People: predators and protectors

Humans is both the enemy and guardian of the Delta. Certain people use it, while others abuse the wetland; some people remain on the land, while others move away.
Concerns about increasing pressures being placed on the Delta’s natural resources contributed to the reasons for writing this book. Some threats come from far afield, such as climate change and potential developments upstream of the Delta (see page 130), but others are due to local processes. And because the Delta matters most to the people who live there, much of the obligation to care for the wetlands falls on local shoulders. The health of the Delta is thus very much a matter for local people, on whom we now focus. As the chapter will show, this is a sparsely populated area compared to most places in the world. It is also one where people are in rapid transition from traditional lifestyles to others associated with modern economics and commodities. And, with many people being recent immigrants from elsewhere in Botswana and other countries, the population is diverse in character and origin.

The majority of people live on the outskirts of the Delta rather than within the wetlands themselves. For this reason and the fact that most demographic information is aggregated for Ngamiland, many of the statistics presented are for this district.

It is also certain that the Delta’s resources, such as fish, game and water, were vital to those who lived nearby, and that people who lived further away would likewise have made excursions to gather food from the wetland.

The Delta and its immediate surroundings have therefore been a home and pantry for much longer than we often imagine. Those who first lived here were hunter-gatherers, and today’s so-called Bushmen, San or Basarwa are perhaps their descendants. The populations of the earliest inhabitants would have been small, and they would have moved widely and frequently in pursuit of sustenance provided by wild plants and animals.

Historical perspectives

Associations between people and the Delta started long before it came to the attention of the wider outside world during the second half of the 19th century (see page 110). But rather little is known of those earlier times, which are largely shrouded in legend. For example, Tsidilo Hills, which are adorned with over 4,000 rock paintings, are claimed by several peoples, including the Hambukushu, Bugakhwe and Xanikhwé, Ju’hoansi as their ancestral ‘home’.

From archaeological records it is clear that northern Botswana has been inhabited for the past 100,000 years at least, and probably for much longer before that. Evidence of occupation has been found at many sites around the Delta (Figure 34), and we can assume that all areas between these sites were also occupied at various stages.

It is also certain that the Delta’s resources, such as fish, game and water, were vital to those who lived nearby, and that people who lived further away would likewise have made excursions to gather food from the wetland.

The Delta and its immediate surroundings have therefore been a home and pantry for much longer than we often imagine. Those who first lived here were hunter-gatherers, and today’s so-called Bushmen, San or Basarwa are perhaps their descendants. The populations of the earliest inhabitants would have been small, and they would have moved widely and frequently in pursuit of sustenance provided by wild plants and animals.

Figure 34 | Places where artifacts characteristic of the Early and Middle Stone Ages (from 200,000 to 35,000 years ago) and the Late Stone Age (between 35,000 and 2,000 years) have been found. Many of the sites also show evidence of early farming activities and agriculture is believed to have developed here between 2,000 and 1,000 years ago.”
The population of Ngamiland has grown 1896 wiped out all the cattle in Ngamiland, while outbreaks of sleeping sickness (transmitted by tsetse flies) led to several settlements in the Delta being abandoned in the 1940s and 1950s. Conflict frequently played a role. Raids by the Matabele in the second-half of the 19th century forced residents of many settlements to flee. Most Herero people escaped to Ngamiland to avoid extermination during the 1904-1906 German-Herero war in Namibia. And more recently, Hambukushu people were relocated to the Entha settlements in 1969 and 1970 to evade conflict in Angola. Exoduses to escape hardships are better documented than movements prompted by the lure of new resources or opportunities, which are more gradual and less dramatic. As we shall see, mobility in pursuit of better livelihoods remains a feature as large numbers of people forsake their rural homes for urban ones.

The first attempt at a systematic appraisal of population size was by Siegfried Passarge in 1898. By counting huts and villages, and estimating how many villages lay beyond his route, he arrived at an estimate of 5,000 inhabitants in Tsau, the then Tawana capital, and between 20,000 and 25,000 in the whole region around Lake Ngami.

