Background Information and Species Management Guidelines for Namibia's Rare and Valuable Wildlife

Southern Reedbuck *Redunca arundinum arundinum*

Common Waterbuck *Kobus ellipsiprymnus ellipsiprymnus*

Red Lechwe *Kobus leche leche*

Puku *Kobus vardoni*

Introduction

This booklet provides an overview of four water-associated grazing antelope – southern reedbuck, common waterbuck, red lechwe and puku – in Namibia. It is part of a series of five booklets reviewing the conservation status and management guidelines of three large mammals and two groups of antelopes in Namibia. The other booklets are on savanna elephant, hippopotamus, southern savanna buffalo, and three large antelopes – roan antelope, sable antelope and tsessebe.

These booklets summarise two technical reports *(Background Study* and *Management Plan)* prepared by Rowan Martin as part of the Transboundary Mammal Project of the Ministry of Environment and Tourism. The project was facilitated by The Namibia Nature Foundation and funded via WWF by the USAID Living in a Finite Environment (LIFE) Programme. Further information can be obtained from the technical reports. A series of five posters are also available for a quick overview of these issues.

The conservation and management issues and ideas presented here are from a Namibian perspective; however, to fully achieve their aims, many of them require considerable co-operation and collaboration with neighbouring countries. Many of the management actions recommended for one species/group of species would have similar benefits to other rare or high value species.

Contents

Reedbuck

Puku

Biology

Taxonomy

The four species of Wetland Grazers which are discussed in this booklet are in the Tribe Reduncini (antelopes of wetlands and tall or tussock grassland) of the Subfamily Hippotraginae (the grazing antelopes) in the Family Bovidae which is in the Order Artiodactyla. The Reduncini evolved over 15 million years ago. The oldest known fossils from East Africa are some 11 million years old and the antelope group formerly occurred in Asia – at least till about five million years ago.

Class Mammalia (Mammals)

⇩

Order Artiodactyla (Even-toed ungulates)

⇩

Family Bovidae (Antelope)

⇨ **Genus** *Redunca*

⇨ **Species** *R. arundinum*

⇩

Subspecies *R. a. arundinum* (Southern reedbuck)

⇨ **Genus** *Kobus*

⇨ **Species** *K. ellipsiprymnus*

⇩

Subspecies *K. e. ellipsiprymnus* (Southern waterbuck)

⇨ **Species** *K. leche*

⇩

Subspecies *K. l. leche* (Red lechwe)

⇨ **Species** *K. vardoni* (Puku)

Waterbuck

Red lechwe

Physical Description

The **Reedbuck** is a medium-sized, brownish-grey antelope. In Namibia most adult males are distinctly greyer than females and immature animals. The back is usually darker than the remainder of the upper parts. The undersides of the neck and chest are greyish-white and the underparts of the body are white. There is a distinct dark band down the front of each foreleg and a similar but less distinct band on the lower hind legs. The hooves are thin and elongated. The bushy tail is buffy-yellow above and white underneath. The horns curve forward and are ridged and corrugated for two-thirds of their length. At the base of each horn is a soft bulbous swelling which is conspicuously white.

Waterbuck are large antelopes; males are slightly heavier and darker than females. The coarse shaggy coat is dark brownish-grey with white and grey hairs. Their most distinctive characteristic is the white ring encircling the rump. The ears are short and rounded, white on the inside with black tips. They have two long patches of white extending from above the eyes to the muzzle, a white ring encircling the top of the muzzle and white patches on the chin and the sides of the neck. The tail is long and black, almost reaching the hocks. The markings of females are less pronounced than males. The horns are uniformly crescent-shaped, sweep forward in a curve and are heavily ringed.

The **Red Lechwe** is a medium-sized antelope with the hindquarters noticeably higher than the shoulders. The coat is bright chestnut on the upper parts of the body and flanks. The white on the underparts extends to the inside of the legs and up to the throat and the base of the tail. There are distinct black lines on the front of the forelegs. The horns are lyrate with the lower part sweeping backwards and outwards from the head and then upwards to smooth sharp forwardly-curved tips.

