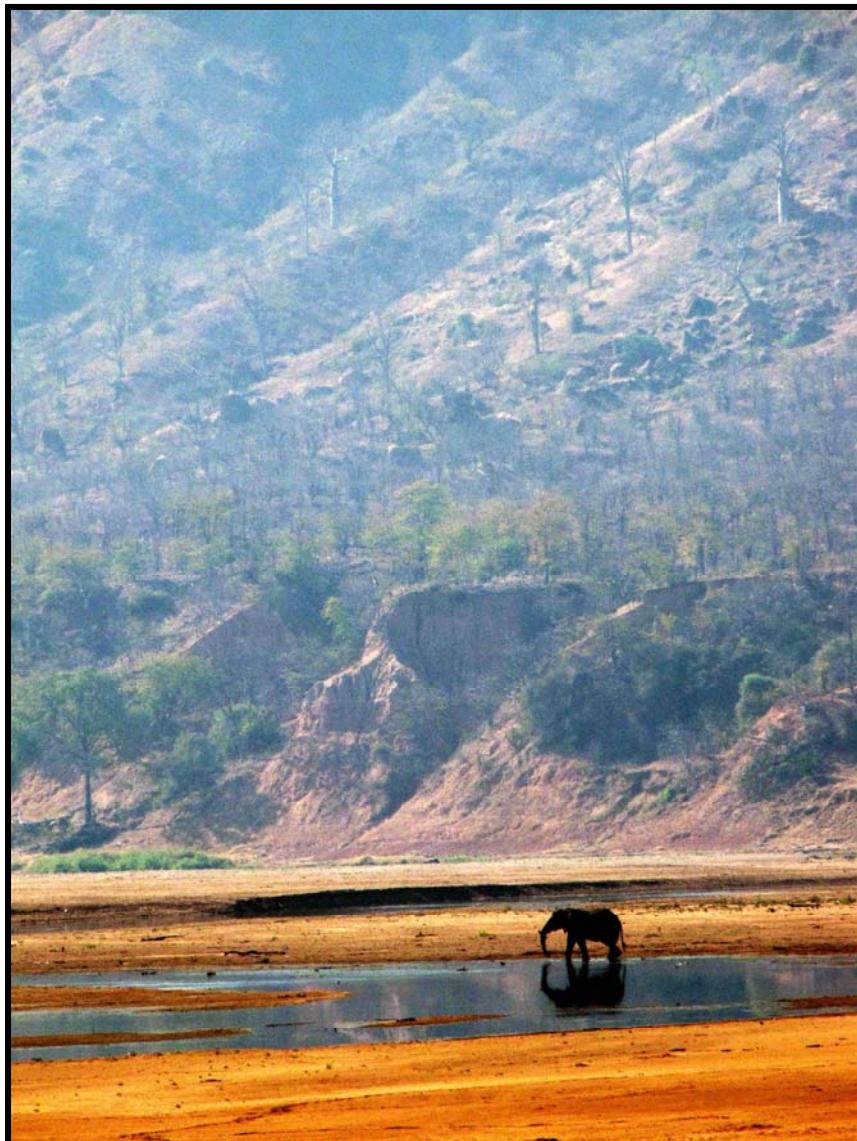




GONAREZHOU NATIONAL PARK



**GENERAL MANAGEMENT PLAN
PART 2: BACKGROUND
March, 2011**

This document provides background information for the Gonarezhou planning process. Rather than being a scientific treatise it makes extensive use of maps and photographs in the belief that this makes it more accessible to the reader and ultimately the users and implementers – the Gonarezhou park managers and staff.

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CHAPTER 1: LEGAL AND ADMINISTRATIVE FRAMEWORK

The management of wildlife and the Parks and Wildlife Estate in Zimbabwe is governed and guided by the laws of the country. The most important legislation is the Parks and Wildlife Act and its regulations while the Policy for Wildlife is the most important guiding document. In addition, there are a number of other Zimbabwean Acts and policies that must be taken into account when planning. Finally Zimbabwe is signatory to a number international conventions and agreements which can affect management of the Estate and hence planning for it. These are summarised in this chapter.

1.1 POLICY AND ACT FOR NATIONAL PARKS AND WILDLIFE

1.1.1 Policy

The Policy for Wildlife in Zimbabwe was published in 1992. The Statement of Intent is reproduced below.

In accordance with its commitment to conservation and its resolve to promote enhanced sustainable rural prosperity and a more equitable apportionment of the benefits from the proper use of the nation's wild life resources, Government intends to:

- A. *Maintain the Parks and Wild Life Estate for the conservation of the nation's wild resources and biological diversity.*
- B. *Ensure the adequate protection of major ecosystems or key species and habitats which are not represented in the Estate through various measures including Biosphere Reserves.*
- C. *Encourage the conservation of wild animals and their habitats outside the Estate recognising that this is only likely to be successful if wild life can be used profitably and the primary benefits accrue to people with wildlife on their land.*
- D. *Insist upon environmental impact assessments for all developments that threaten to affect wild life arid protected land adversely.*
- E. *Use the Estate to promote a rurally based wild life industry,*
- F. *Harmonise the management of the Parks and Wild Life Estate with the efforts of neighbouring communities who are developing wild life as a sustainable form of land use.*
- G. *Transform land use in the remote communal lands of Zimbabwe through its Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) under which rural peoples have the authority to manage their wild life and other natural resources and benefit directly from so doing.*
- H. *Ensure that wild life is not undervalued to the people living with it by permitting them to use it sustainably for their own gain as they are able to do with other natural resources and agricultural products.*
- I. *Promote public awareness of wild life issues.*
- J. *Take the necessary legal and enforcement measures to prevent the illegal use of wild life.*
- K. *Maintain its commitment to wild life research.*
- L. *Participate in those international treaties and conventions which are consistent with Zimbabwe's policies for conservation and sustainable use of wild life.*

M. Examine and develop a cost-effective and adaptive institutional framework for managing wild life and protected areas in terms of this policy.

N. Draw up management plans arising from this policy for approval by the Minister.

The Statement of Policy consists of 10 sections several of which are specific about the Parks and Wildlife Estate. Section 2 deals with the objectives of the Estate, its management, public use and physical developments. The objectives are as follows:

- 2.1.1. Preserve representative examples of Zimbabwe's aquatic terrestrial flora and fauna and their physical environments;*
- 2.1.2. Protect areas of scenic beauty and special interest;*
- 2.1.3. Preserve rare, endangered and endemic species;*
- 2.1.4. Conserve water catchments;*
- 2.1.5. Provide opportunities for public education and the advancement of scientific knowledge;*
and, without prejudice to any of the above
- 2.1.6 Encourage public use related to the enjoyment and appreciation of these areas; and*
- 2.1.7. Generate economic activity within the Estate and surrounding areas to enhance rural development.*

The more important relevant sections are reproduced in Appendix 1.

1.1.2 Act and Regulations

The 1974 Act, consisting of in 17 sections and ten schedules, was revised and reprinted in 1996. Important subsidiary amendments are contained in Act 19 of 2001 and Act 22 of 2001.

For the management of National Parks, Section 23 describes the powers of the Minister in relation to parks. These powers are quite considerable for management, tourism and other utilisation.

Important for the day-to-day management of the National Parks are the Parks and Wildlife (General) Regulations, 1990 (SI 362 of 1990). This has been amended by the Parks and Wildlife (General) (Amendment) Regulations (SI 114 of 1993).

Section 11 specifies the length of time that a tourism facility may be used continuously. It has been set at three weeks and this has a direct bearing on the development of the tourism industry in the Park.

1.2 OTHER IMPORTANT POLICIES AND ACTS

A brief review of other important Zimbabwean policies and Acts is shown below (Table 1).

Table 1: Important policies and acts relevant for the planning of Gonarezhou National Park

Policy/Act	Brief Description
Wildlife Based Land Reform Policy	The policy aims to facilitate wildlife-based land reform to ensure profitable, equitable and sustainable use of wildlife resources, particularly in areas where agricultural potential is limited.
Mines and Minerals Act	The Mines and Minerals Act defines prospecting rights and mining leases. Rights to minerals are vested in the President. All State Land, which includes the Parks and Wildlife Estate, is open to prospecting.
National Museums and Monuments Act	Through the Act the Minister may declare National Monuments. The discovery of any ancient monument or relic must be declared to the National Museums and Monuments Board by the discoverer or the owner or occupier where the relic occurs. The state can acquire the land on which the monument or relic occurs for its preservation or analysis.
Environmental Management Act	The Act provides for sustainable management of natural resources and protection of the environment; the prevention of the pollution and environmental degradation; the preparation of a National Environmental Plan and other plans for the management and protection of the environment. EIAs are required for specified developments
Communal Land Act	The Act is implemented through the Rural District Councils (RDC), these councils are responsible for the planning and administration of the districts. They are the legal representation of government at grassroots level. RDCs are responsible for the management of all natural resources on behalf of the producer communities applying the Environmental Management Act. It will be relevant for the adjacent communal lands.
Water Act	The Act is for the monitoring and management of all surface and underground water resources. Use of water from designated river systems is controlled through the National Water Authority. This includes underground water.

1.3 INTERNATIONAL POLICIES AND AGREEMENTS

Zimbabwe is signatory to a number of international policies and agreements relating to wildlife and the environment and these are briefly outlined below as they need to be considered when planning a protected area.

Table 2: International policies and agreements

Agreement	Comments
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora. Essentially member states regulate trade in endangered or threatened species. Of importance are elephant, crocodile and leopard
CBD	Convention on Biological Diversity signed in 1992.
SADC	The treaty of the Southern African Development Community (SADC) 1992
Sustainable Use of Biodiversity	The Addis Ababa Principles and Guidelines for Sustainable Use of Biodiversity adopted at the 7 th Conference of the Parties of the CBD, (Principle 11 and 12)
GLTP Agreement	Signed in 2002 This treaty governs the establishment and development of the Greater Limpopo Transfrontier Park.

1.3.1 Great Limpopo Transfrontier Park and Great Limpopo Transfrontier Area

Figure 1: The Great Limpopo Transfrontier Conservation Area

The Great Limpopo Transfrontier Park straddles the borders of Mozambique, South Africa and Zimbabwe and joins some of the most established wildlife areas in Southern Africa into a huge conservation area of 35 000km². This forms the core of the second-phase transfrontier conservation area (TFCA), measuring almost 100 000km² - billed as the world's greatest animal kingdom.

The larger transfrontier conservation area will include Banhine and Zinave national parks, the Massingir and Corumana areas and interlinking regions in Mozambique, as well as various privately and state-owned conservation areas in South Africa and Zimbabwe bordering on the Transfrontier Park.

The heads of state of the three countries signed a treaty establishing Great Limpopo on 9 December 2002. In 2006 the Giriyondo Access Facility between the Kruger and Limpopo national parks was opened. Since it was established almost 5,000 animals have been translocated from Kruger to Limpopo National Park. This, combined with 50 km of fence being dropped, has encouraged more animals, including some 1 000 elephants, to cross the border by themselves.

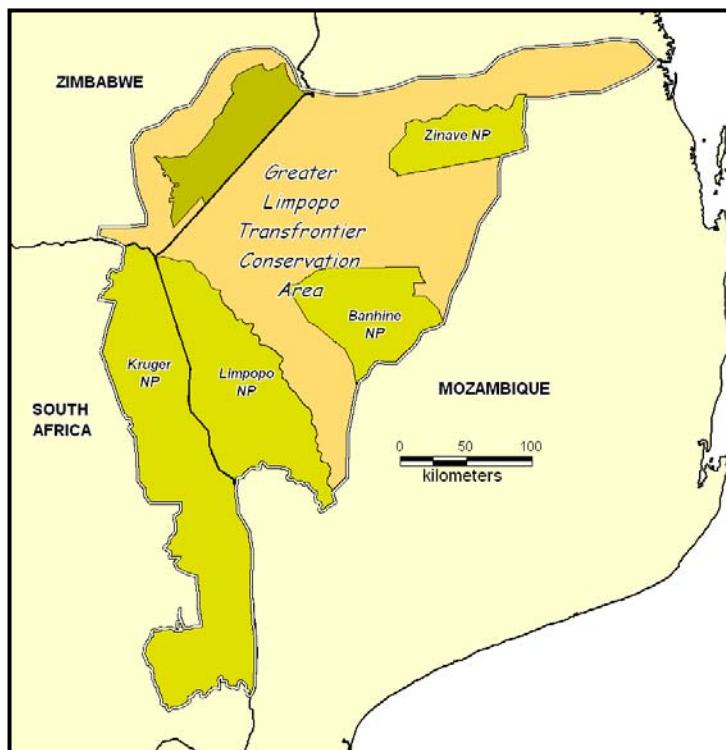
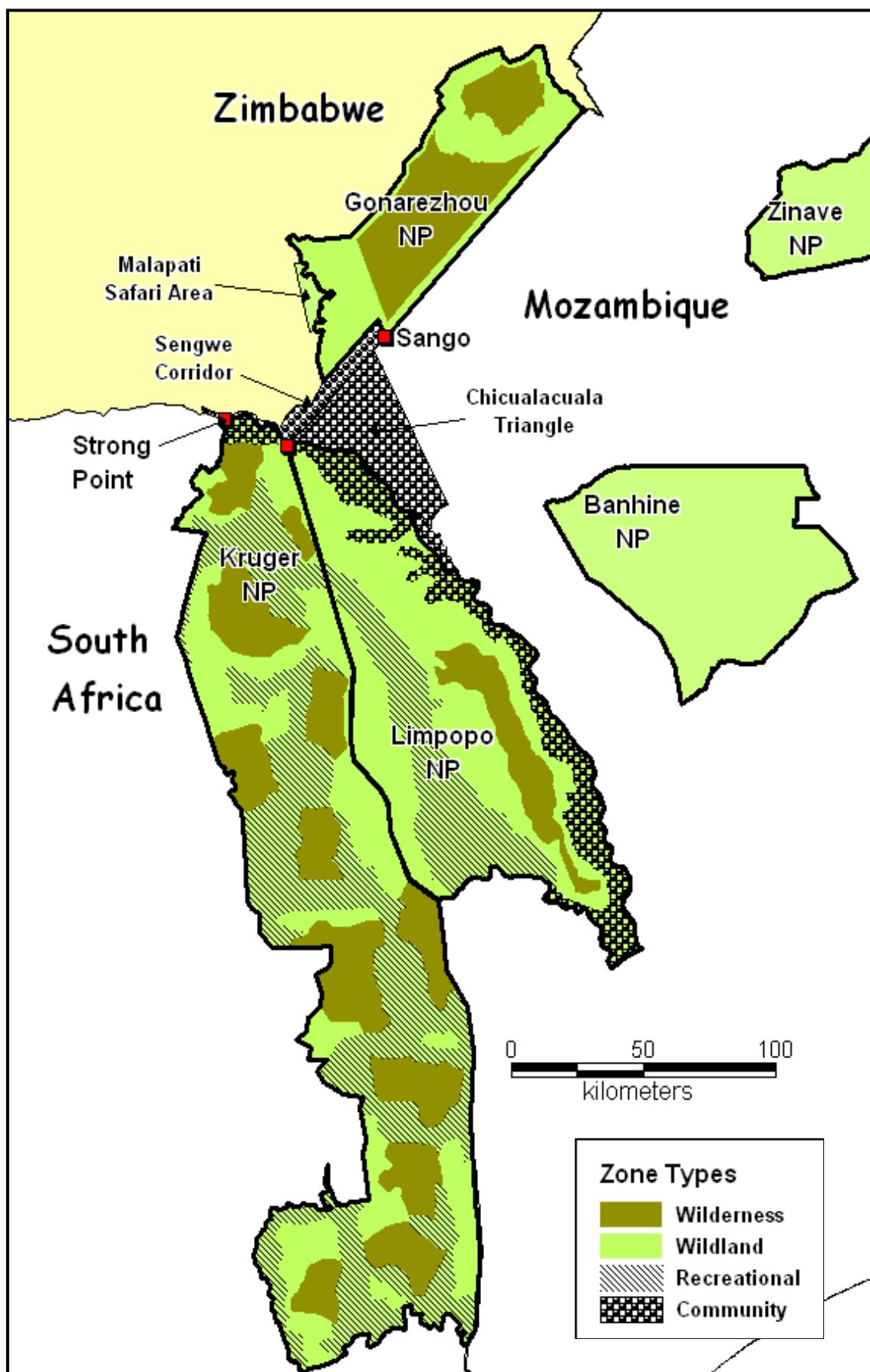


Figure 2: The Great Limpopo Transfrontier Park

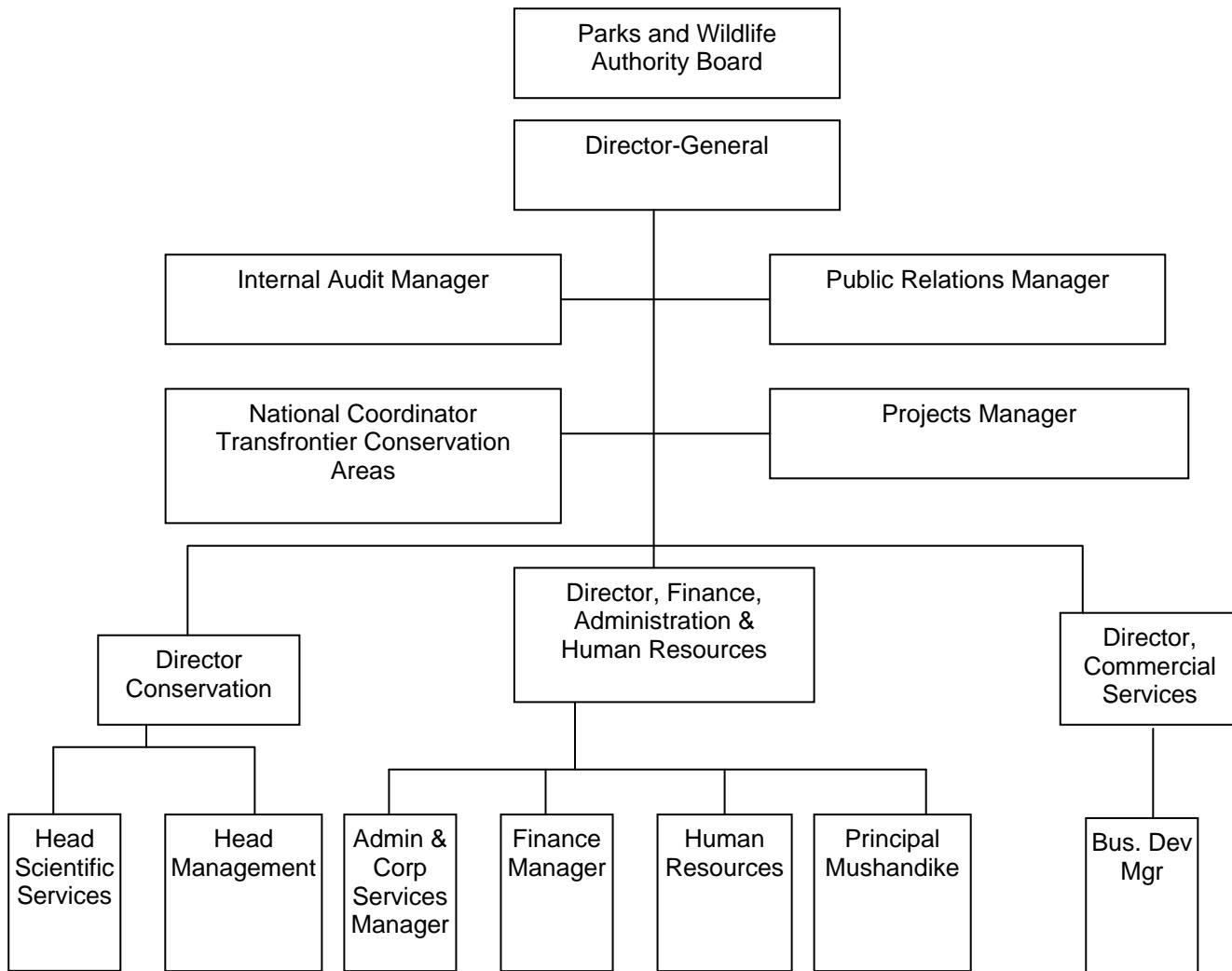


1.4 MANAGEMENT OF PWMA

1.4.1 Management Structure

The Zimbabwe Parks and Wildlife Management Authority was established in 2001? and takes over from the former Department of National Parks and Wildlife Management. The organisation is run through the Corporate Centre (the Head Office in Harare) which controls the two “portfolios” – the **Conservation Division** and the **Commercial Division**. The Corporate Centre is constituted by the Director General, staff in the Director General’s Office and all support services branches of the Finance, Administration and Human Resources Division. The broad structure of the organisation is shown below (Figure 3).