And families now often have diverse sources of income. This is another characteristic with a long history that stems from the need to be flexible and resourceful in a land where rainfall and flooding was variable, diseases common, and natural resources spread over large areas, for instance. Family members therefore often had different roles. Their activities during the dry season also differed from those after rain had fallen, or from one year to the next, depending on flooding, access to resources, labour and capital. The number and spread of people

Official census figures were gathered in the first half of the 20th century by requesting everyone to assemble and be counted at villages of their headmen. This was the basis for estimates of 21,550 people in 1904, and also for figures in 1911, 1921 and 1936, some of which seem rather high or low (Figure 35). Subsequent counts were more reliable, and we can be confident of the population totals that have risen so steeply since 1964 (42,572 people) and the latest estimate of 138,654 people in 2006.

Whilst migrations led to some population increases, most of the district’s recent population growth was due to better survival rates, particularly as a result of health improvements.
Some idea of the enterprise and bustling activity in the booming town of Maun is provided by these images. Maun was officially a village before gaining formal status as a town in April 2009, when it had about 60,000 residents. Its population has been doubling every 11 years.

**Figure 37** The great majority of people live along the western and southern margins of the Delta where most large villages and settlements are located (top). The map of Ngamiland’s human footprint below provides an idea of the magnitude of the man-made pressures that are being brought to bear on resources. The measures are based on estimates of population density, the amounts of land transformed for settlements or by clearing for cultivation, and locations of roads which reflect human access to natural resources.

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<th>11 - 20</th>
<th>21 - 40</th>
<th>41 - 100</th>
<th>101 - 250</th>
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<th>501 - 1,000</th>
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Okavango Delta: Floods of Life

Chapter 7 | People: predators and protectors
services reducing disease and mortality among children. Prior to the establishment of clinics and hospitals the people of Ngamiland were often victims of malaria, gastro-intestinal infections, sleeping sickness, tuberculosis, venereal diseases, bilharzia and other maladies.

Populations throughout the world have grown, not because more children were born, but because more have survived. In fact, birth rates in Botswana have dropped significantly in recent decades. In 1981, the average number of children born to a woman in Botswana was 6.6, but this had halved to 3.2 children in 2006. The decline in birth rate can largely be attributed to women attaining progressively higher levels of education, and therefore spending more of their lives in employment than at being mothers.

While declining birth rates have caused the overall expansion of the population to slow in recent years, mortality and illness from HIV/AIDS has probably had a substantial impact on growth. Infection rates in Botswana have been amongst the highest in the world for a long time, and about one-quarter of people aged 15-49 in Ngamiland were infected in 2004. Although infection rates may not have dropped, the situation has since improved because increasing numbers of people have access to anti-retroviral drugs and therefore survive. Before the drugs became widely available, life expectancy dropped from an average of 65 years in 1990-1995 to just 40 years in 2000-2005. Botswana was the first African country to provide antiretroviral drugs to everyone in need.

No one lives permanently in most areas of the inner Delta and the remote areas of western and northern Ngamiland. Of the settlements that do exist, most are very small (Figure 37), with a high proportion of the population clustered in a handful of larger villages and in the district capital of Maun. From census data gathered in 2001, the largest villages, each with more than 1,000 residents, were (from largest to smallest) Gwagwe, Shakawe, Etsha 6, Etsha 13, Seronga, Nkaneng, Seepopa, Sehlutwa, Nxamae, Mohembo, Tsaio, Mathlapa and Xakal. In total, these 13 larger villages together with the town of Maun were home to about 54,800 people, or 58% of Ngamiland's population. Since 1981, Maun's rate of growth has exceeded 6% per year, with the population doubling every 11 years. Other settlements, such as Shakawe and Gwagwe, have also grown rapidly.

