Assessment of the value of woodland landscape function to local communities in Gorongosa and Muanza Districts, Sofala Province, Mozambique

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Executive summary

Assessment of the Value of Local Woodland Landscape Functions to Local Communities

During the process of developing a management plan for Gorongosa National Park (GNP) in northern Sofala Province, Mozambique the presence of people within the park and in the areas immediately surrounding the park was identified as a major management concern. The major objective of the park was the conservation of ecosystems and biodiversity. Local people were recognised as users of natural resources but park management had set itself the objective of ensuring that the use of resources did not undermine the achievement of conservation, recreation and knowledge generation objectives. Little was known of the spatial patterns of use of resources by local communities nor what areas were likely to be heavily impacted by community use of resources.

The aim of the research was to develop and test an approach to estimating local values for landscape units and relate these to formal biodiversity conservation values. The Tropical Resource Ecology Program (TREP) team conducted participatory analyses in two village scale sites; Muaredzi that was entirely within the boundaries of GNP and the other, Nhanchururu that straddled the boundary of GNP. The team used a combination of participatory research methods, Bayesian probability modelling and spatial data analyses of baseline digital data sets and remotely sensed images, to iteratively improve understanding of the factors determining the value that local people assign to specific landscape elements or locations.

In parallel to this participatory process, an assessment was made of the vegetation diversity of the same areas using standard scientific methods of firstly interpreting satellite imagery and then field sampling to validate the resultant maps and to fill in the details of species composition in each vegetation type. Vegetation types were scored and ranked in order of conservation importance. Conservation importance values were derived as a function of relative area of each vegetation type, species diversity of each vegetation type and the presence of key species of conservation interest. The local landscape values were then overlain with the conservation importance indices to identify areas where conflicts between village use and conservation were likely to be high, i.e. where both conservation and village valuations were both high.

Community resource use assessment teams (CRUATs) were elected by the people of each village to work with the scientific team. The analysis followed the same pattern in each site. Firstly, the scientific team developed a prior model or hypothesis of the value, to local villagers, of each landscape unit. In this model landscape unit value was defined as being a function of the ratio of benefits derived from the unit to the costs of
procuring benefits from the unit. The larger this ratio the more valuable the site. The CRUAT listed and scored, to reflect relative importance, the basic needs that households required for an adequate quality of life. The CRUAT then mapped the local landscape into locally identified and recognisable units and listed the goods and services that emanated from each unit. Using the scores allocated to basic needs an index of the gross value of a landscape unit was estimated as the weighted sum of goods and services derived from the landscape unit or location. The weightings were the local, relative importance scores for each good or service. The cost component of the model was estimated to be a function of the distance from the village to the location or landscape unit and any institutional or physical barriers which increased the labour costs of procuring or using resources. Local estimates of the relative contributions of each of these cost components were identified and then converted into spatial cost maps using the GIS. The final estimate of landscape value was then created as a spatial map of the Benefit-Cost model.

To explore the usefulness of the model it was confronted with real world data. Randomly selected locations were visited by members of the CRUAT who scored each location for all model components; benefits, costs and final value. The resulting data were used to confront the model and then update it.

**Basic needs and the natural environment**

The livelihood systems of both villages that participated in the local valuation of landscape functions project were dominated by natural resources based production with very few external inputs. Food was derived from local agricultural production based on a tree fallow system of nutrient replenishment, from forest products, from wild foods and from purchased commodities. The latter contribute only about 20% of the total food input although this increases in drought or flood years. Most household basics are also directly derived from natural resources; houses are constructed from cut trees bound with tree fibre and grass thatch rooves; water is drawn from shallow ground wells or rivers and cash is generated through the sale of grain, livestock and natural products. Non-agricultural food products become very much more important in drought and flood years, eventually supporting the household. Poorer households have a greater dependence on natural products than do wealthier households.

The landscape is also important from a cultural perspective. With local spiritual beliefs closely linked to the intercession of ancestors in matters of importance the burial of the dead is of great cultural significance. Hence cemeteries are very important local landscape features. People site the burial of their ancestors as a major reason why they would not be interested in moving from their current village areas.