Figure 3: Structure of the Parks and Wildlife Management Authority



1.4.2 Strategic Plan – PWMA Vision, Mission and Values

The PWMA has developed a strategic plan which outlines its direction. The Authority has the following vision, mission and core values.

Vision: To be the world leader in sustainable conservation

Mission: To conserve Zimbabwe's wildlife heritage through effective, efficient and sustainable protection and utilization of natural resources for the benefit of present and future generations and stakeholders.

Core Values:

- Teamwork
- Commitment
- Transparency
- Professionalism
- Fairness
- Integrity
- Accountability
- Creativity
- Environmentally Ethical
- Integrity

1.4.3 Strategic Plan - Goals and Strategies

Conservation Division: To restore and maintain the Parks Estate and wildlife resources in general to their prime condition as the sanctuary of the nation's wildlife heritage and biodiversity. Management and Scientific Services sub-units will drive the Division

Commercial Services Division: To attain the Authority's financial self-sufficiency and corporate growth for the consolidation of the core function of conservation. The Division will focus on achieving growth by pursuing commercial activities that will exploit the vast untapped business opportunities available to the Authority within the limits of resources available

Corporate Centre: To achieve adequate institutional capacity, optimal allocation of resources and effective performance management through results based management, to support conservation and commercial activities

Strategic Goals

Six strategic goals have been identified by the plan. These are:

- 1 *To restore the Parks Estate and Wildlife Resources in general, to their prime condition as the sanctuary of the nation's wildlife heritage and bio diversity.*
- 2 *To attain Financial Self-sufficiency and Corporate Growth for the consolidation of the core function of Conservation*
- 3 *To achieve adequate institutional capacity to support Conservation and the Commercial activities.*
- 4 *To achieve optimal allocation of resources for sustenance of the Authority's Conservation and Commercial activities*
- 5 *To attain an effective Performance Management System*
- 6 *To contribute to the Authority's vision and mission through the provision of requisite skills and competences in wildlife management on a self-sustenance basis.*

The operational strategies and activities that the Authority will use to achieve these strategic objectives are outlined in the Strategic Plan. The operational strategies are summarised below

Table 3: Strategic Objectives and Operational Strategies for the PWMA
 (Conservation and Commercial Divisions)

CONSERVATION DIVISION	
Management Services	
Strategic Objective	Operational Strategies
To reduce and maintain total illegal off take below 0.1% of total population to ensure adequate protection of the nation's wildlife heritage.	<ul style="list-style-type: none"> Enhance the gathering and utilization of anti-poaching intelligence Enhance anti-poaching operations Weed out internal corruption Increase cooperation with national law enforcement agents Enlist community support through education and awareness campaign. Upgrade infrastructure Ensure proper maintenance of infrastructure and equipment
To support and promote the indigenization process by creating a sustainable community-based tourism and wildlife management.	<ul style="list-style-type: none"> Enhance the CAMPFIRE concept Increase Private/Public sector partnerships Develop innovative products and markets for the rural based wildlife industry in partnership with rural and resettlement communities. Facilitate training of community people in tourism and wildlife management
SCIENTIFIC SERVICES	
To ensure optimal biodiversity through the maintenance of viable population habitat and ecological integrity.	<ul style="list-style-type: none"> Conduct contemporary globally benchmarked and continuous research. Generate technical information to support wildlife management Enforce timely, consistent and systematic Environmental Impact Assessment (EIA) for all development work and projects in the Parks Estate and beyond. Initiate effective and integrated wildlife planning and management systems that involve local
TRANSFRONTIER CONSERVATION AREAS	
To improve capacity to implement multilateral treaties	<ul style="list-style-type: none"> Facilitate the formation of institutional framework to run TFCAs Engage and manage the involvement of local communities in TFCA programmes Provide momentum for the running of TFCA programmes Ensure exchange of information for planning purposes

COMMERCIAL DIVISION	
To develop profitable business units from existing and new opportunities identified in the environment in line with the Authority's resource capabilities	Develop two commercially viable SBUs (Strategic Business Units) from the current hospitality and safaris operations. Establish three new SBUs from opportunities in Tours and Travel, Fisheries and Floriculture Improve the commercially viability/profitability of current operations Develop and instil a business orientation in the SBUs
To achieve 25% of the market share in every SBU by 2010.	Develop and exploit synergistic relationships between SBU's Benchmark and refurbish existing tourism infrastructure to meet and exceed the minimum grading requirements spelt out in SI 128 and customer needs Identify and enter into strategic alliances that promote new distinctive competences and enhance existing ones Develop effective Corporate and product brands Enter into strategic joint marketing partnerships Build capacity for effective customer and competitor responsiveness Develop and implement a local and international image building programme

1.5 AREA DESCRIPTIONS

The following are transcripts from the Schedules and Statutory Instruments.

The park boundaries are shown in Map 1 and the following description is taken from the Land Tenure (Repeal) Act, 1979, as referred to in Part II of the First Schedule of the Parks and Wildlife Act No. 14 of 1975; Revised 1996.

1.5.1 Gonarezhou National Park

FIRST SCHEDULE (Section 22)
National Parks
PART 1
National Parks on Parks and Wildlife Land

Chiredzi District

Item 2: *Gonarezhou*

Area: 505 300 hectares

The area of land bounded by a line drawn from a point where the Sabi River is met by the southern boundary of Sangwe Tribal Trust Land, down the Sabi River to the Rhodesia-Moçambique international boundary; thence proceeding south-westwards along that boundary to beacon B2L of Vila Salazar (as shown on plan RN59, filed in the office of the Surveyor-General, Salisbury) and generally northwards, westwards and southwards along the boundaries of Vila Salazar, so as to exclude it, through beacons BD3, BD2, BD1, R5, R4 and TN1 to beacon C1A on that international boundary; thence south-westwards along that boundary to the Bannockburn-Maputo railway line and north-westwards along that railway line to its intersection by the prolongation north-eastwards of a game-fence at map reference 36KUL 612657 on the 1: 50 000 map Malvern 2231B1/B3, Edition 2; thence south-westwards along that prolongation and the game-fence to the eastern boundary of Sengwe Tribal Trust Land between beacons SNG3 and SNG2 (as shown on plan CG2101, filed in the office of the Surveyor-General, Salisbury) and northwards along the eastern boundaries of Sengwe Tribal Trust Land and Malapati Safari Area to the Nuanetsi River; thence up that river to the southern boundary of the former Gonakudzingwa Purchase Land and eastwards and north-eastwards along its southern boundaries and the south-eastern boundaries of Matibi No. 2 Tribal Trust Land, so as to exclude them to the Lundi River; thence up that river to the south-eastern boundary of Lone Star Ranch and north-eastwards along its south-eastern boundary, so as to exclude it, to a point where it is met by a cattle-fence at map reference 36KUM 885579 on the 1: 50 000 Makamandima 2131 B2, Edition 1; thence north-eastwards along that cattle-fence to map reference 36KVM 002641 on the 1: 50 000 map Mutandahwe 2132 A1, Edition 2; thence generally eastwards along that cattle-fence to the south-western boundary of Sangwe Tribal Trust Land, at map reference VM076662 on that map; thence south-eastwards along the south-western boundary of Sangwe Tribal Trust Land; thence south-eastwards direct to the confluence of the Murondozi River and an unnamed tributary (as shown on plan RN10, filed in the office of the Surveyor-General, Salisbury) and generally north-eastwards along the southern boundaries of Sangwe Tribal Trust Land to the starting-point.

Map references quoted in this description are given to the nearest hundred metres.

1.5.2 Manjinji Pan

THIRD SCHEDULE (Section 31)
SANCTUARIES AND SPECIALLY PROTECTED ANIMALS
PART 1
Sanctuaries on Parks and Wildlife Land
Specially Protected Animals

Chiredzi District

Item 4: *Manjinji Pan*

Area: 300 hectares

All Birds

The area of land bounded by a line drawn 366 metres from and parallel to the high-flood level of Manjinji Pan, so as to include it, as shown on the 1: 50 000 map Malapati 2231A2, Edition 1.

1.5.3 Malapati Safari Area

FOURTH SCHEDULE (Section 36)
Safari Areas on Parks and Wildlife Land

Chiredzi District

Item 4: *Malapati*

Area: 15 400 hectares

The area of land bounded by a line drawn from a point on a game-fence at map reference 36KUL 286860 on the I:50 000 map Buffalo Bend 2131 C4, Edition 2, eastwards along that game-fence to the Nuanetsi River; thence proceeding down that river to the easternmost point of the loop in that river (approximately 2,2 kilometres upstream from the Malapati Bridge) at map reference 36KUL 403649 on the I: 50 000 map Malapati 2231 A2, Edition 2; thence southwards direct to beacon SNG7 (as shown on plan CG2101 filed in the office of the Surveyor-General, Salisbury); thence south-westwards direct to beacon SNG8 on that plan and south-westwards direct to a point on a game-fence at map reference 36KUL 370611 on the I: 50 000 map Malapati 2231 A2. Edition 2; thence south-westwards and north-westwards along that game-fence to the starting point.

Map references quoted in this description are given to the nearest hundred metres.

1.5.4 Chipinge District Communal Lands

SI 69 of 1985

Part XIV
CHIPINGA DISTRICT

Item 44: *Ndowoyo*

Area: 210 600 hectares

The area of land bounded by a line drawn from the north-western beacon of Sabi 83 generally southwards and south-eastwards along the western and south-western boundaries of the former Sabi Purchase Land (Area i), so as to exclude it, to the easternmost beacon of Sabi 78; thence proceeding south-eastwards and north-eastwards along the south-western and south-eastern boundaries of Nyagadza, so as to exclude it, to the south-western beacon of Umzelezwe and eastwards along the southern boundaries of the following properties, so as to exclude them: Umzelezwe, Hoghwe, Sable Home and Far Hill to the south-eastern beacon of the last-named property; thence southwards direct to the north-eastern beacon of Sabi 45 and generally south-westwards and southwards along the north-western and western boundaries of the former Sabi Purchase Land (Area ii), so as to exclude it, to the south-western beacon of Sabi 48; thence westwards and generally southwards along the Zimbabwe-Mozambique international boundary to the Sabi River and up that river to the north-western

boundary of the former property Gumera (as shown on plan DG667, filed in the office of the Surveyor-General, Harare); thence generally north-eastwards along the north-western boundaries of the following former properties, so as to include them: Gumera, Chengwe, Pangela and Mhungura (as shown on that plan) to the westernmost beacon of Sabi 61; thence eastwards along its southern boundary, so as to exclude it, to the starting-point.

This description excludes an area of land approximately 2400 hectares in extent, bounded by a line drawn from the point on the Zimbabwe-Mozambique international boundary where it is met by the prolongation of the north-western boundary of Sabi 51; thence proceeding generally southwards along that boundary to the southernmost beacon of Sabi 52 and westwards along the southern boundaries of Sabi 109 and 84, so as to include them, to the south-western beacon of the last-named property; thence northwards along the western boundary of Sabi 84 to its north-western beacon and direct to the southernmost beacon of Sabi 71; thence northwards along its western boundary to its north-western beacon and generally north-eastwards along the boundaries of the following properties, so as to include them: the northern and eastern boundaries of Sabi 71, the north-western boundary of Sabi 51 and its prolongation to the starting-point: and the following areas (as will more fully appear on plan RN26, filed in the office of the Surveyor-General, Harare): Sabi 53 to 56, 59, 60, 64 to 70, 72, 75, 76, 77, 86, 87, 88, 101, 102, 107, 131, and 146 and an area of State Land adjoining, and south-west of, Sabi 59.

1.5.5 Chiredzi District Communal Lands

SI 69 of 1985

Part XV
CHIREDZI DISTRICT

Item 46: *Matibi No. 2*

Area: 220 600 hectares

The area of land bounded by a line drawn from the confluence of the Makambi and Lundi rivers down the Lundi River to its confluence with the Chingwesi river and up that river to its confluence with the Mazvikota River; thence proceeding up the Mazvikota River to its confluence with an unnamed river at map reference 36KUM 801369 on the 1:50,000 map Chipinda Pools 2131 B4, published 1961, and up that unnamed river to its intersection by a game fence at map reference 36KUM 705238 on the 1:50,000 map Chiteo 2131 B3, Edition 1; thence southwards along that game-fence for a distance of approximately 3,8 kilometres to a point on that game-fence at map reference 36KUM 703201 on the 1:50,000 map Gorhwana Pan 2131 D1, Edition 1, and south-westwards along that game-fence for a distance of approximately 16,3 kilometres to Naivasha Camp, at map reference UM 608067 on that map; thence south-westwards along that game-fence for a distance of approximately 15,8 kilometres to a point on the Bannockburn-Maputo railway line approximately 9,1 kilometres north of Twiza siding at map reference UL 491961 on that map, and generally north-westwards along that railway line to the Chikombozi River: thence down that river to its confluence with the Nuanetsi River and up the Nuanetsi and Tjompani rivers to the eastern boundary of Lot 3 of Lot 12 of Nuanetsi Ranche A; thence generally north-eastwards along the following properties, so as to exclude them: the eastern boundary of Lot 3 of Lot 12 of Nuanetsi Ranche A and the south-eastern boundaries of Jabula of Nuanetsi Ranche A, B.J.B. Estate and Stelmarcoe A to the Makambi River and down that river to the starting point.

Map references quoted in this description are given to the nearest hundred metres.

Item 47: *Sangwe*

Area: 63 500 hectares

The area of land bounded by a line drawn from the confluence of the Chirovamupande and Sabi rivers down the Sabi River to a point approximately 550 metres downstream from the confluence of the Murondozi and Sabi rivers and generally south-westwards along a series of straight lines (as shown on Plan RN10, filed in the office of the Surveyor-General, Harare) for a distance of 1,9 kilometres, 1,4 kilometres, 3,4 kilometres, 1,6 kilometres, 3,8 kilometres and 3,2 kilometres to the confluence of the Murondozi River and an unnamed tributary (as shown on that plan); thence proceeding north-westwards direct to map reference 36KVM 076662 on the 1:50 000 map Mutandahwe 2132 A1, Edition 2; thence generally westwards along the north-western boundary of Gonarezhou National

Park, so as to exclude it, to map reference VM 002641 on that map; thence south-westwards along that boundary to map reference UM 986632 on that map; thence northwards direct to the easternmost beacon of Lone Star Ranch; thence north-westwards along the north-eastern boundary of Lone Star Ranch Watershed Extension, so as to exclude it, to the easternmost beacon of Fair Range Watershed Extension; thence north-eastwards along the south-eastern boundary of Mkwashine Ranch, so as to exclude it, to its south-eastern beacon, at map reference 36KUM 996882 on the 1:50 000 map Chisumbanje 2032 C3, Edition 1; thence northwards along the boundary of Mkwashine Ranch, so as to exclude it, to map reference UM 992897 on that map; thence generally north-eastwards along the south-eastern boundaries of Mkwashine Ranch, Senuko 3 and Levanga, so as to exclude them, to the starting-point.

The map references quoted in this description are given to the nearest hundred metres.

Item 48: Sengwe

Area: 244 500 hectares

The area of land bounded by a line drawn from the point where the Bannockburn-Maputo railway line crosses the Zimbabwe-Mozambique international boundary south-westwards along that international boundary to the Limpopo River; thence proceeding up that river to its confluence with the Bubye River and up that river to the southern boundary of Battlefield; thence generally north-eastwards along the boundaries of the following properties, so as to exclude them: the southern and south-eastern boundaries of Battlefield, the south-eastern boundaries of Lot 12A of Nuanetsi Ranche A and Lot 1 of Lot 12 of Nuanetsi Ranche A to the Nuanetsi River and down that river to a point at map reference 36KUL 330860 on the 1:50 000 map Buffalo Bend 2131 C4, Edition 2; thence westwards direct to a point on a game-fence at map reference UL 329860 on that map and westwards, south-eastwards and north-eastwards along that game-fence to a point at map reference 36KUL 370611 on the 1:50 000 map Malapati 2231 A2, Edition 2; thence north-eastwards direct to beacon SNG8 (as shown on plan CG2101, filed in the office of the Surveyor-General, Harare), eastwards and southwards along a series of surveyed lines through beacons, SNG7, SNG6, SNG5, SNG4 and SNG3 on that plan and along a game-fence to map reference 36KUL 401424 on the 1:50 000 map Malapati 2231 A2, Edition 2; thence north-eastwards along that game-fence and its prolongation north-eastwards to the intersection of that prolongation by the Bannockburn-Maputo railway line and south-eastwards along that railway line to the starting-point.

This description excludes an area of land, approximately 300 hectares in extent, bounded by a line drawn approximately 366 metres from, and parallel to, the high-flood level of Manjinji Pan, so as to include it.

The map references quoted in this description are given to the nearest hundred metres.