As a result of migrations over a long period of time, a large variety of people labelled as belonging to different ethnic and language groups live in Ngamiland. The most populous groups are the Tswana (also called BaTswana, most of whom live in Maun and various large villages), Waywi (mostly in smaller settlements along the southern and western margins of the alluvial fan, Hambukushu (mainly in settlements and villages along the western Panhandle) and Herero (largely in the south-west of the alluvial fan in such places as Sehlutwa and Tsaio). Other, smaller groups are Tsimane (also spelled Xanekhwe or //Anikhwe), Bugakwe (alternatively Bukakwe), Deyi (or Teti), Huru (or Ura), Ju//hoansi, Gomahing, BaKgalagadi, BaKhurutu, Masuia, Makalaka, Dzeriku, and various Europeans and Asians. Some of the rapidly changing circumstances of peoples’ livelihoods are illustrated in the table on the next page, which compares the results of the 1991 census with those of 2001. For example, whereas the majority of homes (78%) were traditional structures with thatched roofs (built with labour) in 1991, almost half had corrugated iron roofs (built with cash) in 2001. Two out of five people were employed in agriculture or the harvesting of natural resources in 1991, compared to about one in six people in 2001. Over three-quarters of households had access to piped water in 2001, compared to about half in 1991. Other measures that have changed a good deal over the last few decades, and continue to change, are improved levels of education (with more people going to school and/or completing higher levels of education), greater access to health care, and higher levels of possession of imported manufactured goods, such as vehicles, telephones, radios and other domestic appliances.

**Farming**

Two types of agriculture predominate in Ngamiland: livestock and crop farming, and both are largely practised using traditional methods which depend on family labour and local natural resources such as water, soil nutrients, pastures and browse. Much of this farming is ‘subsistence’ in nature, providing local residents with food for domestic consumption and, in the case of cattle, capital security. Approaches are thus quite different from those used in commercial farming operations where most inputs, for example fertilisers,
Finally, both livestock and crop farming enjoy very substantial subsidies from government. For example, crop farmers can get support to obtain draught animal power, fencing, materials for water tanks, fertilisers, threshing machines, mini-silos, chaff cutters, scotch carts, and canoes and paddles. Grants are also available for stock farmers to obtain poultry and guinea fowl, sheep and goats, equipment for boreholes and wells, fodder, fodder barns, dip tanks, kraals, crushers and loading ramps. Grants are also available for stock farmers to obtain poultry and guinea fowl, sheep and goats, equipment for boreholes and wells, fodder, fodder barns, dip tanks, kraals, crushers and loading ramps. Grants are also available for stock farmers to obtain poultry and guinea fowl, sheep and goats, equipment for boreholes and wells, fodder, fodder barns, dip tanks, kraals, crushers and loading ramps.

Fields are divided into those planted with rain-fed or dryland crops, and those used for flood-recession or molapo cultivation. By the year 2000, some 48,900 hectares had been cleared for crops in Ngamiland, of which 75% were dryland fields and 25% were fields in floodplain areas. However, only about 10,000 hectares are used in any given year, the remainder being abandoned or left fallow.

Each molapo field (plural molapo) averages about two hectares, and is cleared on ground that slopes down into channels or broader floodplains. Maize, sorghum and vegetables, such as beans and pumpkins, are planted most often, usually in late winter and spring as temperatures begin to warm. The crops are planted in strips parallel to water lying in the channels or floodplains to benefit from floodwater moisture remaining in the soil. Although early rains in October and November provide supplementary water, the success of molapo farming is primarily determined by flooding – both the previous season’s flooding and that of the coming season. Either too much or too little flooding is detrimental to molapo crops.

Yields from molapo are generally higher than those from dry lands, which can only be planted after the first good rain fall. Dryland crops also frequently suffer from shortages of water as a result of both limited and episodic falls of rain, and the low capacity for water retention in soils that are mainly sandy. Average yields for dryland crops are 162 kilograms of maize, 121 kilograms of sorghum and 144 kilograms of millet per hectare. These yields amount to less than US$100 per hectare if they are translated into values that would be paid for packaged cereals.

Although their methods and commodities differ, livestock and crop farming share several features. The first is that these activities largely supplement the livelihoods of most rural families who live off a range of different incomes. Farming is just one source of income, and it is often small compared to cash earnings, remittances and social benefits. For instance, it was estimated in 2003 that at least 50%, and perhaps as much as 76%, of all rural income in Ngamiland was not generated by farming activities. Another set of figures showed farming to be the most important livelihood activity for less than one in four rural households. Agriculture is therefore not the mainstay livelihood for most people in Ngamiland, and its importance will continue to diminish as people increasingly seek cash-based incomes in towns.

Secondly, these farming strategies are typical of a ‘low input, low output’ system. For example, farmers seldom invest in, or take measures that many outside observers would assume as necessary for better production. Few farmers thus add fertilizers, compost or manure to improve soil fertility, and weeds are not removed as often as they might be. As a result, crop yields are low. So too, are off-take rates of livestock that are often allowed to graze freely, when herding might provide better forage for the animals.