Species	Shoulder height (cm)		Body weight (kg)		Horns	
	♂♂	♀♀	♂♂	♀♀	♂ / ♀	Record (cm)
Reedbuck	90	80	80	70	Only males have horns	46
Waterbuck	170	<170	250-270	<250		100
Red Lechwe	100	<100	103	80		94
Puku	80	78	74	<74		54

The **Puku** is an impala-like antelope slightly smaller than lechwe. The upper body parts are golden-yellow and this colour extends down the outside of the limbs. The sides of the neck are lighter in colour than the body and the forehead is slightly darker. Short white bands extend above the eyes and the upper lip is white. The throat, underparts of the body and insides of the limbs are also white. The tail is the same colour as the body with a tuft of long hair at the tip. The horns are strongly ridged for two-thirds of their length and similar to those of impala.

Behaviour

Waterbuck, lechwe and puku males are territorial during the breeding season. However, male reedbuck tend to maintain territories throughout the year, defending their females against intruders.

Reedbuck tend to live alone or in small family units of about 5 or 6 animals. Their spatial distribution is determined by the availability of suitable cover and surface water. When environmental conditions change, groups may be forced into less suitable areas.

Waterbuck are gregarious; their social organisation consists of male herds, nursery herds and bachelor groups. They generally segregate into male and female herds from an early age. Herd sizes vary from 6 - 20 and consist of females and young with a single herd male. Herd sizes fluctuate according to availability of resources. Waterbuck generally do not migrate.

Red Lechwe form large herds when resources are abundant. Groups of up to 400 have been seen in the Chobe floodplains. Their herds are loose associations of animals. Their social organisation consists of herd males, bachelor groups and nursery herds. Males exhibit territorial behaviour for a period of about two weeks in October. Red lechwe move between Caprivi and Botswana floodplains seasonally. They tend to move ahead of rising water and therefore the distances and timings of their movements are influenced by the extent of flooding.

Puku herds typically consist of about 50 animals but groups of 5 or 6 animals are common. Their association is fluid and they are often found in the company of lechwe, waterbuck and impala. On the Chobe floodplains the males form orderly territories for about two months of the year. Female herds move through the territories of several different males. Puku tend to be resident wherever they occur.

Habitats

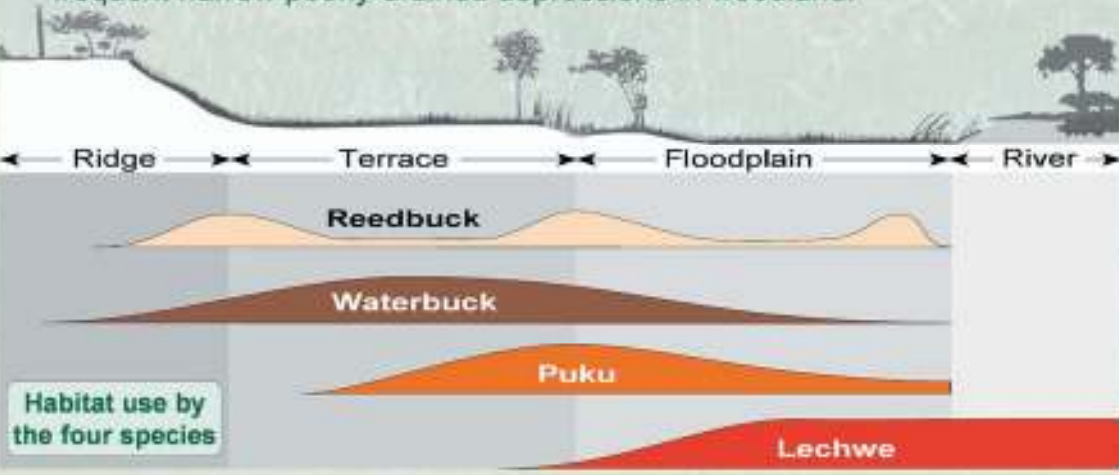
Permanent water is an essential habitat requirement of all four species: they are usually found within 1 km of water and rarely move more than 2 km away. They are predominantly grazers. Water and vegetation play a key role in determining habitat suitability for these antelope.

Reedbuck require tall grass or reedbeds for cover. Grass quality is not important but water - rivers, streams or perennial pans - must be available. Grasslands next to water are preferred. They avoid woodland and scrub but tolerate scattered trees. They are not attracted to grasses sprouting on burns and vacate burnt areas.