CHAPTER 2: NATURAL RESOURCE BACKGROUND

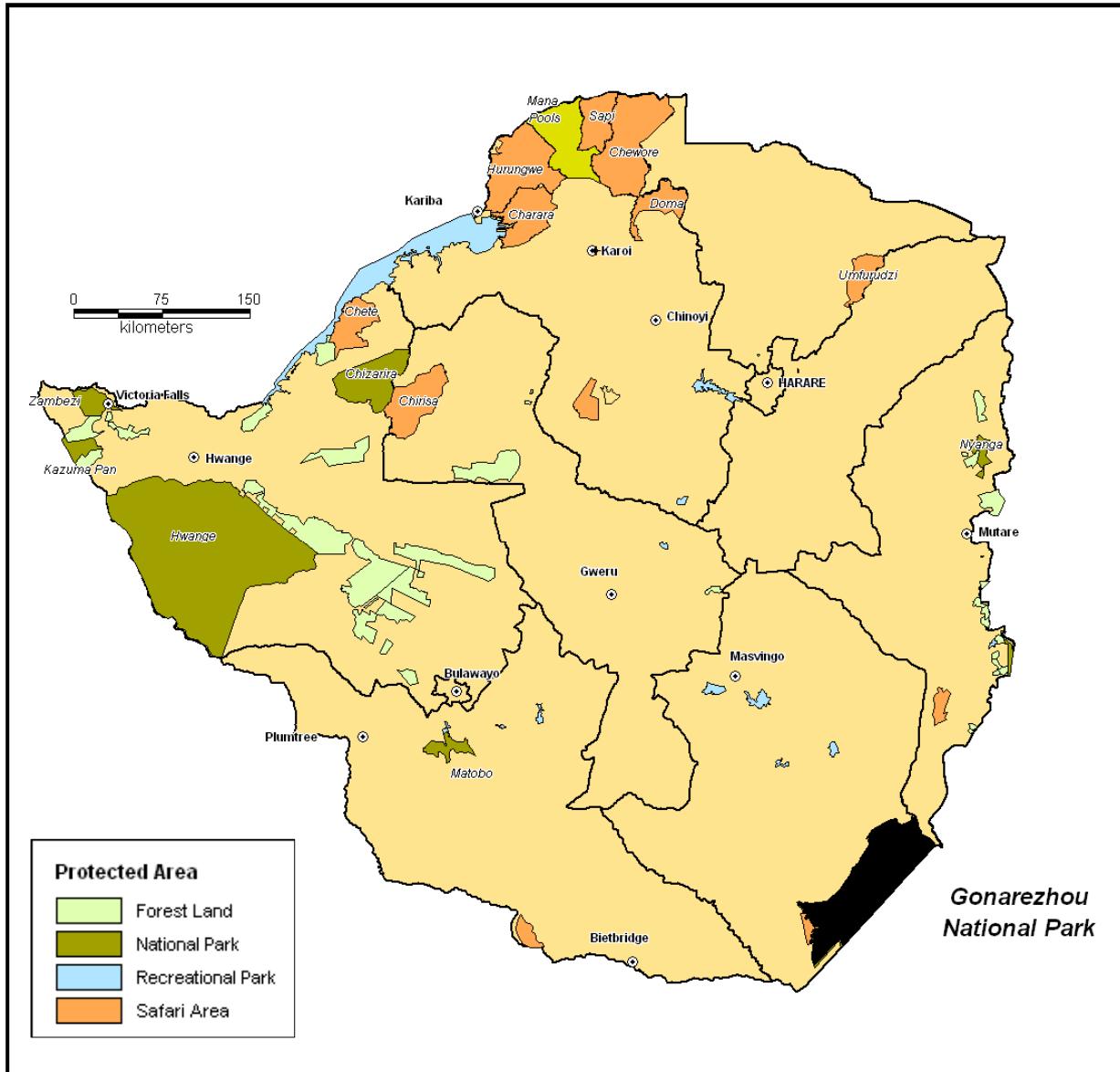
2.1 INTRODUCTION

This chapter provides a summary of information pertaining to the natural resources in the Gonarezhou National Park and surrounding areas.

2.2 LOCATION, BOUNDARIES AND AREA

Gonarezhou National Park (GNP) is one of the 11 areas designated as a national park in Zimbabwe. GNP is situated in the south-eastern lowveld of Zimbabwe, and occupies a total area of 5,053 km².

Figure 4: Location of Gonarezhou National Park in Zimbabwe



2.3 HISTORICAL BACKGROUND

2.3.1 Establishment History

The history of Gonarezhou began in 1934 when it was established as a Game Reserve, when an assigned area of land bounded by the Mozambique border, the Runde and Mwenezi rivers and Matibi No. 2 Reserve (now communal land), was proclaimed as the Gonarezhou Game Reserve (Masona 1978). The area bounded by the Chiwonja hills, was added a year later.

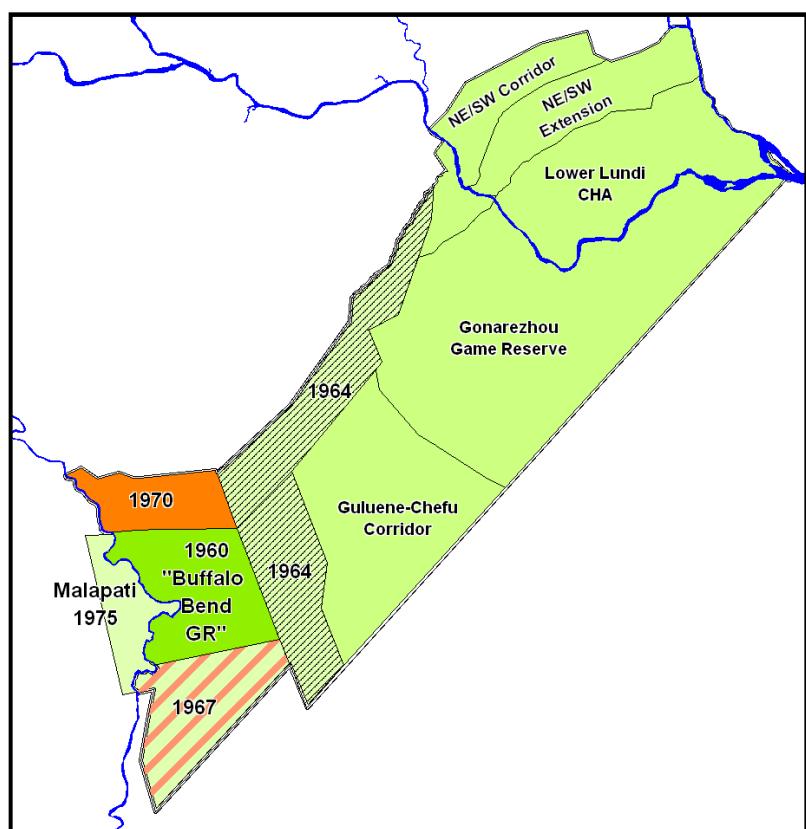
The game reserve was de-proclaimed in 1940/41 as tsetse fly eradication programmes were initiated in the Save and Runde river valleys to halt the westward spread of tsetse fly into adjacent agricultural land. In 1950, the area between the Save and Runde rivers was again designated as a game reserve, but subsequently de-proclaimed to enable Tsetse eradication to continue.

In 1954, land between the Matibi No 2 communal land, Mwenezi and Save Rivers was designated as the Gonakudzingwa African Purchase Area (Wright 1972). In 1961 all of that land to the east of the Maputo railway line, and the unofficial Buffalo Bend Game reserve to the west of the railway line, was reassigned as Forest land. In 1963, two further changes were made, a five mile strip of land along the Mozambique border was designated as a Special Native Area (now part of Sengwe Communal Land), and the boundary between Gonarezhou and Matibi No 2 was moved northeast from the game fence to the cattle fence.

In 1964, two controlled hunting areas (Northeast and Southwest Corridor and the Guluene-Chefu Corridor) were established as part of the Tsetse fly control measures. Hunting in these two areas was terminated in 1970. In 1967, a portion of Gonarezhou National Land was declared a game reserve and in 1968, land between the save and Runde rivers was proclaimed the Lower Lundi (now Runde) controlled Hunting Area. The latter area was reserved as a restricted hunting area of distinguished visitors of the state, an action that was strongly criticised by the Wildlife Commission in 1969. The area reverted to Gonarezhou National Land in terms of the land Tenure Act of 1970. Malipati Safari Area and Manjinji Pan Sanctuary were designated as game reserves in 1968.

Further minor changes to the park boundary were made in the 1980's when the Veterinary Department erected Foot and Mouth disease control fences around the park to prevent buffalo from occupying the same land as domestic livestock. These changes have not been gazetted.

Figure 5: Establishment of Gonarezhou

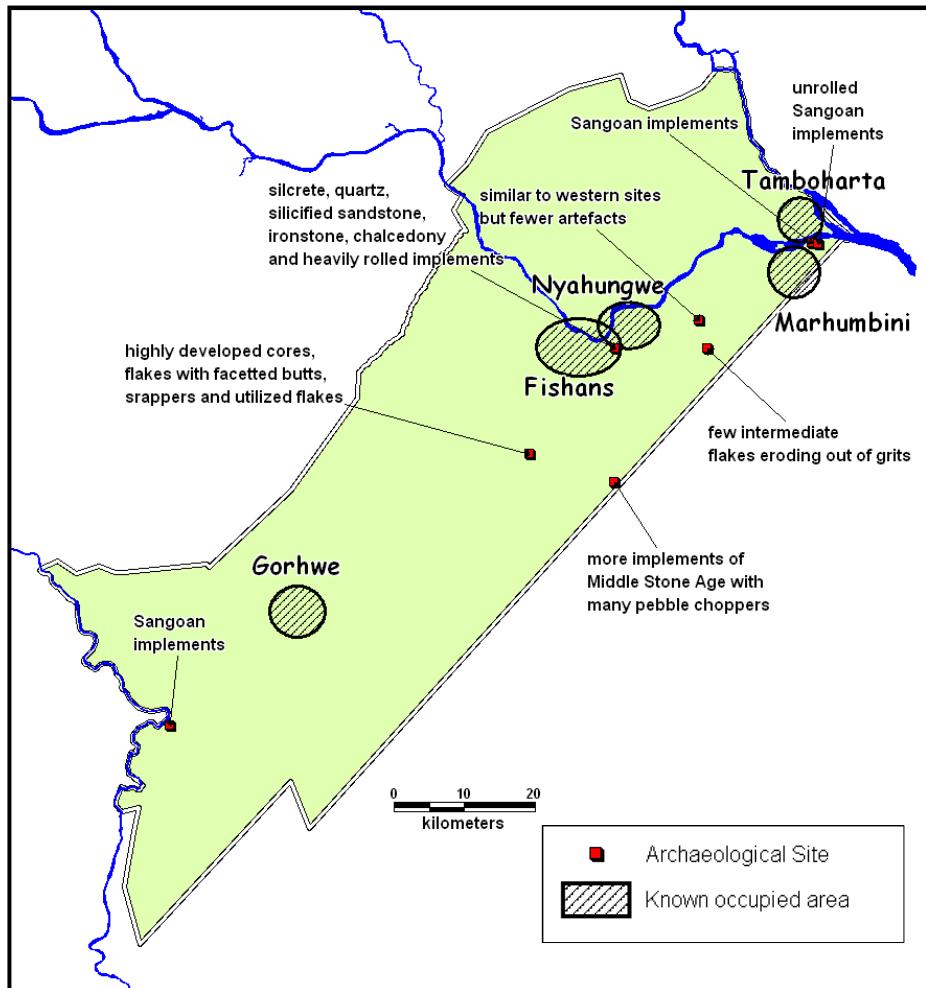


2.3.2 Human Use Prior to Proclamation

Recorded archaeological sites are confined to a small number of medium and late stone age sites found during a 1964 survey of the Save and Runde river valleys (Cook, 1964). No fossils have been found in the Gonarezhou (Lister, 1987), although they might occur in the Malvernia sandstone beds.

Figure 6: Archaeological sites and occupied areas

Most of what is now Gonarezhou was unoccupied, but small groups of Hlengwe people (commonly known as Shangaan, a term loosely applied to Nguni, Hlengwe or Shona inhabitants of the Southeast Lowveld) lived in the park along the Mwenezi, Save-Runde rivers. The pre-colonial Hlengwe economy was based on hunting, gathering, fishing and trading. Crop production was limited by frequent drought to production of small grained cereals in a system of shifting dryland agriculture. Vegetable crops were produced in riverbank gardens. There were probably few if any domestic livestock because of tsetse fly. In drought years, a wide variety of wild plants were used to supplement crops.



Colonial administration reduced the area of land available for hunting, fishing and gathering, there was decline in established patterns of trade. A large segment of the male portion of the population became migrant labourers particularly in South Africa. People were removed from the park area in 1968.

There are a few records of sites occupied by leaders, of the Shangaan community prior to the creation of the Park and oral history held among park staff has identified a number of sites where traditional hunting, fishing and rain making ceremonies were conducted.

2.4 PHYSICAL FEATURES, DRAINAGE, GEOLOGY AND SOILS

2.4.1 Physical Features

The landscape is scenic as a result of various sandstone incisions. For instance, the cretaceous sandstones form a plateau that is incised by the Mwenezi River in the southwest, the Save and Runde rivers in the north east, and to a lesser extent, the Guluene-Chefu in the centre. The spectacular Chilojo Cliffs are more than 180m high and are also a result of the river incision of the sandstones. Red Hills in the north are another result of sandstone incision by the Mwenezi. Perennial and temporal Pans are also a common feature of the sandstone plateaus. Steep rocky gorges with falls and rapids characterize the banks of the Save and Runde rivers.

Noticeable peaks in the north are the Makamandima (578m) and Mutandahwe (571m) and in the south is Nyamtongwe (516m). The Save Runde junction is 165m above Cape Town at sea level and is the lowest point in Zimbabwe.

Figure 7: Relief of Gonarezhou

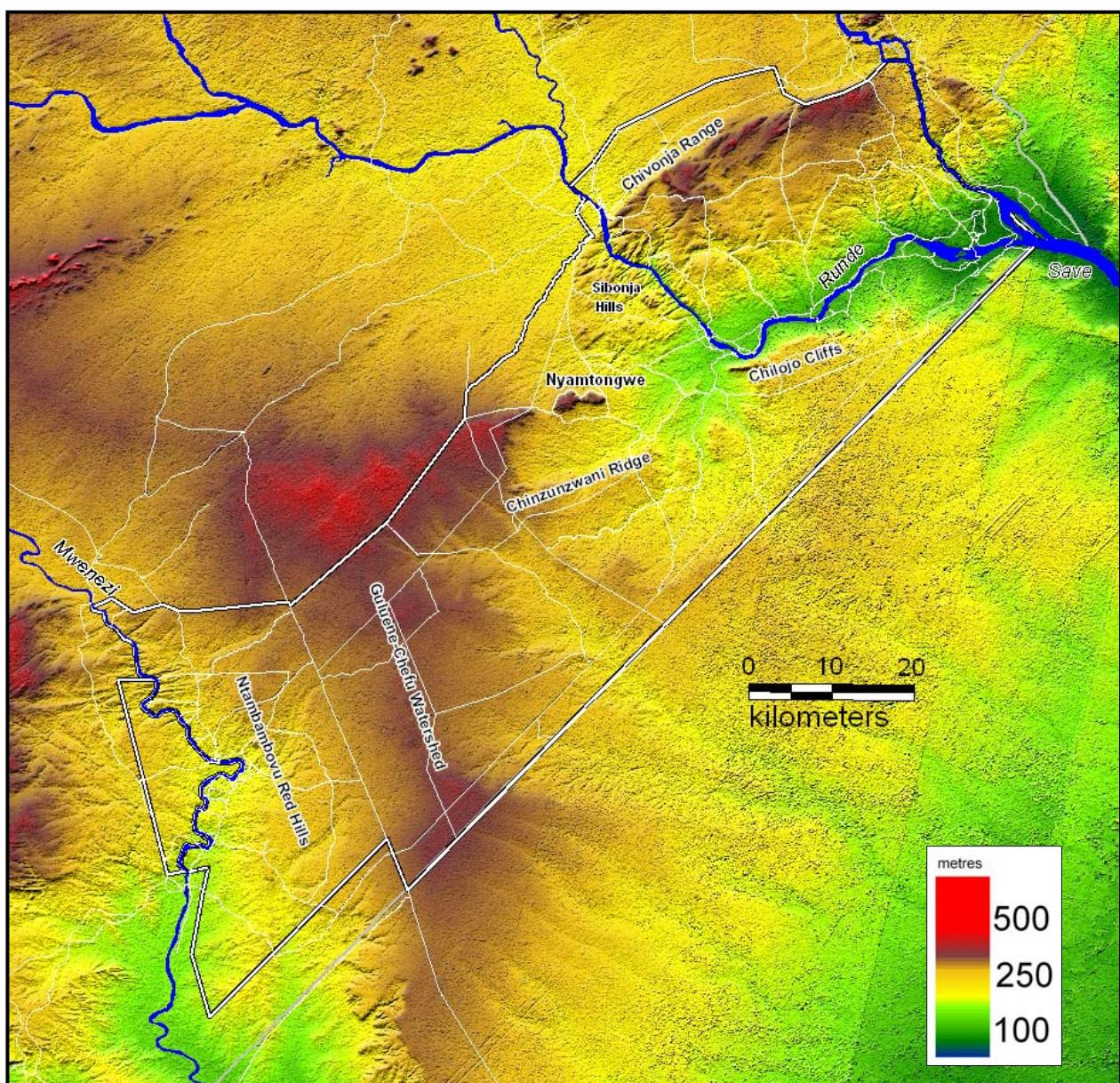
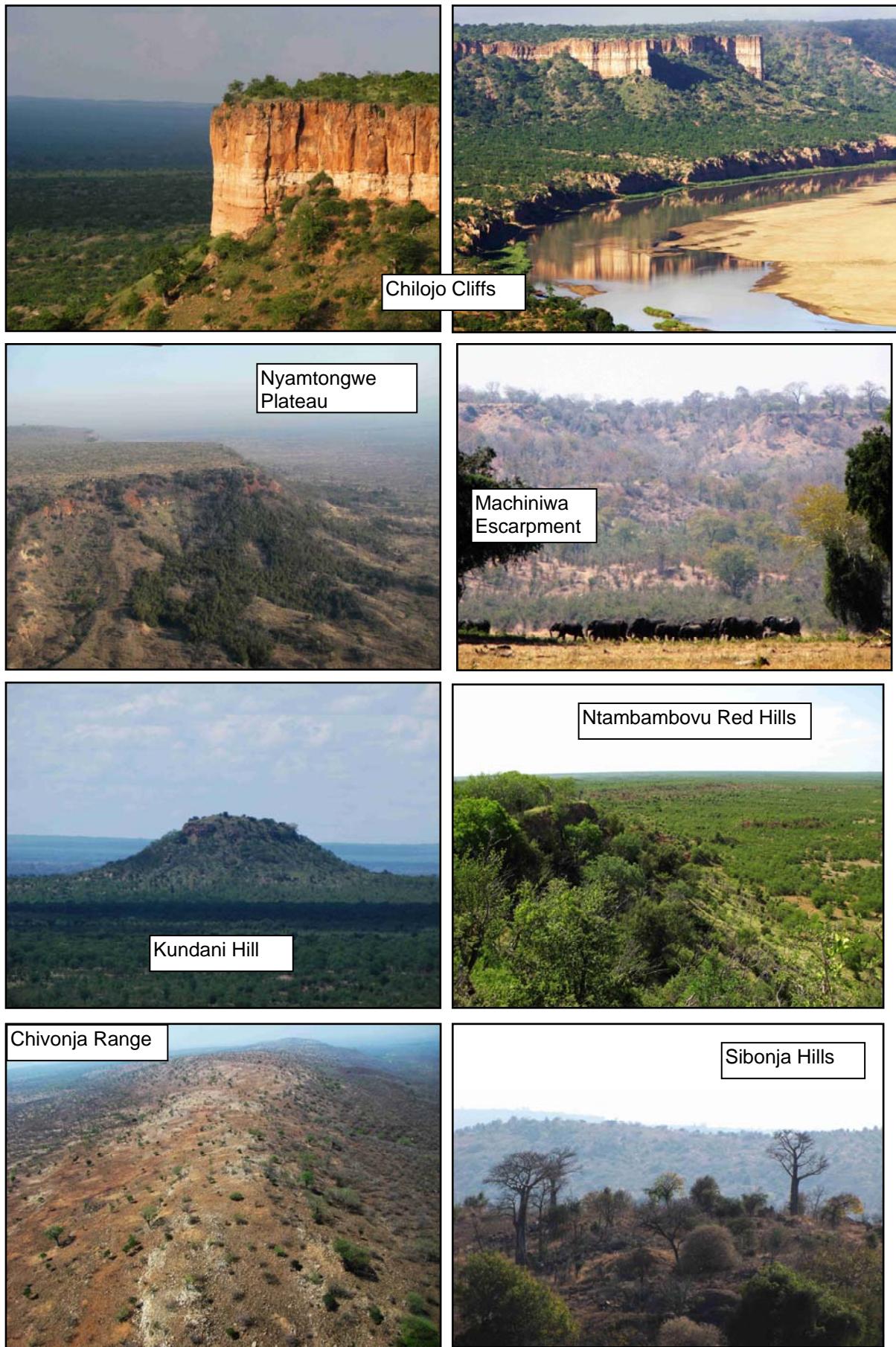


Figure 8: Some physical features of Gonarezhou



2.4.2 Drainage – Rivers and Pans

2.4.2.1 Rivers

There are four main internal drainage basins in the Gonarezhou – Save, Runde, Guluene/Chefu and Mwenezi. The Save and Runde rivers all drain into the sea via the Save and the Guluene and Mwenezi basins are part of the greater Limpopo catchment.