The major reason for low inputs is due to a third feature of farming in Ngamiland. This is the significant risk of failure or loss, which means that extra investment or effort often doesn’t pay off. For example, pests and diseases plague both crops and livestock. Rinderpest wiped out most cattle in 1896, and lung sickness (Contagious Bovine Pleuropneumonia [CBPP]) effectively did the same in 1995 and 1996. Earlier on, over a quarter (28%) of all cattle starved to death during the dry years that lasted between 1982 and 1988. Outbreaks of trypanosomiasis and foot-and-mouth disease occur from time to time. Crops are attacked by various parasites, stripped by locusts and red-billed quelea birds, and suffer from shortages of rain or floodwater. For example, Botswana declared droughts in 27 of the 33 years between 1964 and 1997. Wildlife exerts further tolls on farming, for example by damaging crops and killing livestock. Indeed, the increasing incidence of such conflicts may undermine goodwill towards wildlife and the conservation of the Delta.

A fourth similarity is that it is usually impossible for most farmers to earn reasonable amounts of money because of low levels of production, and because market opportunities for surpluses are limited. This was not a problem before cash became essential, but nowadays everyone needs cash for necessities such as decent clothing, medicines, cell phones and efficient transport. And it is this need for money that now drives so many people to forsake farming for urban livelihoods where they have reasonable chances of earning incomes from employment or enterprises.

Finally, both livestock and crop farming enjoy very substantial subsidies from government. For example, crop farmers can get support to obtain draught animal power, animal-drawn farm implements, fencing, materials for water tanks, fertilisers, threshing machines, mini-silos, chaff cutters, scotch carts, and canoes and paddles. Grants are also available for stock farmers to obtain poultry and guinea fowl, sheep and goats, equipment for boreholes and wells, fodder, fodder barns, dip tanks, kraals, crushers and loading ramps. In addition, extension and veterinary officers provide farmers with free advice, veterinary medication and soil testing services. Very poor families can receive food baskets.

Rural life in Ngamiland would be even tougher without all these subsidies. Traditional farming clearly provides some food and security, but does little to provide most residents with the necessities of modern life. However, it is also true that farming is valuable to poor families that have few or no other sources of income. For example, a recent assessment of poverty found that about 28% of all households were below the poverty datum line. What proportions of these were in rural and urban areas is not known. A challenge for the future is to evaluate whether the best options for alleviating poverty really lie in farming or other economic livelihoods. Likewise, we need to consider whether farming (and what kind of agriculture) or other enterprises are apt to make the best use of land in and around the Delta.

Land uses

All land in Ngamiland is either state-owned or communal, which is often also called tribal land (Figure 38). Government departments directly manage state land while the Tswana Land Board is responsible for the administration and allocation of communal land. The state land consists of the Moremi Game
Reserve (covering 4,871 square kilometres), the 344 square kilometres of Chobe National Park that fall within Ngamiland, several large cattle ranches (used for experimental breeding, artificial insemination and quarantining) and the town of Maun.

In terms of the Tribal Grazing Land Policy (TGLP) of 1975, a large area of designated communal or tribal land was divided into commercial ranches. Most of the ranches each cover between 4,000 and 7,000 hectares. While the ranches were allocated as leaseholds to individual farmers, they have effectively become private property.

Land uses in the remaining communal areas are divided between those where emphasis is placed on crop and livestock farming and those where the primary use of land is for wildlife and tourism. The latter are called Wildlife Management Areas (WMAs), and each is known by a unique number, such as NG/21 or NG/33. Their boundaries and broad purposes were introduced in 1992 as part of a community-based natural resource management (CBNRM) programme. The goals of CBNRM are to provide local communities with benefits from wildlife and simultaneously to maintain large areas in and around the Delta for tourism and conservation. Many of the WMAs also provide buffers between farming areas and protected wildlife zones.

Of 29 WMAs in Ngamiland, rights for the use of 15 are currently leased to private entrepreneurs who use the areas for tourism and/or trophy hunting. Another 13 WMAs are allocated to communities, which usually enter into joint-venture agreements with tourism and/or hunting enterprises.22 A variety of benefits accrue through the joint ventures. For example, local residents gain incomes from employment by the enterprises, which also pay royalties to community management trusts for tourism and hunting rights. Other benefits include support to local social services, such as schools and clinics, and the distribution to local residents of meat from hunted animals.