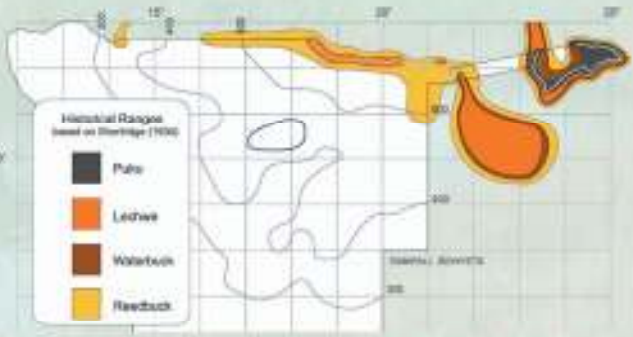
Waterbuck have an unusually high requirement for water and will take up residence around artificial water supplies. They occupy a wide range of riparian habitats but need high quality grasses; they do not like overgrazed areas. Their preferred habitat is open areas with reedbeds or areas with woodland cover. They are not always successful in occupying prime habitats because of competition with other species.

Red Lechwe prefer shallow inundated areas, and will feed in water that is 0.5m deep. They seldom drink. They prefer an ecotone of papyrus, phragmites and aquatic grasses and fringes of dry land.

Puku occupy grassy areas in the immediate vicinity of water. Unlike lechwe which are associated with wide open grassy plains, puku also frequent narrow poorly-drained depressions in woodland.

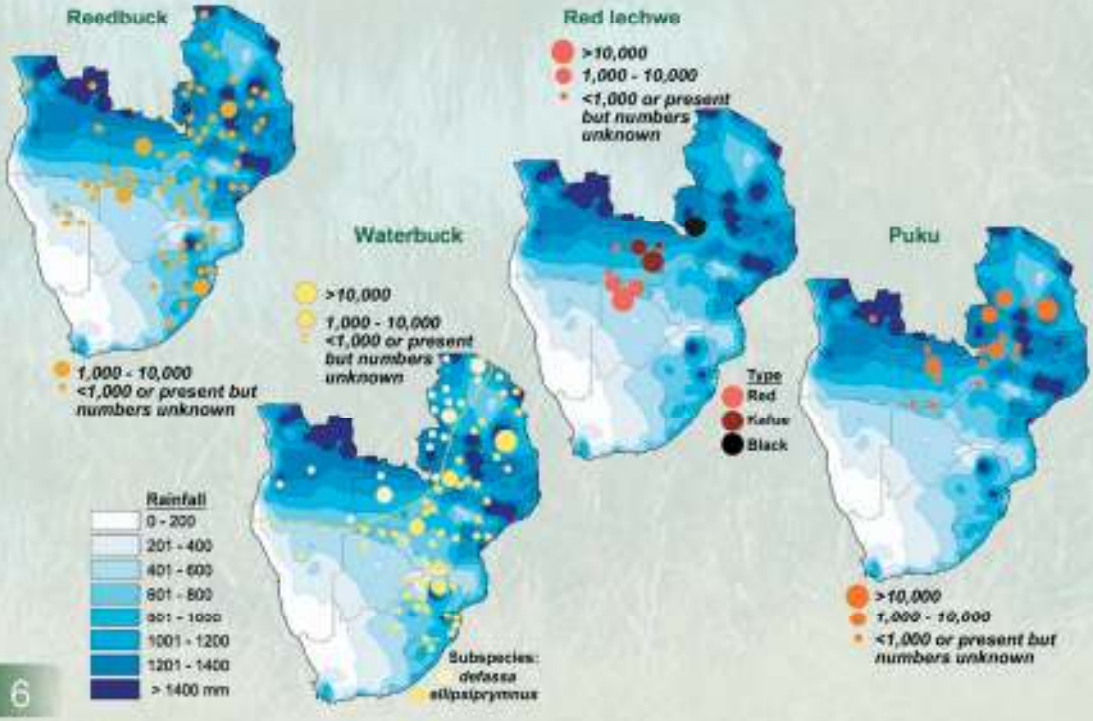


Numbers and



The species' historic range in Namibia was limited to the Caprivi and parts of Kavango where the annual rainfall is over 500 mm. Populations in Namibia have fluctuated over the past century from relative abundance to near extinction. The fluctuations appear to be linked to long term rainfall cycles and river flows. Today the population levels of all four species in Namibia are a matter of concern. Their numbers are far lower than in the past, they appear to be declining and some of the subpopulations are isolated from each other. Puku are almost extinct; waterbuck have been spotted sporadically on surveys, but in the last decade only about 20 have been recorded; lechwe have slumped from nearly 13,000 in 1980 to 200 now; and reedbuck numbers are about 200 at best.