Table 4: Characteristics of the four main drainage basins in Gonarezhou		
Basin	Comments	Size (km²)
Save	Small area immediately adjacent to the Save river. No major watercourses. All seasonal. In high flood years connection to Runde through Tambahata Pan. The Save is a perennial river, except in exceptionally dry years.	100
Runde	Largest basin in the park. Numerous tributaries with Pombadzi (north bank) and Mutondwari/Nyavasika (south bank) being the largest. The Runde is a perennial river in most years. Siltation of pools is become a problem in the Runde.	2 700
Guluene/Chefu	Although the Guluene is the longer arm in the park the river is known as the Chefu in Mozambique. Drains into the Banhine swamp before entering the Changane river and ultimately the Limpopo not far from where it meets the sea. All rivers in this catchment area are very seasonal.	1 000
Mwenezi	A series of relatively short rivers draining into the Mwenezi from the central sandveldt areas of the Guluene. The Mwenezi flows have been adversely affected by upstream developments and is currently regarded as a seasonal river with significant siltation problems.	1 200

2.4.2.2 Pans

The pan system in the Gonarezhou is quite extensive. Apart from the two huge pans near the Save/Lunde junction (Tambahata and Machiniwa) there are a number of larger pans which hold water well into the dry season. The most important of these are listed below (Table 5).

Table 5: Larger pans of Gonarezhou			
Northern Area	Central Area	Southern Area	
Chimuwani Chiyambani Chamochinda Marakeet	Gweni Centre Gorwana Lion Gorwe	Mtungwe Nyala Matoya Malihandava Moyavo	Nyamungwe Nyala

Smaller pans are found throughout the park (Figure 10).

Figure 9: Rivers and drainage basins of Gonarezhou

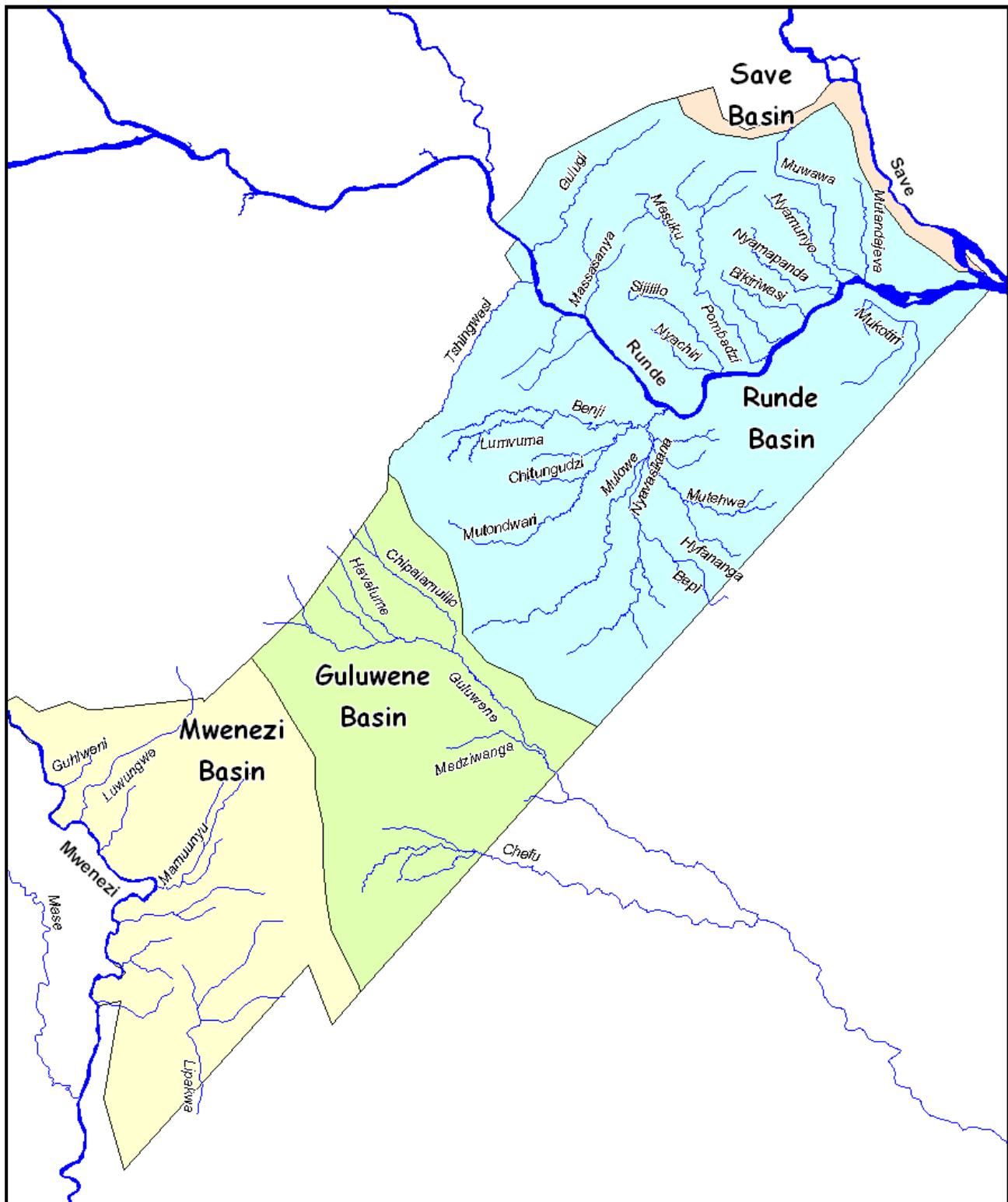


Figure 10: Pans of Gonarezhou

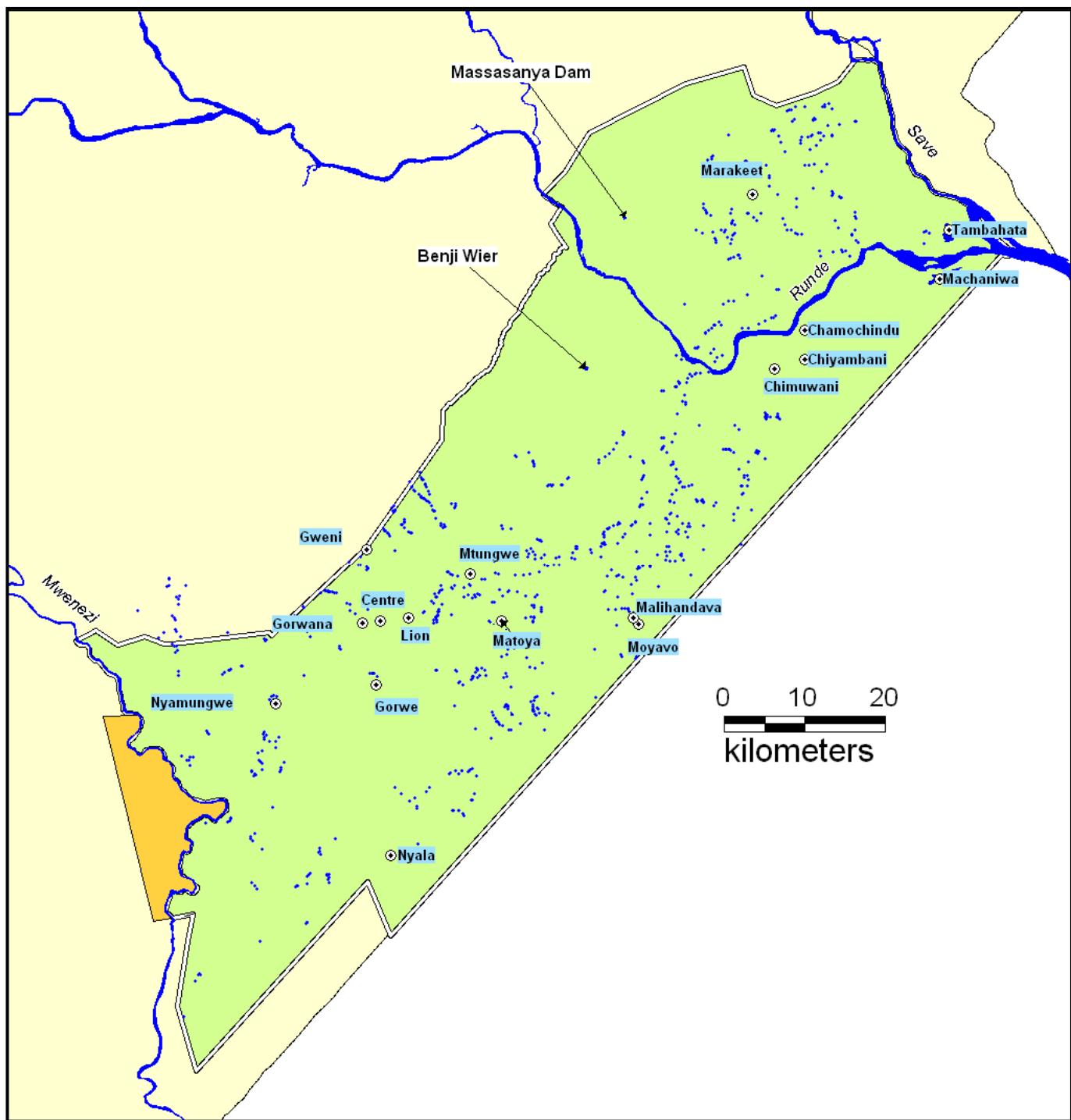


Figure 11: Rivers of Gonarezhou

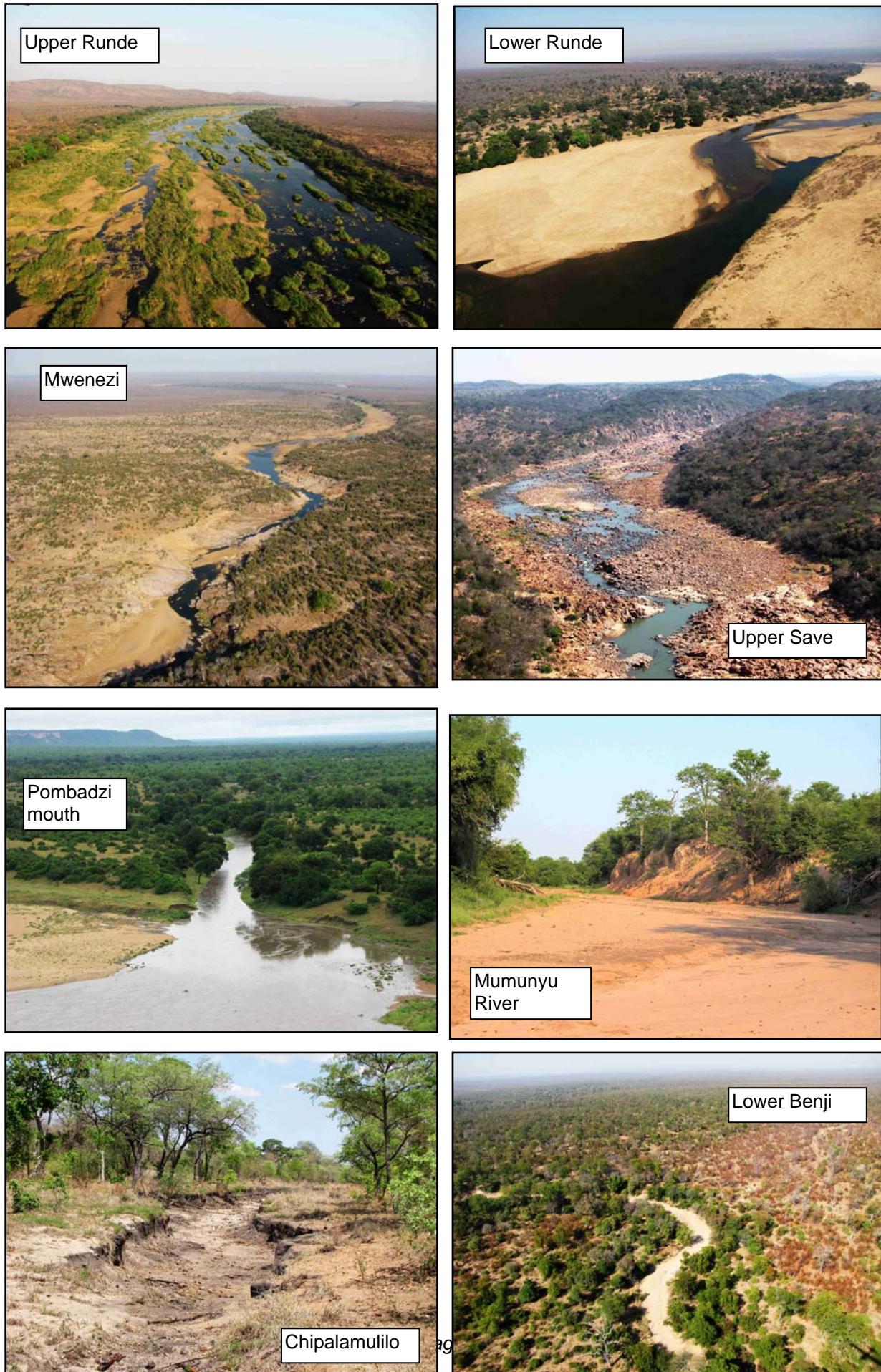
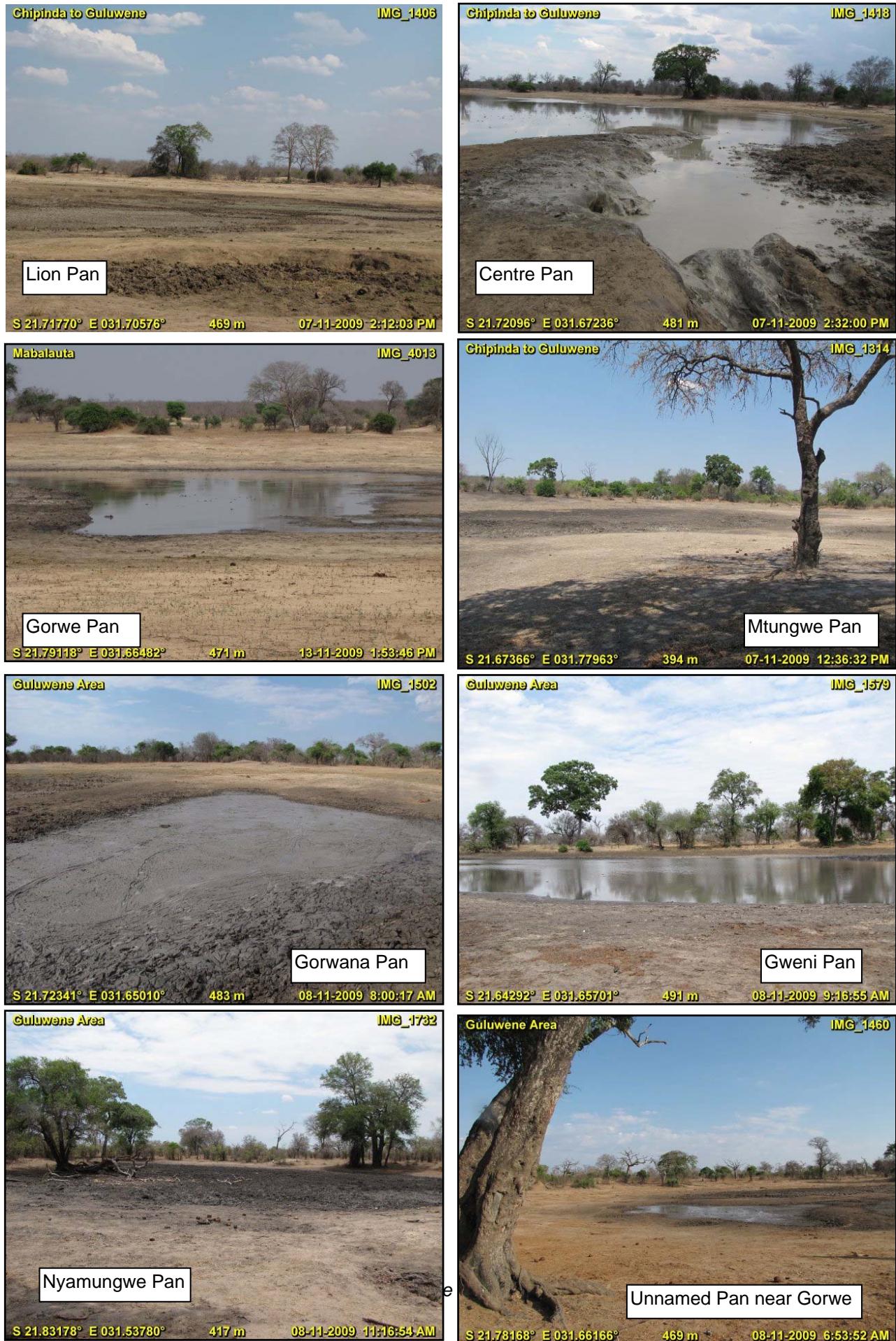


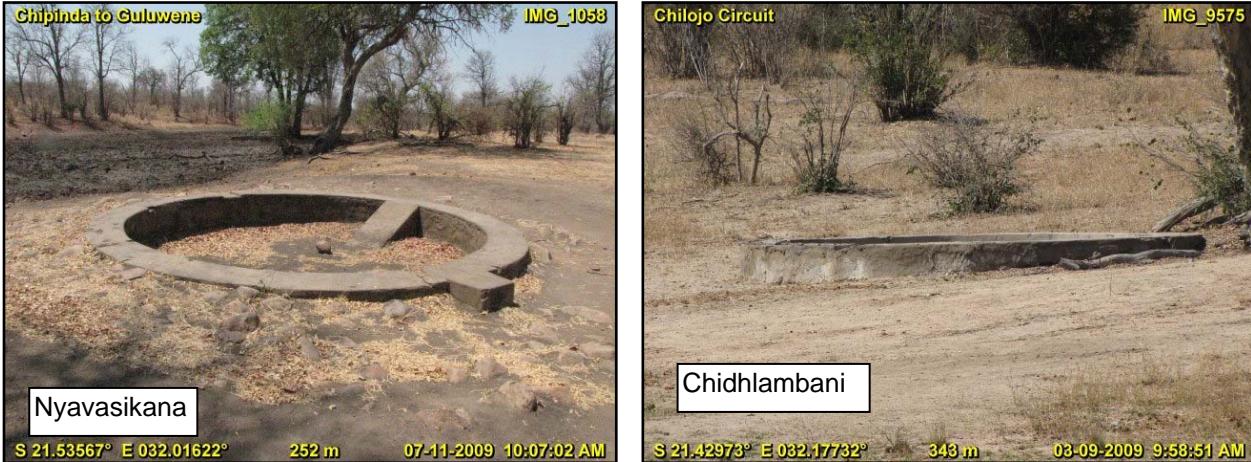
Figure 12: Sandveldt pans in central Gonarezhou



2.4.3 Supplemented Water – Historical and Current

A number of boreholes were drilled in the park with the main intent being to supplement water supplies for game. Several of these supplied pans and waterholes but all have since become non-functional.