The economic conditions of people in some WMAs have improved substantially, especially in those areas where benefits are shared between relatively small numbers of households, and where the joint ventures have high commercial value for tourism and trophy hunting. For example, there were very few jobs or sources of cash in the settlements of Sankuyu, Khwai and Mahabe prior to them establishing joint ventures, which now provide employment to about 50% of all the resident adults.23 While the agreements with tourism and hunting operators may impose restrictions on land uses in certain areas, local residents are generally free to practice traditional farming. Cattle are, however, not allowed in the northern WMAs because of veterinary controls.

Figure 38 | Land uses in Ngamiland.

Veterinary cordon fences were erected to limit the spread of disease between wildlife and livestock and to control infections between domestic animals when outbreaks occur. For instance, foot-and-mouth disease is easily transmitted from buffalo to cattle, and an epidemic of this disease could jeopardise the whole of Botswana’s export beef industry.

However, veterinary (and other) fences are detrimental environmentally. This is particularly true in and landscapes where animals need to roam over large areas to obtain water and forage because rainfall is erratic in space and time. As a result of the southern Buffalo fence, regular wildlife migrations from the Delta westwards towards Namibia and southwards to Lake Ngami have been stopped. Dramatic declines in numbers of wildlife in the Kalahari are probably due to their migrations being cut off, especially by the Kuke fence (Figure 38). In addition, fences create biological islands where animals are prevented from inter-breeding with populations elsewhere. Genetic diversity is therefore reduced, while in-breeding may have unwelcome effects.
for investors in tourism, and for naturalists who
value wildlife and wild places. However, it is often
stated that the use of land for wildlife and tourism
has been at the expense of rural livelihoods
because residents have lost access to natural
resources that they harvested traditionally.27 Areas
available for farming, collecting reeds, fishing and
hunting, for example, have shrunk. In addition,
the number of rural residents has grown, and
so less land is available to support more people.
Legal restrictions on the use of natural resources
have also increasingly been introduced.

The status quo of land allocation in Ngamiland
and its uses is frequently lamented. It is strongly
argued that the loss of resources is unfair because
conservation largely serves the interests of foreign
tourists and of investors outside the Delta, many
of whom are not Botswana citizens. Moreover,
the great majority of beneficiaries are the white
owners, senior employees and shareholders of
tourism businesses.

Much of this is true, although increasing numbers
of black citizens of Botswana are earning
revenues from the same tourism industry,
largely in the service sectors but increasingly
as shareholders and employees in tourism
enterprises. For example, a significant proportion
of Maun’s economy revolves around tourism
with its knock-on effects, and the great majority
of Maun’s approximately 60,000 residents are
Botswana citizens.

Furthermore, rural livelihoods are not lost
to tourism and conservation as generally and
significantly as critics often claim. There are three
reasons for this. First, natural resources are lost
to other land uses as well, for example through the
allocation of communal land to private farms
which are given free to select owners, many of
whom are not from Ngamiland. Some communal
land has also been set aside for government uses
that are unrelated to tourism and conservation.
And natural resources that should be for the sole
use of rural residents, at least from an ethical
point of view, are often used disproportionately
by relatively wealthy people from towns. They
frequently invest some of their savings in cattle
which they place at rural cattle posts where
their large herds consume much of the available

The Delta attracts about 100,000 visitors each year, largely to about 60 camps and lodges. Revenues earned from them,
combined with those from trophy hunters, make up the bulk of Botswana’s GDP now generated by tourism. Tourism is
thus a major sector in the country’s economy, coming second only to diamonds in terms of revenue generated. About
40% of the employment available in Ngamiland is provided by the tourism industry.28 Some jobs directly serve visitors
at lodges and camps or as poking guides, for example, while others indirectly support the tourism industry through
services, such as those in retail outlets and the public service. Botswana’s tourism policy has three principle goals: (a)
to encourage tourists who occupy permanent accommodation, as opposed to casual campers; (b) to maximise financial
returns from tourism for the people of Botswana, especially those who tolerate the costs of living close to wildlife, and (c)
to ensure that tourism is carried out in an ecologically sustainable way.