Reedbuck and waterbuck occur in all four countries neighbouring the Caprivi and Kavango regions. **Lechwe** occur in Angola, Zambia and Botswana. **Puku** populations are in a perilous condition in all four countries and Namibia.



Distribution

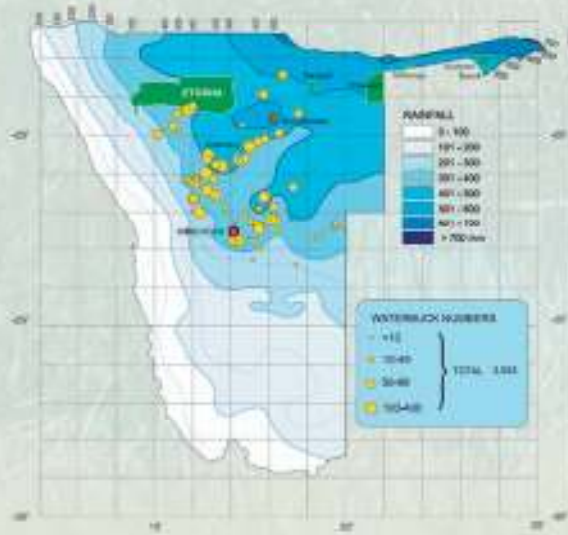
		Reedbuck	Waterbuck	Lechwe	Puku
Caprivi *	Present populations	100	25	200	Not recorded
	Highest estimate	250 (1980)	150 (1994)	13,000 (1980)	Uncertain
Freehold farms		Uncertain	3,500	200	None
2004 TOTAL		200?	3,750	400	Uncertain
Potential population in Parks †		1,000	1,000	10,000	1,000

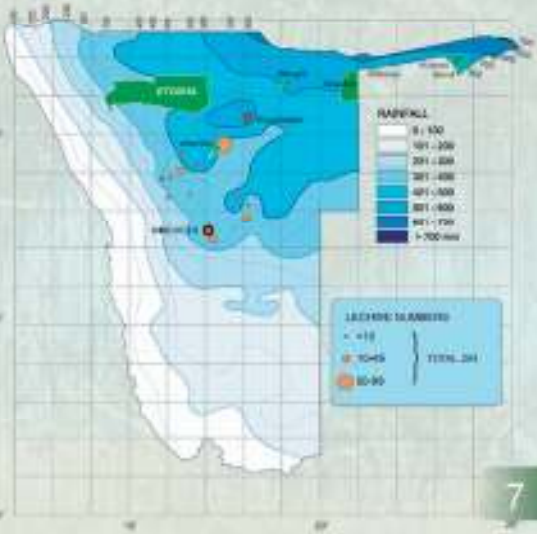
** these numbers are likely to be underestimates, due to the difficulty of counting these species*

† based on an average density of 2/km² for reedbuck, waterbuck and puku and a density of 20/km² for lechwe

The natural range for these species in Namibia is limited to the Caprivi and this represents the fringe of larger populations in Botswana and Zambia. There are no naturally occurring populations below the 400 mm rainfall isohyet. Within the Caprivi (20,000 km²), the species are restricted to the floodplains (4,500 km²). These floodplain habitats are prime areas for agriculture and cattle grazing and the wetland grazers are facing significant competition for resources. In 1996, some 21% of the wetlands in the prime habitats for reedbuck, waterbuck, lechwe and puku had been cleared for agriculture; it is reasonable to assume that the rate of land clearance will increase proportionally as the human population grows.

Significant numbers of these species have been established privately on freehold farms in northern Namibia - about 3,500 waterbuck and 200 lechwe. However, these are outside the species' natural ranges and cannot be regarded as secure populations.