Figure 13: Disused water infrastructure



Although the recent policy appears to be that water will not be supplied for wildlife the two weirs in the Massasanya and Benji river remain in place. The Benji area has considerable vegetation damage associated with it.

Figure 14: The two Gonarezhou weirs



The listing of GNP boreholes was obtained from the 1998 management plan and converted to a file for use in the GIS (see map and table on next pages).

Figure 15: Location of boreholes in Gonarezhou

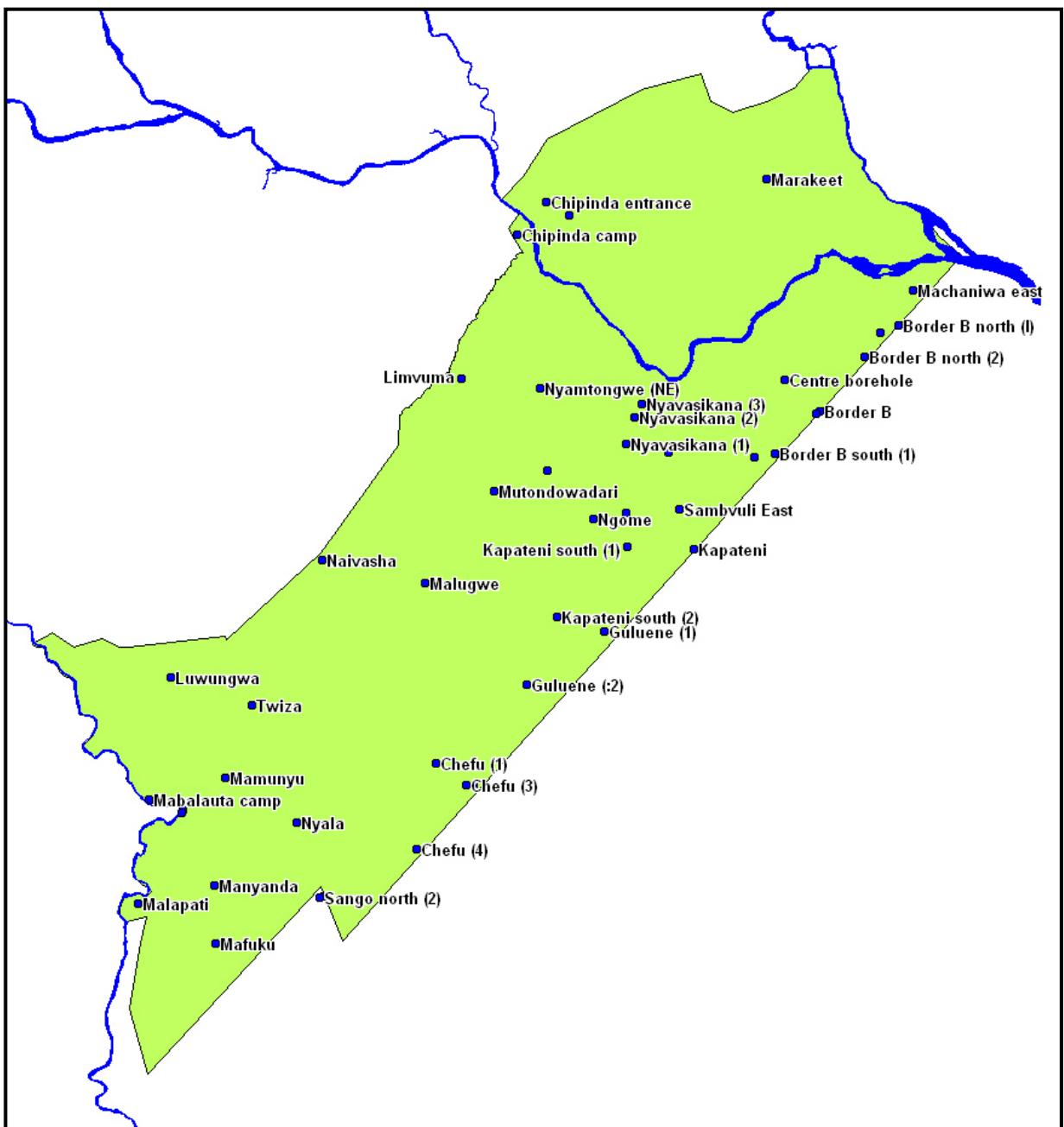
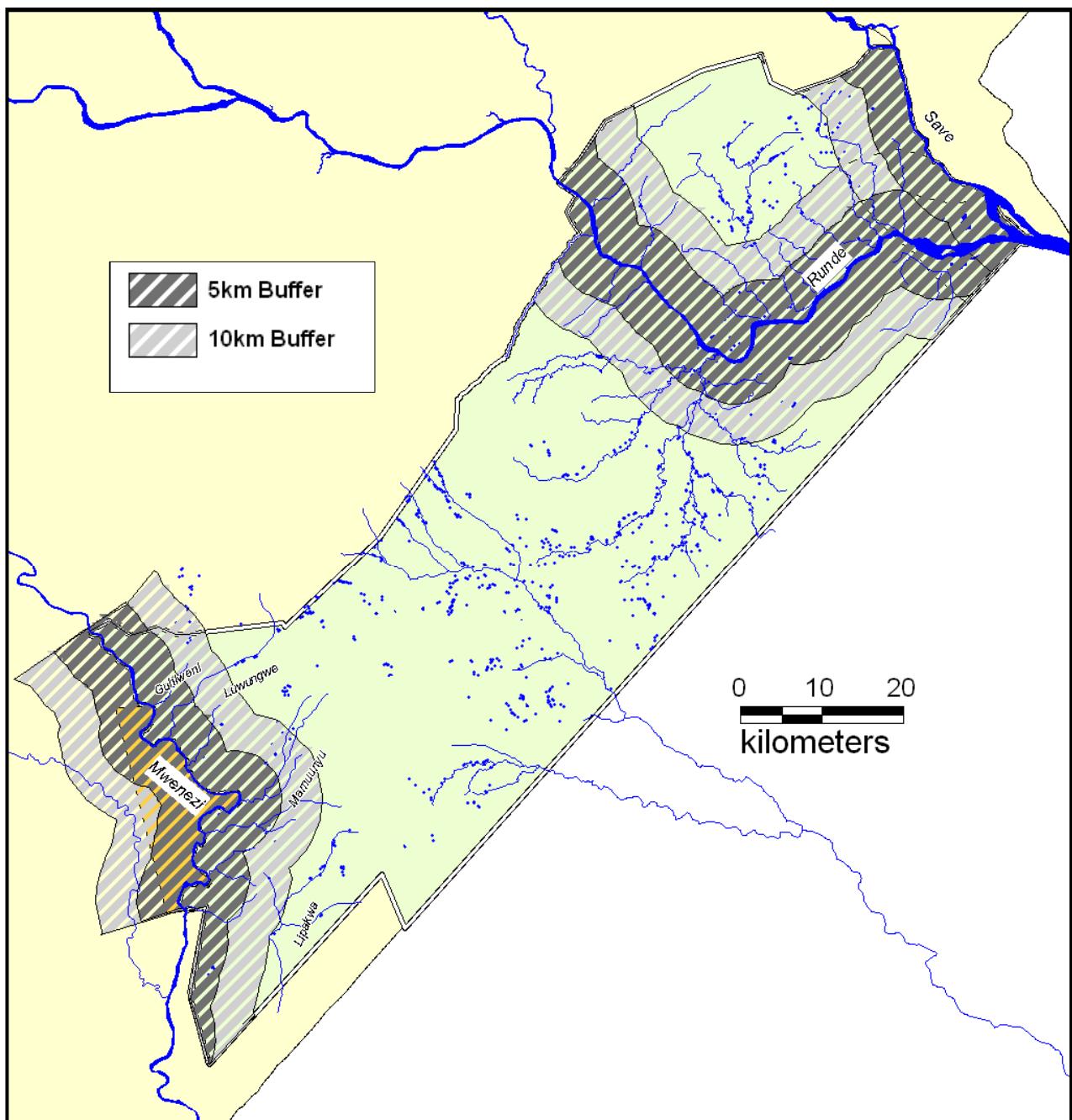


Table 6: Boreholes in GNP – From 1998 Management Plan

Name	Date	Depth	Rest Level	Yield	Comments	Name	Date	Depth	Rest Level	Yield	Comments
Border B	1972	83.8	30.2	1.2	Sealed 1976	Marakeet					
Border B (east)	1969	126.5	51.8	0.8		Nyala					
Border B north (2)	1964	62.8			Sealed 1976	Nyavasikana (3)					
Border B north (1)						Nyavasikana east	1972	91.4	57.9	1.6	Sealed 1976
Border B south (1)						Red Hills	1975	73	Dry		
Border B south (2)	1969	101.8	82.3	0	Sealed 1976	Sambvuli East					
Centre borehole	1969	108.2	79.2	4.1		Sango north (1)	76.8	4.1			Cleaned 1972
Chefu (1)	1964	73.2	27.4	2.4		Sango north (2)	1969	79.3	64	4.6	
Chefu (2)	1964	58.5	21.3	4.6		Swimuwini	1984	85	16	1.4	
Chefu (3)	1974	61	30	2.7		Twiza	0	76.8		4.1	Ex Railways
Chefu (4)	1970	187.5	129.2	1.4	Oil expl.	Chipinda airstrip					
Guluene (:2)	1961					Chipinda camp					
Guluene (1)	1974	94	79	4.1		Chipinda entrance					
Kapateni	1964	45	20.4	5.7	Sealed 1976	Kapateni south (1)					
Kapateni south (2)	1965	15.2	4.1			Limvuma					
Lipakwa (2)						Malugwe					
Luwungwa	1982	47	20	0.91		Mutondowadari	1972	91	42.7	1.2	
Mabalauta camp						Mutondowadari	1972	85.3	39.6	0.9	
Machiniwa east	1986	60	6	10.2		Naivasha	1961	74.7	30.5	0.7	
Machiniwa south						Ngome	1972	91.4	61	1.6	
Mafuku						Nyamtongwe (NE)					
Malapati						Nyavasikana (1)	1972	93	57.9	1.6	Sealed 1976
Mamunyu	1982	90	27	6.13		Nyavasikana (2)					
Manyanda						Sambvuli	1972	150.9	54.9	2.9	Brack

During the height of the dry season much of the wildlife in the park is restricted by access to water. Virtually all of the larger pans dry up and water only remains in the pools in the three large rivers – the Save, Runde and Mwenezi. Approximately 22% of the park will be within five kilometres of water at this time of year and approximately 44% within 10 kilometres of water at this time of year. This concept is represented graphically in Figure 16.

Figure 16: Dry season water bottlenecks



2.4.4 Drainage - Catchment Considerations

All rivers draining into the Gonarezhou have been affected by damming and irrigation developments upstream. The Save and Runde catchment areas are almost the same size (between 42,000 and 44,000 km²) while the Mwenezi is about 30% the size of the two larger rivers (nearly 14,000 km²). The Muturikwe and Chiredzi rivers have been dammed and form part of an extensive irrigation project for sugar in the south-east lowveld (Table 7).

Table 7: Catchments, dams and irrigation on rivers draining into Gonarezhou				
Main Catchment	Sub-Catchment	Catchment Area	Existing Dams/Irrigation	Proposed Dams/Irrigation
Mwenezi	Mwenezi	13,680	Manyuchi	Dinhe, Chikombedzi
Runde	Runde	22,600		Shavi
	Tokwe	8,500		Tokwe-Murkosi/Biofuels
	Muturikwe	7,800	Muturikwe, Bangala, Triangle, Chiredzi	
	Chiredzi	4,000	Manjirenji, Mkwasine	
	<i>Sub-Total</i>	<i>42,900</i>		
Save	Mkwasine	1,500	Mkwasine	
	Turgwe	3,000		
	Devure	8,200		Matezva
	Save	23,760	Chisumbanje, Middle Save	Marovanyati
	Odzi	7,800	Osbourne	
	<i>Sub-Total</i>	<i>44,260</i>		

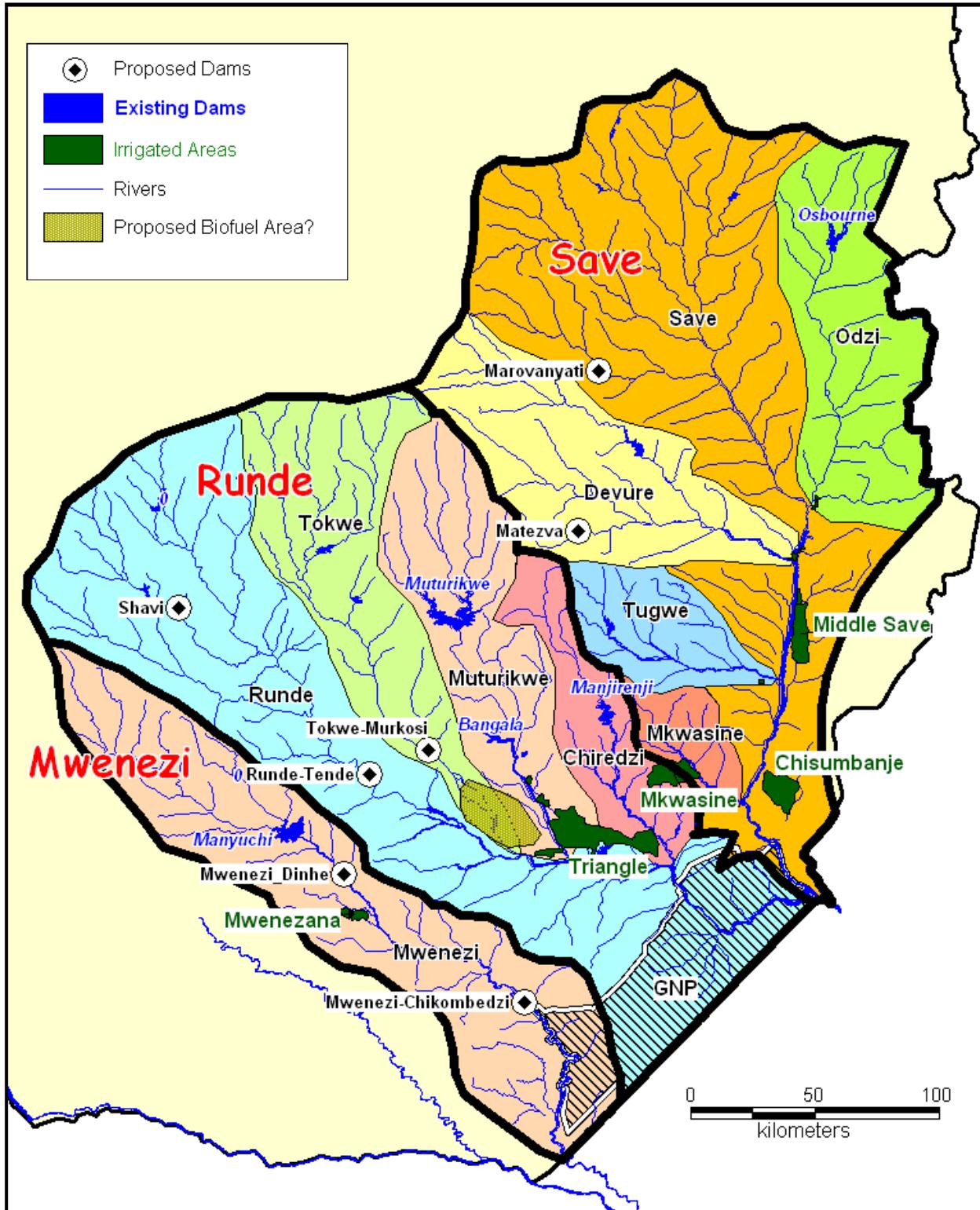
Figure 17: Sugar production adjacent to Gonarezhou NP



Table 8: Dams and irrigation in Save, Runde and Mwenezi – Existing and planned							
Status	Name	Capacity (mill m ³)	Area Irrig ha	Status	Name	Capacity (mill m ³)	Area Irrig (ha)
Current	Manyuchi	309	2,000	Near Future	Tokwe Mukorsi	1,800	25,000
	Muturikwe	1,376			Marovanyati	50	1,249
	Bangala	126			Matezva	7	56
	Manjirenji	285			Shavi	6	76
	Osbourne	400			Runde Tende	1,050	20,000
Future Save	Condo	3,565	5,000	Future Runde	Lubongo	168	
	Chitowe	2,660	25,000		Dinhe		
	Dombotombo	450	40		Chikombedzi		
	Rasa	150	2,000				
	Mkwashine	105	40,000				
	Causeway	75	2,000	Future Mwenezi			
	Mirror	23	1,000				
	Eastbourne	20	35,700				
	Mukazi	18	25,000				

The Ecology Section of Gonarezhou has initiated a river health monitoring programme but study sites are currently only in the park. There is a need to form partnerships with other land authorities and users to broaden the extent of this programme.

Figure 18: Catchments, dams and irrigation schemes in the south-east lowveld



Note: Chisumbanje is now also being developed for biofuels.

2.4.5 Geology and Soils

The major geological formations exposed in Gonarezhou are in sequence of chrono-geo time scale. Jurassic basalt predominantly along the north western boundary with a small exposure in the Mwenezi Valley. A variety of granophyres and granites of the late Jurassic, predominantly in the north of the park, with small exposure in the upper Guluene catchment, and a more extensive area in the Mwenezi valley which extends into the Malipati Safari Area. Cretaceous sandstones mark the top sequence and extend over most of the southern two-thirds of the park. Alluvial terraces formed on the banks of the lower (below the 200m contour) reaches of the Save and Runde, and to a lesser extent on the Mwenezi river at about 240m, during the Pleistocene and recent times (Figure 19).

The soils are moderately deep to shallow self-churning black clays that are highly calcareous. On hill slopes basalt soils are lighter textured reddish lithosols. Granophyres and granitic strata, weather to produce moderately shallow to shallow, dark reddish grained, light to medium textured soils. On level sites the sandstone weather to form deep regosols with little or no prolific differentiation. The regosols are highly permeable, of low nutrient status, and high pH. In low-lying areas along drainage lines, soils derived from sandstone are heavier textured and at the base of steep slopes are medium textured and gravelly. Figure 20 shows the soil map of GNP. *Regosol group*: Deep sands with less than 10% silt+clay above 2 metres; very little or no reserves of weatherable. *Siallitic group*: Soils in which the clay fractions are predominantly illite or illite- montmorillonoid mixed-layer. *Lithosol group*: Very shallow soils, less than 25 centimetres deep, over weathering rock or gravel.