**The value of woodland landscape units to local communities**

A very large number of products were used from the landscape of both village sites. The project team aggregated many of these into classes of product that satisfied specifically identified needs. There were for example, four different types of honey but these were all classed as honey, in the wild product category. The benefit side of the local valuation was therefore based on the supply of between 13 and 25 categories of goods.

The goods that contributed most to the values of landscape units were water, land for agriculture and houses, construction materials (these included poles, fibre, thatching grass and reeds), firewood, general household and craft materials (such as wood for tool handles, reeds for mat construction or materials for constructing pestle and mortars) and various wild foods. This pattern of importance values associated with the goods derived from natural resources are similar to those observed elsewhere in southern Africa. Villagers collected or used resources from areas of about 300 km² for a village of 40 to 100 households. Again this is a similar area to results observed elsewhere in the region.

Important lessons that emerged from the analysis as to the factors governing local valuation of landscape functions or locations the project included the following:

- Village landscapes are valued for the bundles of ecosystem goods and services that people derive from each location in the landscape.
- In terms of predicting the value of a given location the preference-weighted sum of stocks of resources on a given site was a good predictor of the values local people assigned to that location. Costs did not contribute much to the values assigned by local users. Neither distance nor local (traditional) regulations or institutions played much of a role in determining the value of a location.
- Strictly enforced regulations, such as were prevalent in some areas of GNP and for some resources, did act to exclude users and hence greatly reduce the value assigned to the given location.
- The value assigned to a given site was completely determined by tangible benefit stocks. Non-visible ecosystem services, for
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example, were not identified as benefits and therefore did not contribute to the values assigned in this analysis.

**Biodiversity conservation values and potential conflicts between conservation and livelihood systems uses**

Both sites included a range of vegetation types from open grassland areas through various savanna woodlands to thickets and forests. Thirteen types were identified for Muaredzi as compared to seven for Nhanchururu, although the total number of plant species recorded was similar for both sites (231 for Muaredzi and 246 for Nhanchururu). For both sites it was the thicket and forest communities that were identified as being of greatest biodiversity conservation importance, both on the basis of their species composition and particularly their limited occurrence in the overall landscape.

For both village areas the thicket and forest ecosystem types had both the highest conservation value and the highest local livelihood values. These landscape units are likely to be under the greatest threat from village level consumptive use and thus where the greatest conflict is likely to occur in terms of meeting both conservation and livelihoods needs.

**Implications for land use planning**

Community use of resource areas can be divided into two broad classes; land transformation and multiple use. Land transformation comprised the conversion of woodland areas into cultivated fields or riverine gardens. This was clearly the most destructive process and would directly and negatively impact biodiversity and hence conservation objectives. Multiple use of given landscape units by the community could however, under certain management conditions, remain compatible with conservation objectives.

The expansion of human populations in and adjacent to the park will inevitably result in greater demands from people for agricultural land and for the resources that the park seeks to conserve. It would thus seem inevitable that conflict between the park and people whose livelihoods depend on park resources will intensify. Further conflict is likely to arise through the build up of wildlife populations, such as elephants and large predators.

One possible solution for the park management is to identify key ecosystem units, such as forest communities, and put in place fully enforced regulations governing the clearance of these areas for cultivation. Development of land use zones in collaboration with the affected local communities would be one way of achieving this. Once these areas of both high conservation and high local resource value have been identified, and their use regulated through zoning, co-management structures and institutions could be developed to provide sustainable multiple use opportunities to those communities with a high dependency and capacity to manage these resource units.

Secondly, the park management will need to develop and maintain functional relationships with these communities (i.e. relationships with low levels of conflict and high levels of co-operation), which will require significant management inputs. The maintenance of communities within the park will incur additional costs, including both direct costs such as the costs of maintaining ranger’s posts in the areas in which the communities are, as well as indirect costs such as increased fire incidence. For some areas or ecosystem units these costs may be warranted, but for other areas these costs may not be warranted. In these instances GNP management may be better off seeking incentives to persuade communities to voluntarily relocate.