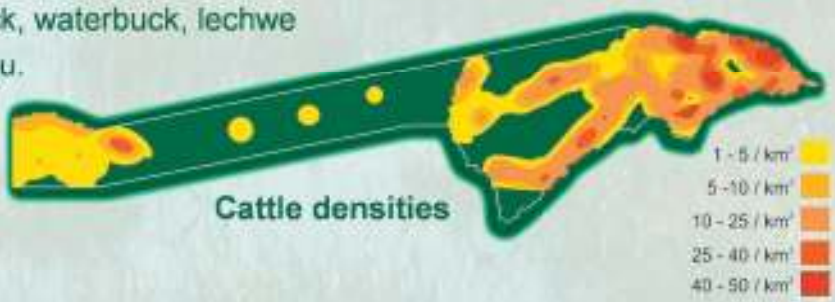


Limiting Factors

Rainfall appears to be the primary factor limiting reedbuck, waterbuck, lechwe and puku populations: the carrying capacity in natural habitats fluctuates in synchrony with the long-term rainfall regime and thus the river levels and inundation of floodplains. Increased rainfall will not necessarily result in an increase in population growth rates but should rather be seen as the removal of a primary limiting factor.

Other limiting factors are:

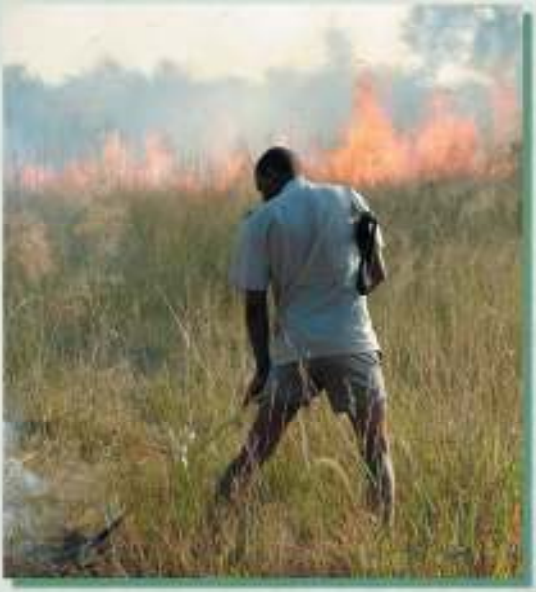
- **Competition with cattle and habitat degradation caused by cattle**. Land degradation caused by cattle renders about 2,500 km^2 of the floodplain habitats in the Caprivi unsuitable for these wetland grazers. The 500 km^2 of suitable habitat in State protected areas has limited potential to develop substantial populations of reedbuck, waterbuck, lechwe and puku.



Cattle densities

- **Significant loss of suitable habitat**. Approximately one-third of the original floodplain habitat has already been cleared for agriculture. If this clearance continues at a rate corresponding to human population increase, it will not be long before the only remaining pristine habitats are those in protected areas.

- The practice of **burning** large areas of the Caprivi floodplains each year is likely to further reduce the carrying capacity for these wetland grazer species, particularly reedbuck.



- **Excessive populations of elephants** in the Caprivi and Botswana are affecting floodplain habitats by removing essential cover required by reedbuck, causing structural changes in grasslands by trampling and competing directly for grazing.

- **Illegal hunting and disturbance** may be other factors preventing population increases.

- International **veterinary cordon fences** prevent free movement of wildlife between Botswana and the Caprivi area along the Kavango River.

The numbers of waterbuck and puku have already fallen below the minimum viable populations.

Population Dynamics

The biological parameters which determine the population dynamics of reedbuck, waterbuck, lechwe and puku are similar. Under average conditions and when they are below ecological carrying capacity, their populations have the capacity to increase at a rate of around 10% per year. This rate is not particularly high - perhaps because of the high juvenile mortality rate of 33% in the first year of life. If mortality is less and female fecundity is slightly higher, populations can grow at 20% per annum. However, variations in annual rainfall may have profound effects on the performance of these species. Any prolonged dry period will affect water tables and vegetation, causing preferred habitats to shrink to narrow bands close to rivers.