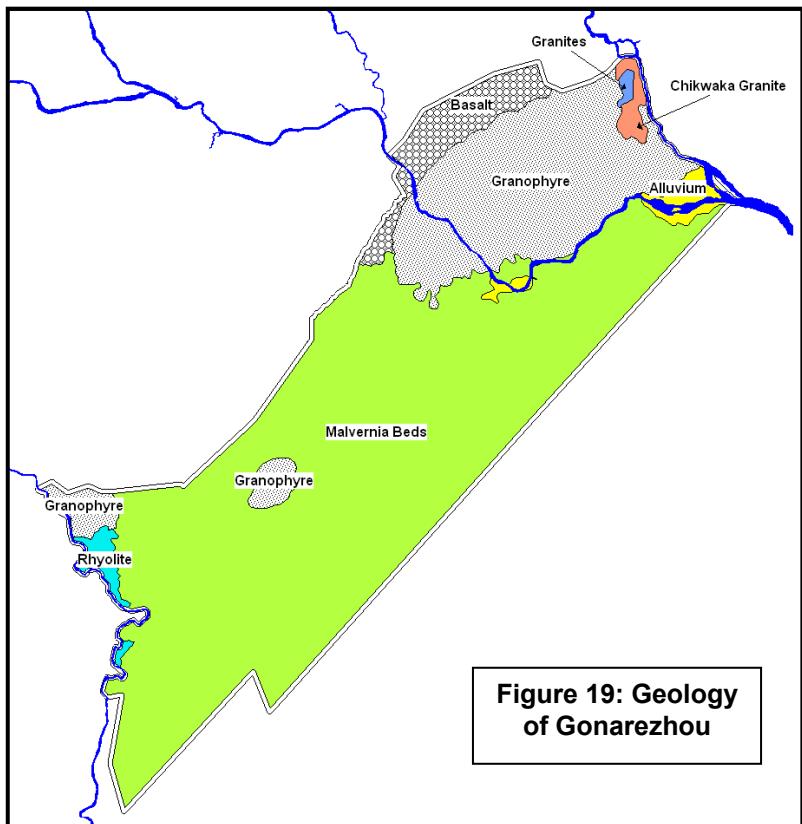


Figure 19: Geology of Gonarezhou

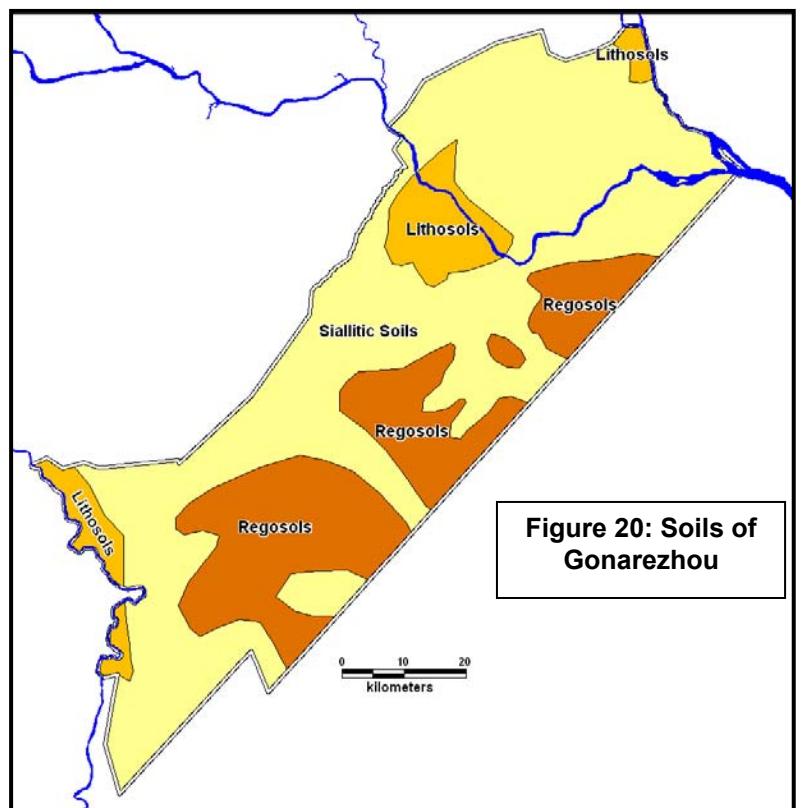


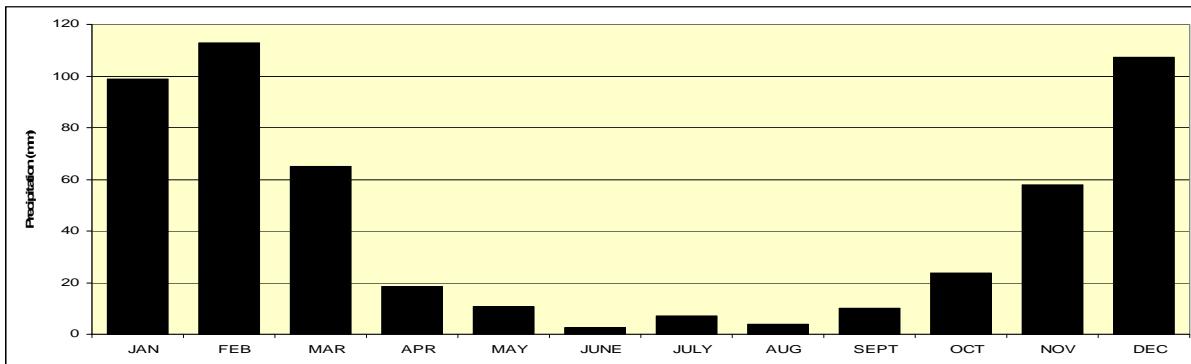
Figure 20: Soils of Gonarezhou

2.5 CLIMATE

2.5.1 Rainfall

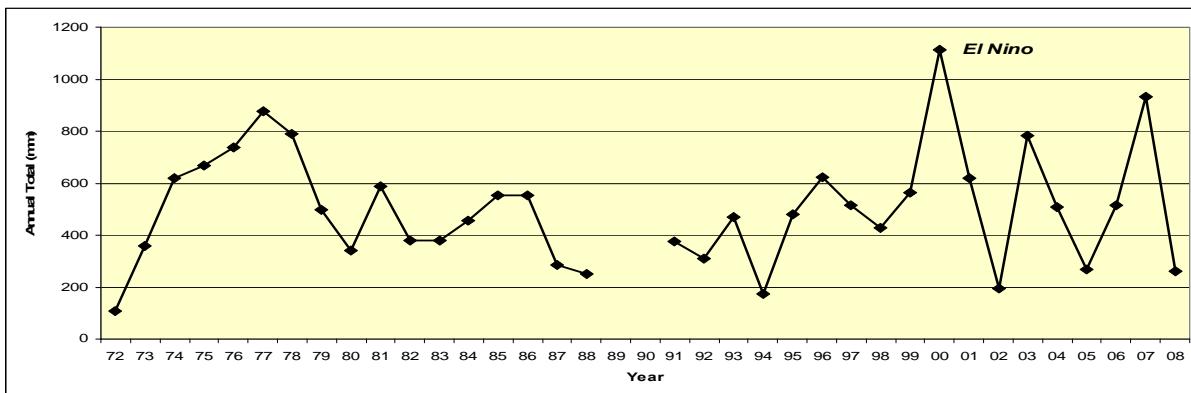
The mean annual rainfall measured at Chipinda Pools is 466 mm (Gandiwa and Kativu 2009), most of which falls between November and March (Figure 21).

Figure 21: Mean monthly rainfall at Chipinda Pools



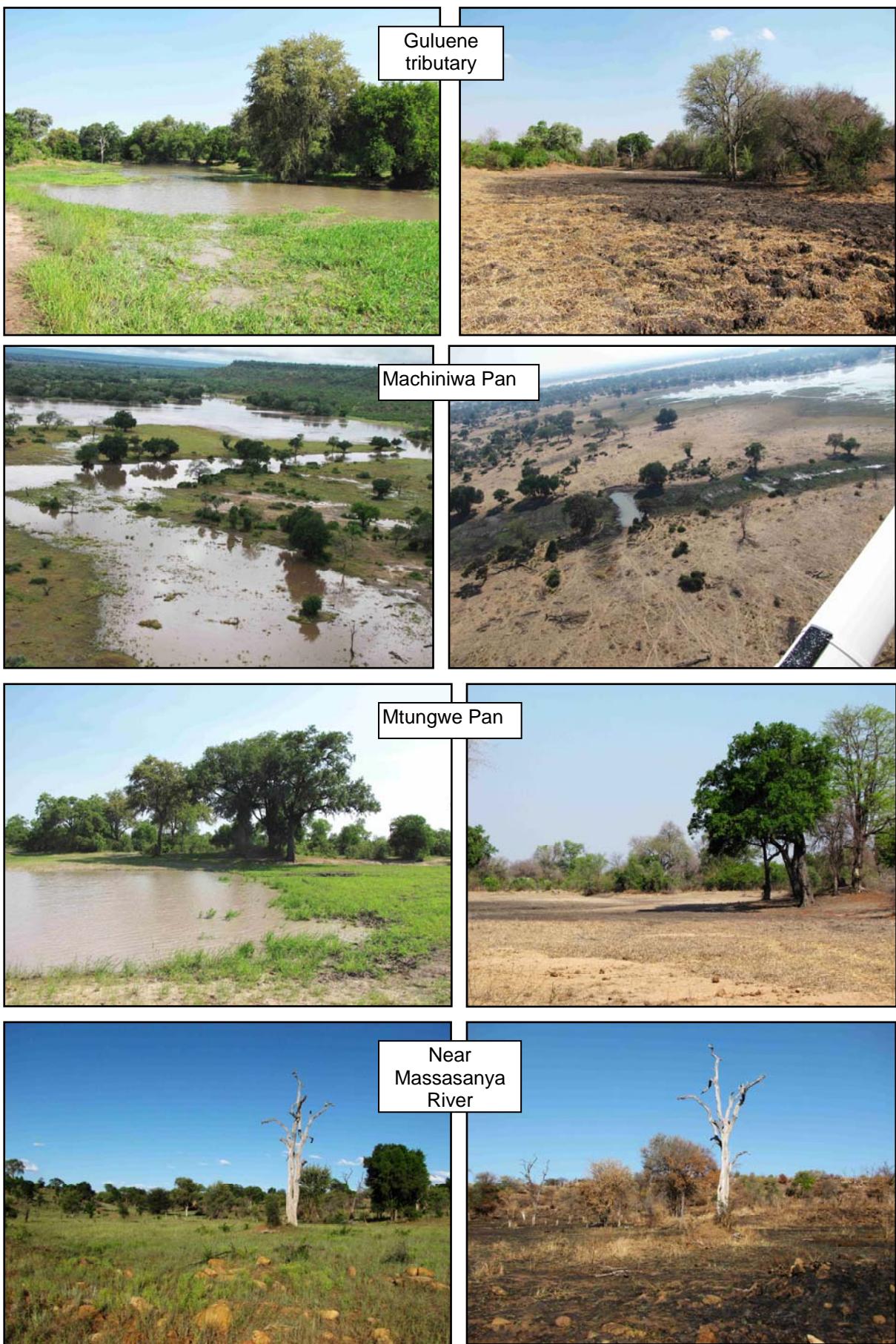
Two severe droughts have occurred since 1961 and the 1991/92 drought led to the death of large numbers of wildlife.

Figure 22: Total annual rainfall at Chipinda Pools



Temperatures range from 27 °C in June to 36 °C in January. The park experiences a short dry winter season in June and July with temperatures below 30 °C and a hot wet summer season from November to April when temperatures exceed 40 °C. The remaining months are hot and dry periods which precede and follow summer rains.

Figure 23: Seasonal changes at selected spots in Gonarezhou

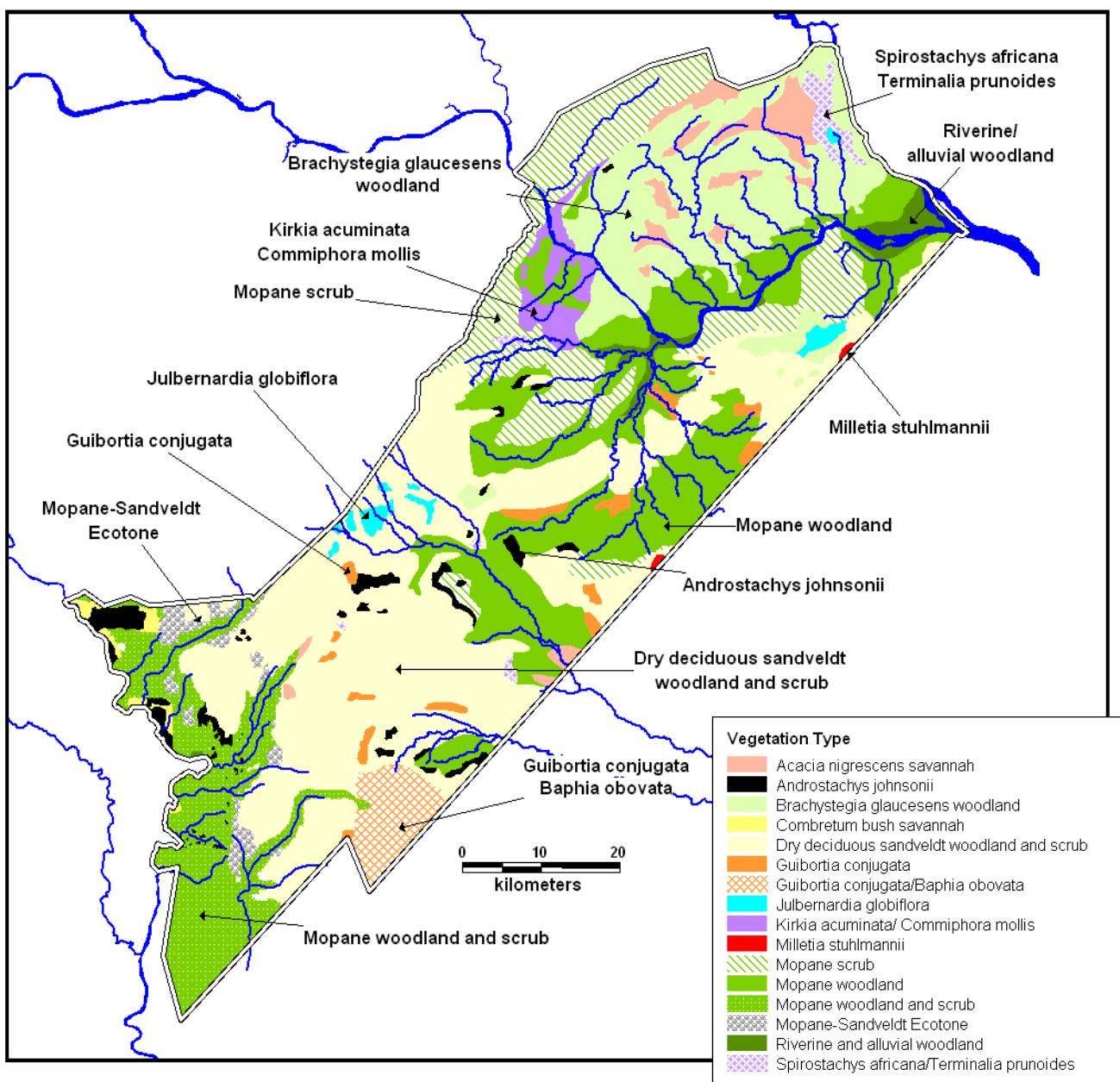


2.6 VEGETATION

2.6.1 Vegetation Description

The vegetation surveys in the Gonarezhou were carried out nearly 40 years ago and there have been some significant changes in the vegetation since this time, notably north of the Runde River. In the early 1970s much of the upland areas north of the Runde were covered by *Brachystegia glaucescens* woodlands but much of this has since disappeared. The causes of this are unclear but it appears that elephants, fire, climate variability and drought may have played a part. In addition, some other vegetation types (e.g *Androstachys johnsonii*) are under threat, with fire being a major driver of the change.

Figure 24: Vegetation types in the Gonarezhou National Park
(Data from Sherry, Farrell etc)



The vegetation of Gonarezhou is typical of the semi arid *Colophospermum mopane* zone (Rattray and Wild, 1961) and is predominantly dry deciduous savanna woodland of varying types (Wild and Barbosa, 1968). Vegetation communities have been described by Wild (1955), Farrel (1968) and were mapped on the basis of aerial photography and described in more detail by Sherry (1970).

Physiognomic types are woodland and woodland savanna (59%), scrubland (40%) and savanna grassland (1%). The plant checklist for the park includes 924 species from 118 families and 364 genera, with 265 trees, 310 shrubs, 55 woody climbers and 137 grasses. The list is regarded as incomplete as no systematic survey has been undertaken.

The more extensive plant communities, their associations with landscape units in the Park, and recent modifications by Tsetse control operations, fire and large mammals, are described below.

- 1. Mopane woodland.** The type is dominated by *C. mopane*, covers approximately 40% of the park, usually on heavier textured soils derived from all geological types in valley floors. Community composition ranges from pure mopane woodland to a variety of mixed woodland types.
- 2. Mopane scrubland.** Primarily an edaphic community of multi-stemmed *C. mopane* apparently caused by restricted drainage and root pruning on self churning vertisols. In some sites, mopane scrubland may be a secondary community caused by fire and large herbivores. The community commonly occurs in the major river valleys.
- 3. Mopane - *Combretum apiculatum* woodland.** This mixed type occurs on shallow rocky sites on the ecotone between the sandstones and other geological types.
- 4. Dry deciduous sandveld woodland and scrub.** A species rich community on deeper sandy loam soils of the watershed between Mwenezi and Runde rivers. This community is regarded as a secondary type caused by tree thinning to eradicate Tsetse fly in the 1960's, and subsequently maintained by high fire frequency and elephant densities.
- 5. *Brachystegia glaucescens* woodland.** Occurs on the southern slopes of the Chionja range and has been considerably thinned by Tsetse operations, fire and elephant. In 1959, *B. glaucescens* formed a closed canopy woodland, in stark contrast to the present situation, where a large proportion of standing *B. glaucescens* is moribund. There was an extensive die-off in the drought of 1991/92.
- 6. *Julbernardia globiflora* woodland.** Typically occurs as round patches of nearly closed canopy woodland on Cretaceous sandstones at altitudes above 490 m. Some of these woodland patches were cleared by Tsetse eradication teams.
- 7. *Androstachys johnsonii* forest to thicket.** This dry evergreen type is generally associated with the scarp slopes of the Cretaceous sandstones. It is vulnerable to fire and elephant damage, which results in a stunted and denser growth. Some thickets were eradicated with bulldozers by Tsetse eradication teams.
- 8. *Kirkia, Commiphora* and *Adansonia* open woodland.** This community occurs below the 450 m contour on granophyre and granitic hill sides. This community has been extensively thinned by elephant.
- 9. *Guibertia conjugata* woodland.** A 12 - 15 m tall woodland on Cretaceous sandstones with a fairly rich understorey. This community grades into the Mopane - *Combretum apiculatum* woodland.
- 10. Riparian and alluvial woodland.** This species rich type occurs on the alluvial terraces of the lower reaches of the major rivers. Trees reach heights of up to 25 m. There is a distinct shrub understorey with a variety of lianes and a herbaceous layer of shade tolerant species. Cultivation by the Hlengwe people who formerly inhabited the park modified some areas of these woodlands. More extensive areas were destroyed in the 1950's and 60's as part of the Tsetse fly control operations. Further degradation and/or maintenance of secondary communities is promoted by large populations of elephant, hippo and impala.