The coupling of park ecosystems to ecosystems outside of the park (particularly hydrological couplings with Gorongosa Mountain), and hence outside of GNP management control, means that for GNP to survive ecologically, park management must also seek to develop fully functional co-management relationships with the local communities responsible for managing these external ecosystem elements.
Looking east, from the miombo woodlands of Nhanchururu, down to the rift valley of Gorongosa National Park.
Introduction

As part of CIFOR’s project to identify the value of landscapes to local users the Tropical Resource Ecology Program (TREP) at the University of Zimbabwe was contracted to undertake a short term research project to establish the value of landscapes to local communities. A startup meeting was held in Harare, Zimbabwe on 29th and 30th of January, 2001, at which the TREP team presented their suggested approach, and also suggested implementing the project in Gorongosa National Park (GNP) in Mozambique. The principal reason for electing to implement the project in the logistically more difficult Mozambican site, was the opportunity for the project to directly contribute to the GNP planning activity in which the team leader (Dr. T. Lynam) was already involved.

Several communities live within the boundaries of GNP, whilst others straddle the boundaries, together amounting to an estimated total population of some 10 to 15 thousand people living within the park (Figure 1). The Administrator of GNP and other senior National Parks staff had clearly indicated the importance of addressing the question of people living within and adjacent to the park. A notable component of the GNP planning activity was expected to be the development, in consultation with all relevant stakeholders, of a management strategy for the buffer zone or co-management areas of the GNP. Thus, the CIFOR project would be able to contribute directly to a real need, and hence had considerable support from the GNP Administration.

Conducting the assessment in and around GNP would serve three major purposes. The first was the provision of information to park planners and managers, on what is of value to the local communities living within and around the park, and some indication as to where these values might be in conflict with GNP management objectives. The second, and equally important objective, was to ensure that the views of local communities were clearly expressed in the park planning exercise. In essence this would involve working with the local communities and translating their needs and views into information that would be useful to the Park Administration. The third purpose was to enhance the capacity of Mozambican partners in the project to conduct similar assessments.

The approach adopted was to develop method to estimating local values for landscape units, to generate corresponding biodiversity conservation values, and then to compare these two sets of

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2Tim Lynam, Team Leader; Rob Cunliffe and Isaac Mapaure.
values. A combination of participatory research methods, Bayesian probability modelling and spatial data analyses of baseline digital data sets and remotely sensed images, were used to generate and iteratively improve understanding of the factors determining the value that local people assign to specific landscape elements or locations. Vegetation analyses of the same areas were carried out using standard scientific techniques of firstly interpreting satellite imagery and then carrying out ground sampling to validate the resultant maps and to provide details of species composition for each type. These data provided the basis for the subsequent generation of biodiversity conservation values. The local landscape values were then overlain with the conservation importance indices to identify areas where conflicts between village use and conservation were likely to be high.

It is important to clarify what is meant by the term value as used in this project. There is a considerable literature, both in the economic as well as in the social fields, as to what value means and how it is measured. It is not necessary for us to review that literature here. What is important is that we have a clear definition of what is meant by value and what limitations there are on the use of the term in the context of this project. We use the term value to reflect an index of preference ordering. The value of a good or service is the relative degree to which that good or service is preferred in comparison with other goods and services available at that time and location. This last point is of fundamental importance. In our conception of the term there is no such thing as “THE VALUE”. Value is a dynamic and relative concept - value varies across individuals, and varies through time as the relative abundances and needs for various goods and services change. What we have striven to obtain, in our implementation of this project, is a value estimate that is averaged across a community and is expressed by individuals selected by that community to represent their views - it is thus a social value. We have also sought to average that estimate of value across a limited time domain - perhaps only meaningful over at most a year or two. The important point to reflect upon is that the estimates we have succeeded in making are appropriate at a given time and in a given location - they are not necessarily generalisable across a wider spatial or temporal domain.