	Reedbuck	Waterbuck	Lechwe	Puku
Seasonal breeding	All four species are able to breed throughout the year			
Breeding peaks	September-May	October & March	October-December	June-November
Gestation	220 days	280 days	225 days	240 days
Age at first conception	Some females conceive in their second year: all conceive in their third year			
Age at first parturition	In favourable years, about 50% of two-year-old females produce calves and all will produce calves in their third year of life			
Fecundity (adults)	Offspring may be produced at a rate slightly higher than one per year in favourable conditions			
Longevity	Uncertain: it has been assumed that few animals survive beyond 10 years of age in the wild. Waterbuck, being larger, may have a slightly longer lifespan			
Breeding longevity	Females are probably capable of breeding throughout their adult life although fecundity may be reduced in last few years			
Mortality (juveniles)	May be as high as 50% in poor years. 33% has been used as typical			
Mortality (adult males)	Around 10%, increasing in the last few years of life			
Mortality (adult females)	Less than 5% except in last few years of life			
Adult sex ratio	About 2 males:1 female depending on hunting regimes and predation			

Significance

Conservation

The IUCN Red Data book classifies all four species as at "Lower Risk (Conservation Dependent)" indicating that they are not threatened at the global, continental or regional levels. However, all four species are of conservation concern at the national level in Namibia because their natural range is limited to Caprivi and Kavango, their numbers are low and appear to be declining, and some of the subpopulations are isolated from one another. However, since reedbuck, waterbuck, lechwe and puku in the Caprivi are spatially linked to larger populations in Botswana, with careful management their populations should slowly recover. This recovery would be significantly enhanced by reintroducing animals.

When present in substantial numbers the species establish the unique character of the floodplain habitats. Their disappearance from Namibia's wetland habitats would be a significant cultural, ecological and economic loss. Their persistence in healthy numbers is a key indicator of ecosystem health and good local management.

Economic

Once populations of these species have recovered, substantial economic benefits could be derived through tourism, live capture and sale, and trophy hunting based around these species. Safari hunting generates competitive returns from land with little adverse ecological impact, low capital investment and rapid returns to the land custodians. While it may take several years for any non-hunting tourism venture to build up markets, the return from sport hunting is almost instantaneous – provided the minimum population is present. This could play an important rôle in local community development programmes where benefits are needed from the outset in order to promote wildlife conservation.

Stakeholders

The primary stakeholders affected by the occurrence, abundance or absence of reedbuck, waterbuck, lechwe and puku in Namibia are landholders – including the State, private sector and those with traditional landholdings. Secondary stakeholders are those who have a direct financial investment in the land and the wildlife industry. Tertiary stakeholders are those with a general interest in the conservation of wetland grazers.

All of the primary stakeholders of the four species are located in the Caprivi and Kavango. Primary stakeholders of reedbuck also extend southwards into the main body of the country, especially Khaudum National Park and Nyae Nyae Conservancy.

Habitats of these wetland grazers are restricted to a set of narrow bands along rivers and these areas are the focus for conflict between wildlife management, people, domestic livestock and cultivation. To promote conservation of these species beyond protected areas, it is imperative that local stakeholder institutions capable of co-managing floodplain habitats are developed.

Namibia has already made substantial progress in developing policies and legislation which empower landholders to manage wildlife resources both on freehold farms and communal lands. Co-management is a new challenge. The existing mosaic of small parks and small conservancies calls for co-management approaches across larger landscapes. The partners in the Mudumu Complex are setting new standards and developing new approaches to test and implement effective co-management mechanisms.

Transboundary Co-operation

Transboundary cooperation, particularly between Namibia and Botswana, could make a substantial difference to the conservation of these species. Namibia's primary conservation objective is to increase its numbers of reedbuck, waterbuck, lechwe and puku and to avoid fragmentation of the populations. Maintaining spatial linkages with Botswana will be vital in achieving this.

Other possible areas of co-operation are:

- Ensuring compatible forms of land use on either side of the international boundary;
- Expanding the available range for reedbuck, waterbuck, lechwe and puku;
- Co-operating on law enforcement directed at illegal hunting;
- Managing the interaction between these four species and others, particularly elephants;
- Controlling fire;
- Collaborating on aerial surveys, monitoring and information sharing to improve population estimates;
- Collaborating in setting hunting quotas and monitoring the sustainability of hunting; and
- Maintaining liaison between wildlife departments and communities managing wildlife on either side of the international border.

Management

Under Namibia's evolving wildlife legislation, management plans are required for species which are rare or valuable. Reedbuck, waterbuck, lechwe and puku are rare and valuable. The envisaged management plan incorporates three objectives: Social, Ecological and Economic.