Table 9: Occurrence and status of plant species in Gonarezhou that are rare or have a restricted distribution

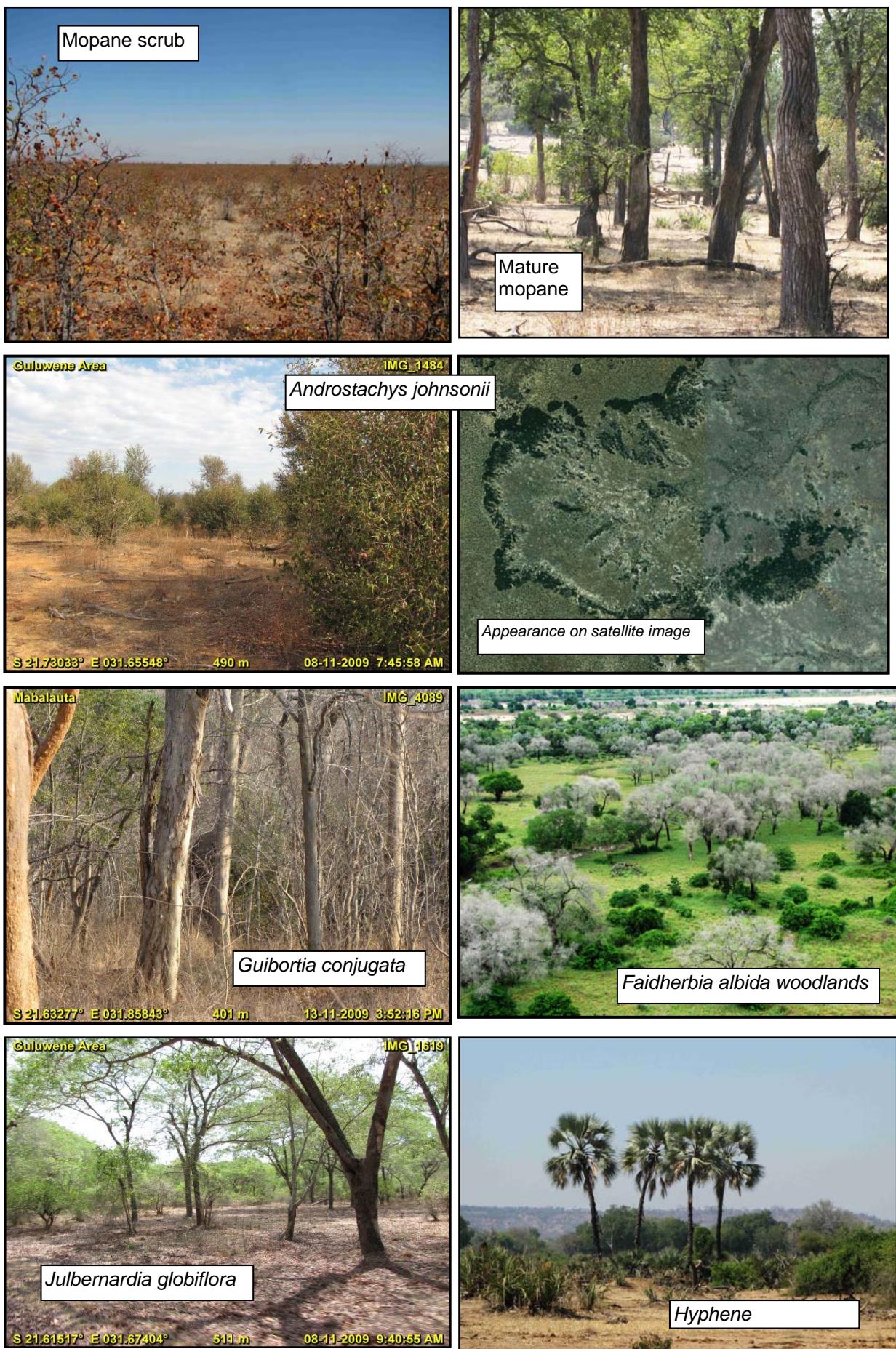
Species	Status
<i>Adenium obesum</i> (Forsk) Roem et Schult var. <i>multiforum</i> Klotzsch	common
<i>Euphorbia davyi</i> N.E. Br	rare
<i>Euphorbia decidua</i> Bally and Leach	rare
<i>Euphorbia momoralis</i> R.A. Dyer	rare
<i>Euphorbia wildii</i> Leach	rare
<i>Aloe arborescens</i> Miller	common
<i>Aloe excelsa</i> Berger	common
<i>Aloe littoralis</i> Baker	common
<i>Aloe marlothii</i> Berger	rare
<i>Aloe sessiliflora</i> Pole Evans	rare
<i>Androstachys johnsonii</i>	common
<i>Alsophila dregei</i> Tryon	common
<i>Chlorophora excelsa</i>	rare
<i>Pachypodium saundersii</i> N.E. Br	rare

Notable individual trees

Milicia excelsa at Nyahungwe

Khaya nyasica at Chamuluvati

Figure 25: Vegetation types of Gonarezhou



2.6.2 Elephants and Vegetation

The relationship between elephants and vegetation in Gonarezhou has been a troubled one. Research has indicated that the “ideal” carrying capacity for elephants in the Gonarezhou is somewhere around 3,000 animals. This is the level at which the park vegetation can sustain the elephants without significant change occurring. Estimates of well over 5,000 elephants in the early 1970s led to the initiation of a culling programme aimed at reducing the numbers back down to the 3,000 mark and there are more details on this subject in Section 2.7.5.1.

The last elephant removal exercise took place in 1993 and in the preceding 20 years over 5,500 elephants had been removed from the Gonarezhou by management. In 1993 a further 1,500 are thought to have died from drought and a further 1,000 may have succumbed to poaching – so in total around 8,000 elephants. Despite all these removals the population in 2009 was estimated to be in excess of 9,000 animals. The current vegetation survey indicates that significant areas of the park are disturbed and it is possible that much of this disturbance could be due to elephants. Some authorities believe that the elephant will be the biggest management challenge for the Gonarezhou in the future.

Figure 26: Elephant damage – Machiniwa area



However, control and management of mega-herbivores such as elephant is a complicated subject and inextricably linked with human population growth and changing land use. The debate is not concluded and many believe that elephant management should follow a non-interventionist approach which would allow natural cycles to control elephant numbers. The most famous example of this was in Tsavo NP in Kenya in the 1970s where elephants were instrumental in transforming the park vegetation before the population crashed.

2.6.3 Exotic Plants

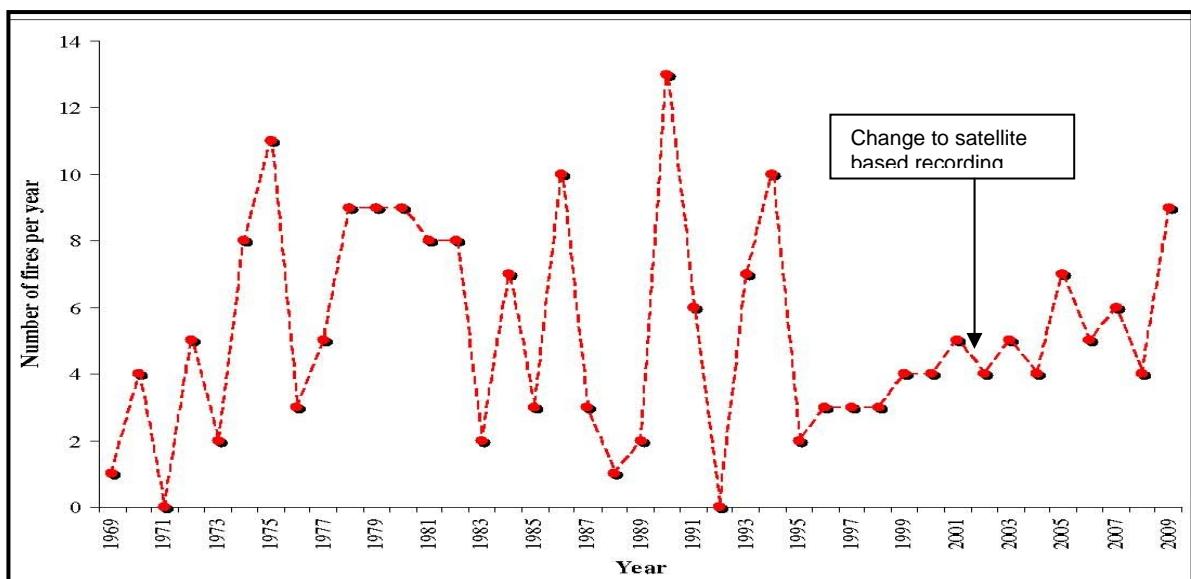
Although one study (Chatanga, 2007) indicates that *Lantana camara* could be a significant problem in the northern part of the park, the recent vegetation study (still ongoing) suggests that alien invasives are not a significant problem in the park. It is important to clarify the situation to ensure that appropriate measures can be taken if required. The Chatanga study indicated that *L. camara* was altering soil properties which would make recovery of these areas more problematic. Work on other invasives is ongoing and concern has been expressed about the rate of spread of invasive species in the riverine areas (see Table 10).

Table 10: Relative abundance of invasive species in two different areas			
Species	Abundance	Species	Abundance
<i>Bidens pilosa</i>	172	<i>Acanthospermum hispidum</i>	659
<i>Acanthospermum hispidum</i>	119	<i>Bidens pilosa</i>	374
<i>Portulaca orelacea</i>	26	<i>Xanthium strumarium</i>	360
<i>Ipomea purpurea</i>	16	<i>Datura stramonium</i>	279
<i>Sesbania bispinosa</i>	16	<i>Lantana camara</i>	69
<i>Berula erecta</i>	12	<i>Senna occidentalis</i>	68
<i>Hibiscus micranthus</i>	10	<i>Calamintha grandiflora</i>	18
		<i>Ipomea purpurea</i>	11
		<i>Berula erecta</i>	10
		<i>Ricinus communis</i>	8
		<i>A spinosum</i>	4
		<i>Melia azedarach (syringa)</i>	1

2.6.4 Fire

Uncontrolled fires are a common occurrence in the Gonarezhou. Almost all of these fires are started by illegal hunters within the park. Other fires start outside the park and will move in if not stopped. Very few fires have been started by natural causes. The number of fires recorded is variable but records from 1969 indicate that there are an average of five large fires per annum (Figure 27).

Figure 27: Number of fires recorded in the Gonarezhou



On average, an estimated 22% of the park is burnt annually with between 100 and 4,000 km² being burnt in individual years (Figure 26). The worst burn in 1978 meant that 80% of the park had been burnt. The extent of the area burnt was found to correlate strongly with the mean annual rainfall for the preceding rainy season.

Figure 28: Extent of burnt area in Gonarezhou

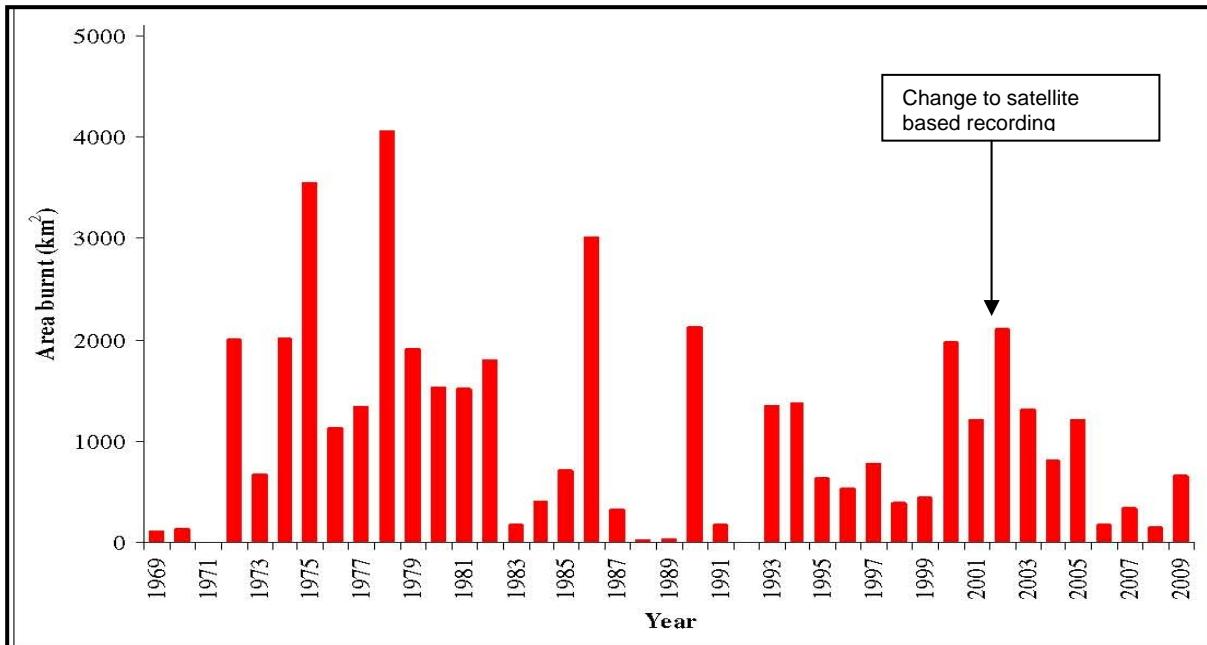
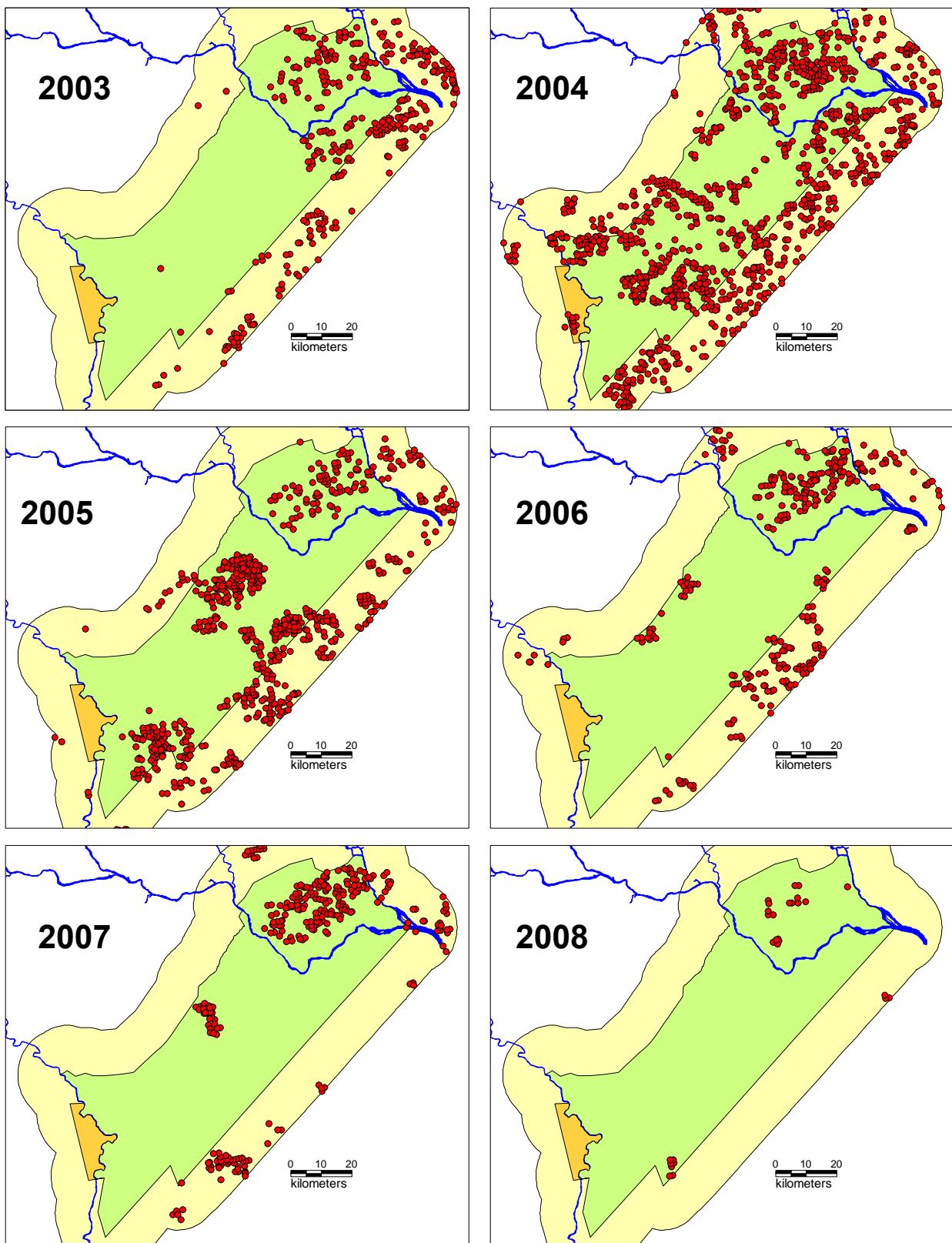


Figure 29: Gonarezhou fires



Since 2003, fires in the park have been recorded via satellite and the spatial extent between 2003 and 2008 is shown below (Figure 30). The Pombadzi area is an area of concern and the vegetation here has exhibited a significant change over the last 30 years.

Figure 30: Spatial extent of fires recorded in Gonarezhou and surrounds



2.7 WILDLIFE POPULATIONS

2.7.1 Invertebrates

The presence of tsetse fly in Gonarezhou has played a significant part in its development. In an effort to safeguard the cattle industry to the north of the park the Gonarezhou was subjected to a variety of control measures against the fly which included vegetation clearance, fencing and the shooting of wildlife. More details are found in Section 3. Today tsetse do occur in the park but nowhere can the infestation be regarded as severe. It will be important to document the current status of tsetse in the park so that the spread of the fly can be assessed in the future.

Termite activity is a major determinant of savannas and the Gonarezhou is no exception. The reduction of vegetation cover in the Pombadzi area (see vegetation section) coupled with a recent burn illustrates the density of termitaria in some parts of the park (see photo)

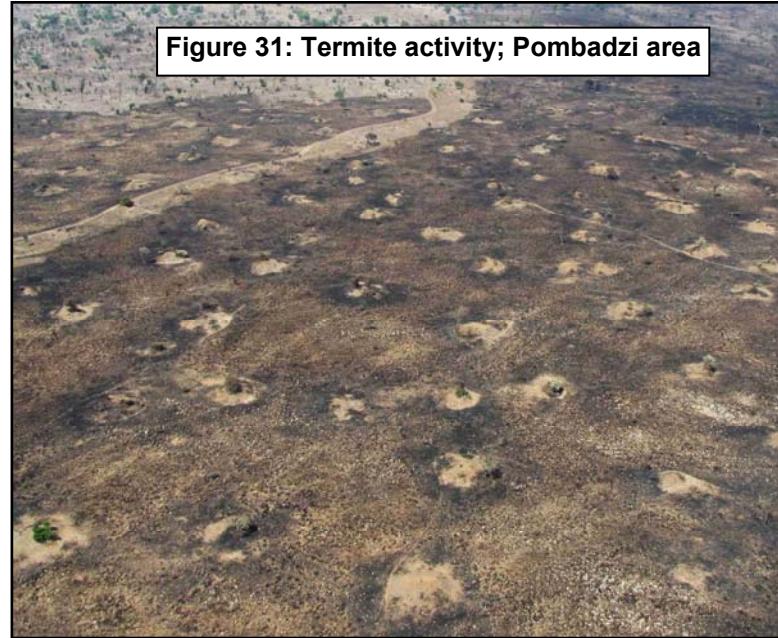


Figure 31: Termite activity; Pombadzi area

The mosquito is an important species in the park mainly for its role as a carrier of malaria. In general very little is known about the invertebrates of the area.

