 000 topographical maps except for the Nata block (CT5) for which 1:50 000 orthomaps have been produced. Some of the demarcated areas are covered by existing maps at a scale of 1:250 000 (see section 3.5) above and soils have also been mapped at 1:250 000.

In order to produce 1:50 000 maps of the demarcated areas it will be necessary to draw a 1:50 000 UTM grid for each area and to transfer topographical features from the existing 1:250 000 maps to the 1:50 000 grids. To produce vegetation maps, aerial photographs will first have to be annotated to delineate homogeneous blocks of vegetation and these blocks and any other visible features must then be traced onto the grid. The maps would then be printed and

will result in a large number of maps with little information on each.

We suggest that the final maps be produced at 1:250 000 or at most 1:100 000 and that existing vegetation maps be used. The slight changes in vegetation that may be mappable at 1:50 000 will not be significant as far as the wildlife potential of the areas is concerned.

- B. The basic maps will be drawn in Gaborone or in the District centres before visiting the actual demarcated blocks. Each area will then be visited, each vegetation type located, dominant trees, shrubs, grasses noted and an assessment of veld condition made. Estimates will be made of browse availability, grass cover, grass height, evidence of fire, grazing, bush encroachment and termite activity. The areas are too large for a detailed veld assessment involving quantitative measurements in the time available and such detailed data are anyway not essential for this project.
- C. From the above and information from DOLs, District Wildlife Biologists, aerial survey results and existing literature an assessment of potential stocking rates for individual species and estimates of sustainable offtakes will be made.
- D. Each area will then be assessed for viability for one or more of five systems of wildlife utilization; game farming, trophy hunting, meat cropping, game viewing and live capture.

9. ITINERARY

Day 1-2: Introduction. Travel to Molepolole and meet the DC, DOL (as coordinator of the District Land Use Planning Unit (DLUPU), Game Warden and Wildlife Biologist of Kweneng District. Study aerial photographs of KW/4 and go through available vegetation, habitat, land use and wildlife maps and documents. Discuss the possibility of existing rights to the area and present land use related to grazing areas, RAD settlements and Khutse Game Reserve. Trace any attempts on game ranching in the past and the future and evaluations made thereof. Meet the Land Board Secretary of the Kwena Land Board to discuss the possible problems of converting a TGLP ranch into a game/livestock or game ranch.

Day 3-5: Veld assessment

Day 6: District Feedback. Drive back to Molepolole to brief the DLUPU, gather additional information, discuss possible problems

and if feasible visit existing game ranches.

Day 7-8: Introduction. Travel to Kanye and meet Southern District DLUPU.

Southern District has no priority CHA zoned as game ranch area, but accomodates two TGLP farms where game ranching takes place. If possible, these will be visited to assess the operation of the ranches, general features, the economic viability, the animal density and possible management problems.

Day 9-11: Introduction. Travel from Kanye to Tshabong to meet Kgalagadi DLUPU and study maps, documents and aerial photography on zones KD/5, KD/7 and KD/11.

Day 12-14: Visit existing game ranches or livestock/game ranches in the western part of the district.

Day 15: Travel to Hukuntsi to meet the DO and DOD to discuss the Masheng Land Use Plan and gather specific information on the area.

Day 16-19: Veld assessment of KD/5, KD/7 and KD/11.

Day 20: District feedback. Drive back to Hukuntsi to brief the sub-district, seek additional information and discuss possible problems. Travel from Hukuntsi, via Ukwi, to Ncojane in Ghanzi District.

Day 21-23: Veld assessment of GH/13.

Day 24: Travel to Ghanzi-town and visit Extension Farm 1MK along the route.

Day 25-29: District feedback. Meet the DLUPU Ghanzi to seek additional information, especially regarding the Ncojane Ranches. Study maps, reports and aerial photography. Visit existing game ranches in Ghanzi if possible and visit Extension farms 173NK and 156NK, who have been allocated to Remote Area Dwellers in Hanahai and Groot Laagte.

Day 30: Travel to Maun

Day 31-34: Introduction. Meet DLUPU Ngamiland in Maun and study relevant documents, maps and aerial photography. Check the use and condition of the B.L.D.C ranch. Meet representatives of the Safari business and if feasible visit existing game ranches.

Day 35-37: Veld assessment of NG/44 and NG/46.

Day 38: District feedback and travel to Kasane.