Social Objective

To develop co-management institutions in the Caprivi for the conservation and management of wetland habitats.

The floodplains of Caprivi are in high demand for agriculture and cattle grazing. To achieve any progress in conserving floodplain habitats outside the protected areas, development of co-management institutions involving the State, conservancies and other communal land owners is necessary. In other words, the social requirement needs to be addressed first to achieve the ecological objective.

The co-management institutions have begun with partnerships between Mamili and Mudumu National Parks, neighbouring conservancies (Wuparo, Mashi, Mayuni, and Kwandu) and the State Forest.

Typical measures implemented under co-management might include zoning along rivers to preserve portions of the original floodplain and to designate restricted areas for cattle grazing or seasonal use of grazing, fire management and prevention of illegal hunting. To be effective, all stakeholders must appreciate that attempting to improve floodplain conservation is a worthwhile goal.

Ecological Objective

To increase reedbuck, water, lechwe and puku numbers in the Caprivi through the recovery of original floodplain habitats.

The ecological objective of restoring and recovering wetland habitats will depend on the success of the social objective.

Population numbers of each of the four species will ultimately be determined by the rainfall regime. The best strategy in these circumstances may be to ensure that a viable nucleus of each of the four species survives the negative conditions and is able to rebound when conditions improve. There are probably such viable breeding nuclei of reedbuck and lechwe in place at the moment. In the case of waterbuck and puku, there are definitely not; their numbers have dropped below minimum viable populations and there are strong arguments for re-establishing breeding nuclei. It is recommended that breeding nuclei of both waterbuck and puku be established in Mahango National Park and in Mamili National Park through the introduction of about 50 animals of each species.

Through the co-management institutions, measures must be taken to overcome the factors which limit the population growth of these antelopes (see pages 8 - 9). These should include: modifying the traditional practice of lighting fires; continuing the conservancies' monitoring of illegal activity and hunting; initiating discussions with veterinary authorities in Namibia and Botswana; limiting sport hunting quotas to 3% of the population; and monitoring population numbers.

Economic Objective

To realise the full potential of reedbuck, waterbuck, lechwe and puku as components of wildlife-based land use for the benefit of rural landholders and the State, according to the provisions for sustainable use in Namibia's Constitution.

This objective should be progressively achieved as the ecological objective is met: as the numbers of these animals increase so will the potential economic benefits through tourism and hunting. Tourism is currently low in the Caprivi and an abundance of these species would be likely to make a significant difference.

For maximum benefit, hunting quotas should be set in a planned manner. Additionally, all tourism and safari hunting concessions should be sold with the best possible advantage. Co-management between the State, its neighbouring landholders and the neighbouring countries is essential in order for them to reap equitable benefits from the overall proceeds from hunting when hunting takes place from the common population.

The impact of achieving the highest valued land use is likely to be considerable. It will provide revenue for effective State conservation, elevate the standard of living for landholders with reedbuck, waterbuck, lechwe and puku in the Caprivi and create the incentives for more land to be put under wildlife. Ultimately, it could revolutionise land use practices and pave the way for transfrontier conservation areas.

This series of booklets provides an overview of 5 groups of species:

Southern Savanna Buffalo *Syncerus caffer caffer*

Savanna Elephant *Loxodonta africana africana*

Hippopotamus *Hippopotamus amphibius*

Roan Antelope *Hippotragus equinus*
Sable Antelope *Hippotragus niger niger*
Tsessebe *Damaliscus lunatus lunatus*

Southern Reedbuck *Redunca arundinum arundinum*
Common Waterbuck *Kobus ellipsiprymnus ellipsiprymnus*
Red Lechwe *Kobus leche leche*
Puku *Kobus vardoni*

Photos: Cover K. Landen; inside cover top S. Linder, bottom K. Landen; p1 top K. Landen, bottom treknature.com; p2 top S. Mayes, bottom K. Landen; p3 top S. Mayes, bottom K. Landen; p4 top K. Landen, bottom S. Linder; p8 top & bottom QED-CFN Project; p9 top S. Mayes, bottom K. Landen; p12 K. Landen; p15 S. Mayes; p16 top to bottom: S. Linder, K. Landen, S. Linder, M. Jarvis, M. Jarvis; inside back cover left & right S. Linder.

Reedbuck

Waterbuck

Transboundary Mammal Project
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