Following this introduction, the remainder of the report is structured into a further five main sections (Sections I-V). Section I describes the process of selecting research sites, and provides brief descriptions of the two chosen areas: Muaredzi and Nhanchururu. The following section deals with the community landscape valuations (Section II). This includes both methods and results concerning the development and confrontation of the models, the GIS data sets, and the participatory community assessments. Details of the vegetation assessments and generation of biodiversity conservation values are then presented in Section III. Section IV concerns the overlay of the community and biodiversity conservation valuations. The final section (Section V) comprises a synthesis which draws the various threads together and spells out the implications of the research findings in terms of the land use planning process for GNP.
Figure 1. Boundary of Gorongosa National Park with major tracks and roads as well as major areas of human settlement and possible human incursion into the park.
I. Site selection and description

Discussions were held between the TREP team and the Administrator of GNP to identify communities that would provide useful information for the development of the Park plan. The importance of community perspectives on the biophysical resources in the Park, and also their perspectives on resources outside of the Park but on which GNP was critically dependent, were discussed. Following these discussions reconnaissance trips were made to four different communities. The first of these potential sites was called Muaredzi and was entirely within the GNP (M - Figure 2). The second site (Nhanchururu) was on the western boundary of the GNP and hence in the foothills of Gorongosa Mountain with the community straddling the GNP boundary (N - Figure 2). The third and fourth sites (Vunduzi and Canda) were located on the eastern and western sides of Gorongosa Mountain respectively (V and C - Figure 2). The Vunduzi community was close to the GNP boundary whilst the Canda community was several kilometres from the GNP boundary. The Regulos governing these two communities were responsible for the traditional control of Gorongosa Mountain.

The traditional leaders from each of these communities were approached and asked if they would be willing to involve their communities in the research project. In all cases this permission was granted, although in the Canda site this permission was more guardedly given - apparently because previous research initiatives had yielded no tangible benefits for the community, and in fact once the researchers had left nothing was ever heard from them again.

In general the selections were made using the following criteria:

1. Willingness of community leaders to participate;
2. Degree of dependence of community on GNP resources;
3. Accessibility of the site.

Based on the reconnaissance visits it was decided that the project would start in Muaredzi and then carry on in the Nhanchururu site. The Vunduzi site, whilst offering the opportunity to work on the biologically very interesting Gorongosa Mountain, would be inaccessible after severe rains, whilst the Canda site was furthest from the park and hence reflected the least dependence on Park resources. Although

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1 GNP is critically dependent on the water that drains off Gorongosa Mountain and that which drains off Cheringoma Plateau. Both of these areas are outside of the GNP and hence not under the control of the park authorities.

2 Regulo is the highest level of traditional leadership - roughly equivalent to Chiefs in other parts of southern Africa.
Gorongosa Mountain itself provides one of the most interesting biological sites in the region, due to the difficulty of working there (access is limited to a walk up lasting several hours and then camping at the top) it was decided to not attempt to implement the project there.

Once the Muaredzi and Nhanchururu sites were selected, the local leaders in each community were asked to assist in conducting the traditional ceremonies that were necessary for the ancestral spirits to accept the project.

A. Background to Muaredzi

The Muaredzi community is situated on the north and south sides of the Muaredzi River where it joins the Urema River, downstream of Lake Urema (Figure 3). Mauza, the nearest town, is approximately 35km to the northeast and Chitengo the GNP headquarters is about the same distance to the west. There is no regular transport from Muaredzi to Mauza and, and other than the occasional visit by national parks staff, very few vehicles come to the village.

The village area, comprising all households and fields, is relatively compact, being contained within an area of about 2km by 2km. In 1998 there were estimated to be 172 members in the community (Costa and Vogt, 1998). Although we do not have a full count of people living in Muaredzi, 40 households were identified in November 2001. These were split roughly equally north and south of the Muaredzi River. The community falls under the jurisdiction of two different Regulos. Regulo Nguinha controls the area to the north of the Muaredzi River and Regulo Nhantaze controls the area to the south. Within Muaredzi there were four Fumos\(^5\).

Residents are forbidden by park regulations to venture to the west of the Urema River. The village area does not appear to have any clear boundaries to the east, south or north.

In addition to the road to Mauza, there are two other tracks leading away from Muaredzi. One leads north for some 18km along the edge of the Urema floodplain to Goinha (also known as Mauza Baixo). The other comprises a path, which runs for some 5 km to the south of the village, to a crossing point on the Urema river known as Jangada. Across the river, this connects to the road to GNP headquarters at Chitengo, some 35km to the west. Before the civil war there was a pontoon here (hence the name Jangada), but now the only means of crossing is by a dugout canoe.