Day 39-41: Meet the DLUPU of Chobe District. Though the district has no CHA's zoned as game ranch zone, MLGL

wanted the consultants to visit the Chobe enclave to assess the area on game ranching/farming potential.

Day 42-43: Travel to Nata and do a veld assessment of CT/5.

Day 44-49 : District feedback. Travel to Serowe and meet DLUPU of Central District and study relevant sources. If possible, visit existing game ranches in the TGLP areas and Tuli block.

Day 50: Back to Gaborone

Day 50-64: Drafting of the interim report stating major findings, constraints, problems to be resolved as well as the first set of draft zonal maps.

Day 65-75: Final report on the assessment of the abovementioned game ranching zones, including guidelines to enable District officers in the future to assess the viability of and to allocate land use for similar ventures.

* One resting day a week is anticipated when convenient.

** DOL's in Districts and Sub-districts will be made aware of the exact date of arrival of the consultants by telephone or radio. A general notice on the assessment has been sent to the Districts in December by the CLUP.

APPENDICES: Terms of Reference
 List of people consulted
 Bibliography

APPENDIX 1: LIST OF PEOPLE CONSULTED

Ministry of Agriculture: FAO Soils Unit: J. Tersteeg
 Range Ecology Unit: R. Sebego
 S. Ngakane

DWNP: N.D. Hunter
 K.M. Mogatle
 W.K. Lindsay
 C. Graig

MLGL: B. Mathuba
 V. Rantshabeng

USAID: R. McColaugh

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**SECTION B
Services and Price**

Contractor shall provide a work plan, progress report, and final report as detailed in SECTION C under this cost-reimbursement contract in the amount of Pwla 77,946.00 as detailed in Attachment A in accordance with PIO/T 690-0251.33-3-90091.

**SECTION C
Statement of Work**

1. The contractor will liaise closely with MLGL and DWNP to ensure a review of all relevant published material related to the natural resources of the areas of interest is made. A list of the most relevant reference materials will be included in the final document.

Estimated Person Days: 10
Required Output: A detailed plan of work approved by the Game Farming Area Assessment Steering Committee.

2. The consultants will visit the seven districts where game farming and ranching areas are proposed and liaise closely with the District Land Use Planning Units (DLUPU) and the District Biologists. Site surveys will be made of each proposed game farming and ranching zones and the suitability of particular game farming and ranching projects in relation to the natural resources of the area will be assessed. In the event of the proposed zones being unsuitable the consultants will be guided by the relevant DLUPU to inspect other areas in the district where game farming and ranching may be a suitable land use. If land has already been allocated for game farms and ranches by the relevant district authorities these to should be inspected. All zones should be detailed on 1:50,000 (topo) maps with relevant information provided on climactic conditions, habitat type, vegetation cover, soil types, present carrying capacity estimations, animal diversity and boundary descriptions. These detailed maps should form a part of the final guideline documentation.

Estimated Person Days: 87
Required Output: An interim report stating major findings, constraints, problems to be resolved as well as the first set of draft Zonal Maps.

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3. The consultants will prepare a final report, Game Farming Assessment Guidelines, which should indicate which game farming or ranching enterprises are appropriate for the relevant zones in each of the seven districts and the minimum land area (in each zone) which should be allocated to a specific enterprise to ensure ecological and economic sustainability. The guidelines should provide clear instructions (minimum information required and methodology to extrapolate) which will enable district officers in the future to allocate land use for similar ventures in these zones. In the event that a zone may be suitable for several different types of game farming or ranching then these options should be prioritized with those offering the greatest ecological sustainability and economic returns given the highest priority for project implementation. Note: As the guidelines are prepared there should be close consultation with MLGL and DWNP.

Estimate Person Days: 25
Required Output: A final document containing guidelines for each of the seven districts, as described above, which will include detailed maps, bibliographies and instructions on how to extrapolate these findings in the future to analogous land areas or to similar wildlife or farming enterprises. Five copies of the final report (guidelines) will be presented on the last day of the consultancy.

SECTION E Acceptance

The final report submitted under this contract will be reviewed and formally accepted by the USAID/Gaborone Agricultural and Natural Resources Development Officer, who shall serve as the Technical Officer for this Contract.

SECTION F Deliverables

Contractor will submit the various items required under Section C of this contract, namely: (1) Work plan, (2) Progress Report at the conclusion of the second month of field work, and a final report (with ten copies) in a format directed by the Technical Officer.