\[\text{Figure 38 provides a perspective on the spatial extent of land uses. Another way of looking at this is provided by Figure 39 which illustrates the flows of revenue and people associated with different land uses.}\]

\[\text{Figure 39 | Major land use areas, and the flows of money and people into and out of these areas.}\]

All land in Ngamiland was originally communal for
farming and the harvesting of natural resources.
Recently, some land has been given to private
commercial farms, while a larger area was set
aside for the primary purpose of conservation
and tourism and hunting enterprises. Large sums
of money flow to sustain families in the remaining
communal areas where it is hard to make a
decent living, and many people therefore leave to
live and work in urban areas. By contrast, large
sums of money flow out of profitable wildlife and
tourism areas, but critical questions are often
asked about the beneficiaries of the revenues.
Few questions are raised about the merits of
private ranches, however. The narrow arrows
reflect the small flows of people and money in
and out of private farms, and of people in or out
of tourism and wildlife areas.
markets where occasional surpluses can be sold. And this remains true despite significant government subsidies to support small-scale farming and fishing. Rural life also appeals only to certain people, whereas the great majority of schooled men and women are attracted to urban lifestyles.

Debates on the pros and cons of tourism/conservation vis-à-vis the necessity of maintaining rural livelihoods are not easy to conclude. The contentious issues may also be viewed from different angles and framed differently, for example by asking if local interests should prevail over wider ones. Are long term goals more important than those that meet immediate needs? More directly: “Whose Delta is it?” and “How long should the Delta’s resources remain useful?” And are traditional livelihoods preferable to modern ones and, if so, preferable to whom?

The Botswana government recently grappled with these tough questions while compiling the Okavango Delta Management Plan, which was completed in 2008, and the Ngamiland Integrated Land Use Development Plan, finalised in 2009. Both plans emphasise the economic and conservation values of the Delta’s natural resources for the country, international community and local residents, and the need to maintain the natural processes that keep the Delta functioning, as described in Chapter 4. Proposals are made to enhance and distribute the benefits of these resources more fairly. The plans also recommend the expansion of zones for wildlife management, and to physically separate land uses where the potential for conflict is high.

These include conflicts between farming and wildlife, and between different kinds of farming. The challenge now remains for these and other useful recommendations to be implemented.

People living in rural areas are much more diverse that is commonly perceived. Some are members of rich and large families, others are small and poor. The former usually depend on off-farm incomes for their daily needs, while poorer people depend much on farming and the use of other local resources. In achieving a balance between conservation, the economic value of tourism and trophy hunting, and uplifting the livelihoods of local residents of the Delta, it seems important that these poorer families be given the best opportunities of using natural resources. There is also a need for benefits derived from wildlife to be more evenly spread across the Delta’s population.

KEY POINTS

1. The population of Ngamiland has grown rapidly as a result of medical services that have improved survival, but growth rates have recently slowed because fewer children are born nowadays.
2. Crop and livestock farming produce low yields, and are risky as a result of disease, pests, shortages of rain, and too much or too little flooding. Inputs to farming are therefore low.
3. In addition to low agricultural production, rural livelihoods are tough as a result of limited access to services, cash incomes and modern necessities.
4. Whilst farming is valuable to very poor families, most income in rural areas is not from farming or from the direct harvesting of natural resources, but rather comes from salaries, business earnings, remittances, social benefits and subsidies.
5. Rates of urbanisation have been high as increasing numbers of people, especially younger men and women, have moved to seek salaries and services in towns. Over half the population now lives in urbanized settings in towns and large villages.
6. The daily activities of most people therefore now focus on earning money, on purchasing food (rather than harvesting it), on buying clothes (rather than making them), on quick, comfortable transportation (rather than walking) and on fast electronic communication (as opposed to the ‘Bush telegraph’).
7. Likewise, modern medicine has largely replaced traditional cures, and food security has taken the place of food self-sufficiency. Formal education is held in high esteem, and its teachings are more highly regarded than folklore. Likewise, public services and government play stronger roles than traditional leadership.
8. Most land is used for three purposes: communal farming, private ranching, and wildlife conservation and tourism.
9. There is considerable debate over the beneficiaries and comparative value of communal land and that used for tourism and conservation.