\(^5\)Fumos are the next level of traditional leadership down from the Regulo.
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The nearest neighbours to Muaredzi live within a small village comprising a few households situated several km to the south of Jangada. To the north, the closest village is Goinha, which appears to be slightly larger than Muaredzi. Both of these are also within the National Park. There are no schools, clinics or shops within the village, such that people must travel to Muanza for these facilities. The lack of any buildings with tin roofs in Muaredzi, provides a further indicator of the limited extent of development.

Tinley (1977, Figure 7.2) did not indicate any settlement in the Muaredzi area at the time of his analyses (mid-1970’s), although there were settlements north and south of Muaredzi along the Urema river basin. The 1:50,000 topographic map of the Muaredzi area (based on air photography of 1958/60) does however, indicate a small area of settlement a few km east of the present settlement. The inhabitants were essentially subsistence producers of sorghum, cassava and maize (as a cash crop). These crop yields would be supplemented with fish and wild life harvesting.

Situated towards the southern most end of the great rift valley (18.9392°S, 34.5557°E), in what is called the Urema trough section of the rift valley, Muaredzi is low lying (approximately 30 m above sea level) and hot (mean annual temperatures of 25.50°C). Rainfall is relatively high, but very variable (mean annual rainfall 850mm, coefficient of variation 67%). Evaporation is high and greatly exceeds precipitation in the dry season months (mid-April to mid-October).

Geologically the Urema trough section of the rift valley was covered by alluvial fan deposits in Pleistocene to recent times. These deposits have given rise to black, hydromorphic clays interspersed with non-hydromorphic alluvia and grey, semi-impervious sandy soils. The soils are base rich and hence generally fertile (although often saline). In some areas underlying sand at 2-4 metres gives rise to gilgai micro-relief. Organic carbon is generally high (1.5-5%) in the dominant soils of the Urema trough area and most of these soils are phosphorous rich.

The vegetation of the Lake Urema floodplain area is dominated by open grasslands. Tinley (1977) classified these into short, medium and tall floodplain grasslands. The short grasslands

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Figure 3. Muaredzi study site showing the major rivers, 10 m contours and major routes from the village centre.

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"Most of the background data that is presented for both sites is drawn from Ken Tinley’s (1977) remarkable PhD thesis that was based in the Gorongosa - Marromeu region of northern Sofala Province. Where data are from a different source this source is identified."
comprise communities dominated by *Sporobolus* spp. (particularly *S. kentrophyllus* and *S. ioclados*) on saline soils, and others dominated by the *Cynodon dactylon* and *Digitaria swazilandensis* lawns. The latter form the bulk of the floodplains on the south and northwest sides of Lake Urema. The medium grassland largely comprises two communities - one dominated by *Setaria eylesi* and the other by *Echinachloa stagnina*. The tall grasslands are characterised by a *Vetiveria nigritana* community, which grows to 225cm in height. These different grassland communities occur as a mosaic that grades into the savanna areas above the floodplain. Historically there would have been a large biomass and diversity of herbivores associated with these grasslands, but during and after the war of independence these populations were completely decimated. Only small populations of mostly smaller herbivores such as impala now occur in the Muaredzi area. There are however, infrequent visits to the area from hippopotamuses and elephants. Tinley also noted an aquatic community based on seasonally flooded pans in the flood plain.

Tinley identified six savanna woodland types growing on the rift valley floor:

1. Mixed savanna (*Acacia, Albizia, Lonchocarpus, Pilostigma, Sclerocarya*);
2. Marginal floodplain woodland (*Acacia albida, Acacia xanthophloea*);
3. Knobthorn savanna (*Acacia nigrescens*);
4. Sand savanna (*Burkea africana, Terminalia sericea*);
5. Mopane savanna (*Colophospermum mopane*);
6. Palm savanna (*Hyphaene benguellensis, Borassus aethiopica*).

Tinley also identified four thicket types and two forest types from the valley floor area. All thicket types (riverine, alluvial fan, tree-base and termitaria thickets) appear to occur in the Muaredzi area, but the forest types appear to be absent.

Historically there would have been a great number of large herbivores (elephant, buffalo, hippopotamus, zebra, waterbuck), with approximately 50 hippo counted at the Muaredzi / Urema confluence in the 1969 dry season, about the same number of zebra, and with well over 1000 buffalo and about 50 elephant in the area during the following wet season. These were virtually all eliminated, such that by 1994 there were hardly any large herbivores in the GNP at all (Cumming et al. 1994). Although the larger herbivores are slowly reappearing, without introductions, rebuilding the populations to their former levels will probably take decades.

The GNP maintains a ranger’s post in the village, from where there is radio contact to their headquarters at Chitengo (although this was not always functional). An overriding concern of the Muaredzi community is that the GNP would like them to relocate to outside of the park area. The park has previously attempted to force them to move, and has made it clear that they would still like to pursue this. Villagers are adamant that they want to remain where they are.

Being situated within the national park, the village is exposed to wildlife. Elephant move within the village area and surrounds, and clearly do cause some destruction to crops. A number of smaller animals were also commonly seen within close proximity to the village, including nyala, impala, bushbuck, oribi, warthog and wildpig. Lake Urema is reported to harbour a healthy population of crocodiles, and hippos are also present.

Community members are permitted to fish on parts of Lake Urema, although the GNP staff regulates such activities. Fishing is carried out with gill nets placed within Lake Urema. These are serviced by means of dugout canoes. Canoes are launched from a designated point, situated some 6km to the north of the village. Fish extracted from the nets are brought back to the launch point, where they are gutted and laid out to dry in the sun. From here they are carried by foot or bicycle, initially back to the village, and subsequently out to Muanza, where they can be sold. This appears to be one of the few ways that people have of earning money.

During the period of the study, the only other direct involvement of any NGO’s within Muaredzi was that of a food for work programme, being run by the World Food Programme. The work involved clearing and repairing the western part of the track from Muaredzi towards Muanza.

We are aware of two previous studies that have been carried out within the village. One comprised a community study carried out by three psychology students over four weeks during 1997 (Costa and Vogt, 1998). The other comprised a fishing project, implemented by the GNP authorities, the aim of which was to establish a fishing cooperative in Muaredzi and increase returns from fishing activities (Zolho et al. 1998). This has subsequently collapsed, apparently due to poor management.

**B. Background to Nhanchururu**

The Nhanchururu site is situated astride the western boundary of GNP, some 15km to the southeast of Gorongosa Mountain, and some 25km northeast of Villa Gorongosa. It comprises
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part of the Barue Plateau, the altitude of which varies between about 200 and 340 metres above sea level. The terrain is deeply dissected, with rivers draining south to the Mucodza River and north or north-east to the Vundudzi River. The community is therefore on the upper portion of the rift escarpment, and on the watershed between the Mucodza and Vundudzi Rivers.

The rains fall for the most part in the hot wet season from November to April, with a mean annual rainfall of about 1,320 mm and a coefficient of variation of 26% (considerably lower than the 67% in the rift valley). The relative humidity varies from a mean of 63% in October to a mean of 78% in March. Evaporation was estimated to be between 37 mm in June to 171 mm in December.

Geologically the area forms part of the Barue midlands, comprising eroding surfaces of granitic and migmatic gneiss of pre-Cambrian times. These rocks are of the oldest in the region and hence heavily weathered, yielding sandy soils that are generally infertile. The soils are largely shallow, brown granite-gneiss sands with pockets of hydromorphic soils in the dambos along watercourses. Localised termitaria are important for local concentrations of nutrients in the otherwise base, and nitrogen, deficient soils.

The vegetation of the Nhanchururu area is largely miombo savanna woodland, but with some evergreen thickets on the deeper sands of the interfluve crests. The dominant woodland species are Brachystegia boehmii, B. spiciformis, Erythrophloeum africanum, Julbernardia globiflora, and Pterocarpus angolensis. There are some narrow patches of thick riverine forest along the Vundudzi and Mucodza Rivers but these are very limited in extent.

Following cultivation, a shrub thicket replaces the Brachystegia woodland, which then restores the limited soil fertility.

Wildlife populations in the region have always been low relative to the Rift valley, and characterised by limited dry-season movement of species from the rift valley up onto the escarpment for the new flush of leaf or water. There were previously a few elephant and some sable, but generally populations were low.

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7 There is some confusion over the naming of this river. Local people call it the Vunduzi but there is another Vunduzi river that runs south from Gorongosa Mountain to the Pungwe River. Tinley (1977) called this river that runs to the north of the Nhanchururu community the Vundudzi. We will use this latter name to avoid confusion with the river to the south.
Sketch maps drawn by community members provided more specific background data for Nhanchururu. The village area is roughly rectangular in shape, some 10 km south to north and some 8 km east to west (Figure 4). Nhanchururu is bounded to the east by the national park, to the west by Nhangela village, to the south by Nhanthemba village and to the north by Safumira village. The boundaries with adjacent villages appear to be reasonably clear. These comprise the Mucodza river to the south, the Vunduzi river to the north and, to the west, a minor drainage called the Rio Nhachituzui.

To the east, the boundary between the village and the park is less clear. The community members were adamant that the entire village was outside of the park, and that the park started immediately to the east of the village, with the boundary being marked by a line of low hills and the small Rio Nhachiru. However, as one approaches the village along the main access road from the west, shortly after entering the village area one encounters an official sign stating that one is now entering Gorongosa National Park. According to this the bulk of the village falls within the national park. Regardless of this situation, the community members seemed to feel much more secure than the Muaredzi residents, and there was never any suggestion of fears that the park may in future attempt to move them.

Principal features included on the initial sketch map were five cemeteries; three churches; the primary school; the “local de julgamento” (the judgement tree where people gather to settle local disputes); the above mentioned Gorongosa National Park sign post; the fumos house; our meeting place; our camp; and the rangers post. Six internal drainages were also shown: three of these internal streams flow south to the Mucodza, and the other three drain north to the Vunduzi.

In terms of roads and major paths, the main access road follows the watershed between the Vunduzi and Mucodza rivers, bisecting the village into southern and northern portions. It leads through the village to the rangers post, and then continues east into the park (and in former times apparently all the way through to Chitengo). There were no other significant tracks to the east. To the south, there are two routes that cross the Mucodza River, both of which are located towards the western end of the village. One of these comprises a shortcut to Villa Gorongosa if travelling by foot or bicycle. As far as vehicles are concerned this route appears not to have been used for some time, is in a very poor state of repair, and the crossing over the Mucodza would not be passable until late into the dry season. To the west, in addition to the main access road, there is one other footpath that crosses the Rio Nhachituzui and continues to the neighbouring village. To the north there are a number of routes that lead off the main access road towards the Vunduzi river. Two of these reach to the Vunduzi, but neither of them appears to cross the river.

A total of 107 households were identified within the village, these being split roughly equally to either side of the main access road. Households tend to be scattered individually rather than clumped. Nhanchururu includes four fumos. Of these, Fumo Almeida appears to be the most influential, and the other three of lesser significance. The traditional ceremony was performed at Fumo Almeida’s homestead, which is located at the eastern end of the village near the rangers’ post. The responsible Regulo lives outside of the village to the south of the Mucodza River.

People were moved from the rift valley areas of Gorongosa National Park in the 1950’s to the Barue plateau area, including what is now Nhanchururu. Further disruptions and movements occurred during the war for independence and the subsequent period of continued fighting.

Villagers reported the prior presence of two other non-governmental organizations. One of these was a logging company which apparently operated within the area from 1997-1998, and took out only mukwa (Pterocarpus angolensis) trees. Most of the village area appears to have been covered, and much evidence remains of their operations in the form of old tracks, tree stumps and felled logs. The area was reported to have been previously logged during the colonial period (1960-1970’s).

The other organisation that was reported to have been operational within Nhanchururu was GTZ, who were reported to have run a project here during 1996-1998. Their activities included the construction of wells, construction of the primary school, and the promotion of agriculture including the introduction of new crops such as sunflower.