2.7.2 Fish

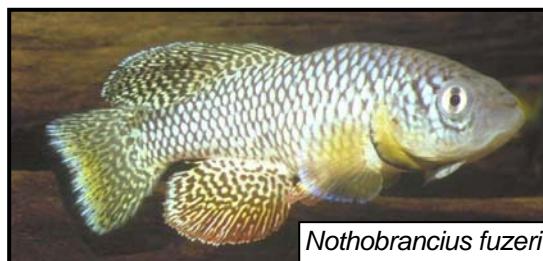
Fifty fish species have been recorded in Gonarezhou, primarily from the Save and Runde Rivers, but recent declines in water quality and flow patterns of the major rivers may have reduced this number. The Mwenezi system may contain additional species. The fish fauna of the Runde and Save is separated into two different groups divisible by the Chivilila and Chivirira Falls (Runde and Save).

The diversity of fish species must be viewed as potentially threatened because of water abstraction, poor land use practices upstream and chemical pollution in the major river catchments.

Figure 32: Fish separation points in GNP



Previously the Killifish *Nothobranchius fuzeri* was thought to be endemic to the pans in the Guluene-Chefu catchment in Gonarezhou. However, recent work (Reichard et al., 2008), shows that the species is relatively widespread further down the catchment in Mozambique. It has also been found in the lower reaches of the Limpopo catchment. As it is an attractive aquarium species, it may need protection. Other noteworthy species include lungfish that occur in seasonal pans in the Guluene/Chefu catchment, and the Zambezi Shark and Small-tooth Sawfish, recorded at the Save/Runde confluence.



Nothobranchius fuzeri

2.7.3 Reptiles and Amphibians

The herpetofauna of Gonarezhou is unusual in Zimbabwe, as it includes many species which typically occur on the East African coastal plain. The lower altitude areas of the Park represent a westward extension of the Mozambique Coastal Plain into Zimbabwe. Reptiles and amphibians, being poikilothermic and less mobile than higher animal groups, are good indicators of bio-geographic boundaries, and their occurrence in Gonarezhou illustrates the bio-geographic importance of the Park. The Gonarezhou species list includes about 6% of the Southern African endemics and 14 species of special conservation interest (Table 11).

Table 11: Reptile and amphibian species occurring in Gonarezhou National Park that are rare or have a limited distribution in Zimbabwe

Species	Remarks
Occurs in Gonarezhou only	
<i>Cyclodernma freantum</i> Zambezi soft-shelled turtle	Restricted to lower Save/Runde in Zim.
<i>Pachydactylus capensis vansonii</i> Van Son's thick-tailed gecko	Restricted to Gonarezhou in Zimbabwe
<i>Zygapsis violaceae</i> Violet round-snouted amphisbaenian	Restricted to Gonarezhou in Zimbabwe
<i>Hyperolius pusillus</i> Water lily frog	
Occurs in southeast lowveld only	
<i>Typhlosaurus auranticus auranticus</i> Orange blind skink	
<i>Mabuya hamolocephala depressa</i> Peter's blind skink	Recorded at Urombo pan
<i>Nucras caesicauda</i> Blue-tailed scrub lizard	Sazale pan is the type locality
<i>Hyperolius argus</i> Argus reed frog	Recorded at Marhumbini and Ngorima
Other restricted populations	
<i>Kinixys belliana belliana</i> Hinge-back tortoise	
<i>Monopeltis leonhardi</i> Kalahari wedge-snouted amphisbaenian	
<i>Tomopterna krugerensis</i> Kruger burrowing frog	
<i>Pheynobatrachus acridoides</i> Zanzibar puddle frog	
<i>Leptopelis mossambicus</i> Mozambique tree frog	
<i>Kassina maculata</i> Red-legged pan frog	

2.7.4 Birds

The bird checklist of 400 species includes a further 92 species regarded as ‘likely to occur’. The bird list includes 13 species that are rare or of limited distribution and of conservation interest (Table 12). The scrub mopane areas of the park are one of the more significant breeding sites for the Lappet faced vulture in southern Africa.

Table 12: Bird species found in Gonarezhou that are of conservation interest	
Species	Common name
<i>Struthio camelus</i>	Ostrich
<i>Gutter pucherari</i>	Crested Guinea-fowl
<i>Charadrius marginatus</i>	White-fronted Sandplover
<i>Vanellus lugubris</i>	Lesser black-winged Plover
<i>Rhyncops flavirostris</i>	African Skimmer
<i>Poicephalus cryptoxanthus</i>	Brown-headed Parrot
<i>Cethmochares aereus</i>	Green Coucal
<i>Scotopelia peli</i>	Pel's fishing Owl
<i>Neafrapus boehmi</i>	Boehm's Spinetail
<i>Cisticola galactotes</i>	Black-backed Cisticola
<i>Ploceus xanthopterus</i>	Brown-throated golden Weaver
<i>Serinus citrinipectus</i>	Lemon-breasted Canary
<i>Torgos tracheliotus</i>	Lappet-faced vulture

2.7.5 Mammals

A total of 89 species of mammals in 71 genera and 31 families have been recorded from the Gonarezhou. A further 61 species, mostly insectivores or small rodents as likely to occur. Most of the work on mammals was carried out in the 1960s and 1970s and there is a need to re-evaluate some of the collections. Mammal species that are rare, or have limited distribution within Zimbabwe are listed in Table 13.

Table 13: Mammal species occurring in Gonarezhou National Park that are rare or have a limited distribution in Zimbabwe	
Species	Remarks
Occurs in Gonarezhou only	
<i>Calcochloris obtusirostris</i> Yellow Golden Mole	Only known from Gonarezhou in Zimbabwe
<i>Lepus capensis</i> Cape hare	Only specimen in Zimbabwe came from Malugwe pan
Occurs in southeast lowveld only	
<i>Paraxerus palliatus</i> Red squirrel	Confined to Androstachys and riparian thickets. The population status is unknown
Other restricted populations	
<i>Petrodromus tetradactylus</i> Four-toed elephant shrew	From the Eastern Highlands to the Beitbridge area. The subspecies collected from Gonarezhou is <i>P.t. beirae</i> .
<i>Tadarida (M.) midas</i> Midas free-tailed bat	Confined to the Mwenezi and Limpopo valleys

**Table 13: Mammal species occurring in Gonarezhou National Park
that are rare or have a limited distribution in Zimbabwe**

Species	Remarks
<i>Tadarida (T.) ansorgei</i> Ansorge's free-tailed bat	Known from only three localities in Zimbabwe, including the Save/Runde confluence
<i>Taphozous perforatus</i> Egyptian tomb bat	Known from only four localities in Zimbabwe, including the Chivarira Falls
<i>Hyaena brunnea</i> Brown hyaena	Rare in Zimbabwe and only one record from the Park
<i>Diceros bicornis</i> Black rhinoceros	Possibly extinct in the Park
<i>Alcelaphus lichtensteini</i> Lichtenstein's hartebeest	Re-introduced from Mozambique and confined to the north of the Park and Lone Star ranch
<i>Neotragus moschatus</i> Suni	Confined to thickets in low lying river valleys
<i>Tragelaphus angasi</i> Nyala	Common in the Park but very restricted distribution elsewhere
<i>Heliosciurus rufobrachium</i> Sun Squirrel	The Save/Runde junction is the southernmost limit of its range in Zimbabwe
<i>Uromys ruddi</i> Rudd's mouse	Rare in Zimbabwe - remains were recovered from owl pellets at Chipinda Pools
<i>Gerbillurus paeba</i> Lesser Gerbil	Rare in Zimbabwe

Table 14: Notes of some species of large mammals in Gonarezhou NP

Species	Comments	Est Pop.
Impala	Relatively high numbers	6 005
Kudu	Population has been steadily increasing over the years	2 285
Buffalo	Stable population of buffalo, there are disease-ecological threats e.g bTB	2 274
Zebra	Population likely to continue increasing due to opening-up of woodlands	1 385
Nyala	Gonarezhou is the only place in Zimbabwe where nyala are found in significant numbers.	370
Wildebeest	Mostly found in north of the park	364
Eland	Very low population in GNP, restricted range in GNP ecosystem	317
Giraffe		251
Suni		Unknown
Roan	Very low population, mostly sighted in southern GNP	35
Hartebeest	Never found in the park in large numbers, the Lichtensteins hartebeest became locally extinct during the 1992/1993 drought	0
Carnivores		
Wilddog	Move throughout SE lowveld	60
Lion	Thought to be in decline with low densities at present. The park could support much higher densities, based on prey availability studies.	30 to 40
Cheetah	Few individuals seen	
Hyena	Hyena population is at relatively high density	400

2.7.5.1 Elephants

The Gonarezhou is famous for its elephants, both in terms of numbers, the size of large tuskers and for their temperament. Population estimates for elephants have been carried out since the late 1960s and numbers have always been estimated above 3,000 animals. In 2009 there were estimated to be over 9,000 elephants in the park and this is the highest ever recorded. In 1982 over 7,000 animals were estimated to be in the park and this was followed by a cull of over 2000 animals in 1983¹. The culling operation seems to have had the desired effect as the 1984 survey shows a population estimate of nearly 4,000 animals (Table 15).

Table 15: Population estimates and removals of elephants – Gonarezhou
(Data from previous park plan)

Year	Population Estimate	Number Culled	Illegal hunting	Year	Population Estimate	Number Culled	Illegal hunting
1969	3 100			1986	4 451	1 208	6
1971	5 187	621		1987	3 802		30
1972	4 566	1 116		1988			823
1974	3 450			1989	5 179		8
1975	5 159			1990			10
1980	4 704			1991	6 406		12
1981	6 103			1992		557	
1982	7 315			1993	5 241	670	
1983	3 986	2 000	2	2001	4 987		
1984	3 937		5	2007	6 516		
				2009	9 123		
				Total		5 572	896

The results of all surveys since 1993 (the last management offtake) implies that the Gonarezhou elephant population is increasing at a mean annual rate of 6.2 % (lower and upper confidence limits 3.9 % and 8.5 %). Should this trend continue as is (unlikely but still a possibility) it will mean that the elephant population could double to around 18,000 animals during the ten year life of this plan. Clearly this will be unsustainable and some intervention (either management or environmentally driven) may be necessary. The number of elephants in cow herds has increased at a faster rate than the number of elephants in bull groups. Bulls appear to have increased slightly, remained constant, or declined.

¹ Estimates of offtakes vary. The previous management plan indicates that the 1983 cull was 1,400 animals

Figure 33: Elephant population estimates and offtakes since 1969

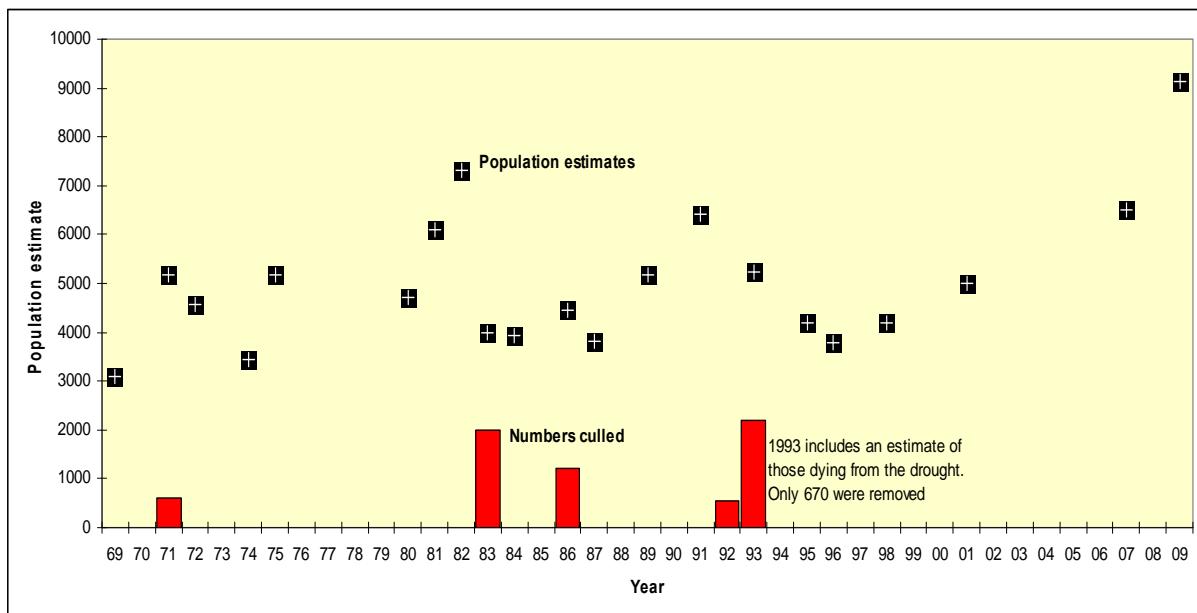
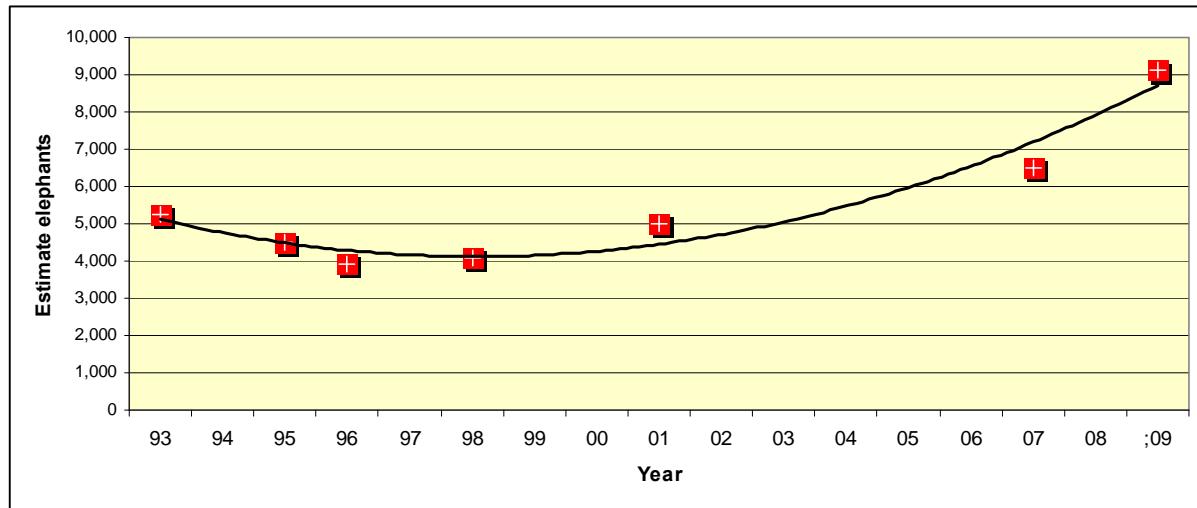


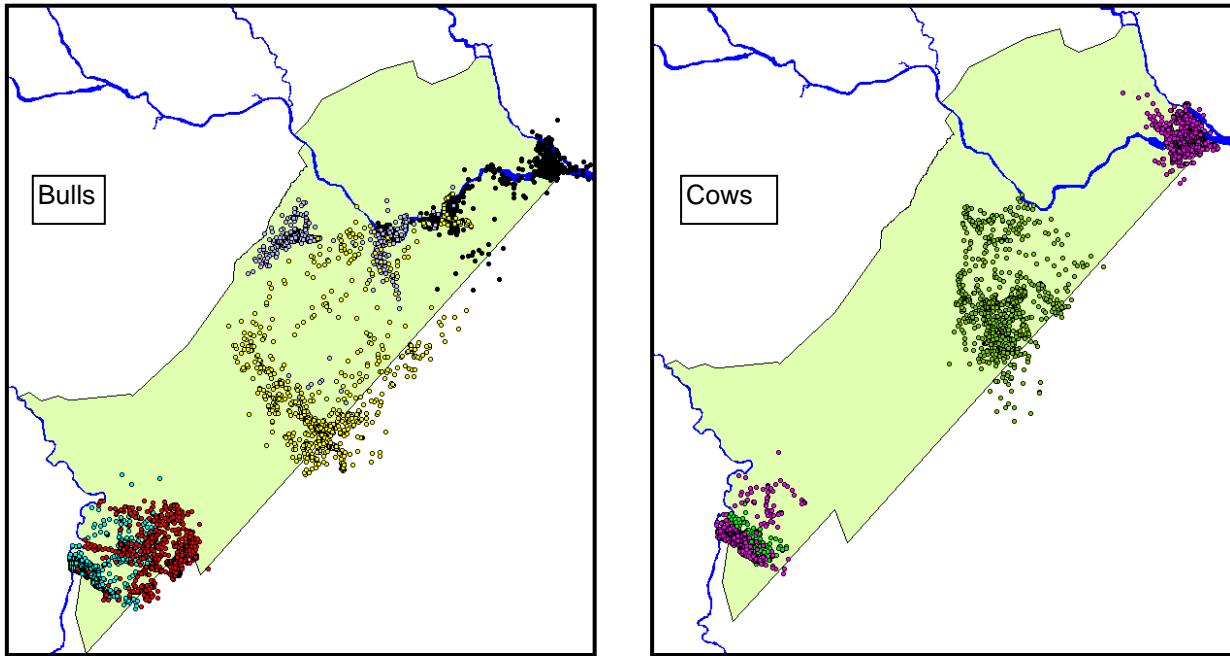
Figure 34: Elephant population estimates since 1993



An elephant collaring exercise was initiated in 2009 when satellite telemetry collars were placed on eight elephants (five bulls and three cows). The aims of the project were to assess cross boundary movements in the GLTP as well as seasonal movements within the park. Early indications are that elephants in the north and south of the park rarely cross the boundary. This may be due to the land uses outside the park in these adjacent areas and the fact that safari hunting also takes place in these areas – with elephant being the primary safari drawcard.

Seasonal movements of elephants are most marked in the central parts of the park which can sometimes be devoid of water in the dry season. The preliminary positions of the marked elephants are shown in Figure 35.

Figure 35: Recorded movements of elephant bulls and cows (June, 2009- June 2010)
(Data from radio-telemetry project)



2.7.5.2 Rhino

Gonarezhou has the distinction of being where the rhino has gone locally extinct twice. Records indicate that the last of the original population had gone extinct by the early 1940s.

A total of 77 black rhinos were released into the Pomdadzi area between 1969 and 1971. At this time a programme for the development of artificial water supplies was also initiated but this had failed by 1976.

An intensive protection zone for rhino has been proposed for the Pomdazi area between the Runde and Save rivers. Some key elements of this proposal are summarised below:

The feasibility study carried out in 2005 recommended the release of a founder population of 20 black rhinos released into near the Pombadzi/Sijililo rivers which would then expand into the IPZ and also into other parts of the park. The possibility of the release of white rhino was also proposed, but this would be more along an experimental basis with a fall-back plan to move these animals elsewhere if there were problems.

- The use of artificial water supplies in the IPZ was not recommended
- The conversion of the *Brachystegia glaucescens* woodland in the Pombadzi-Chivonja area to bushed grassland also resulted in the loss of thickets, a fact that is probably detrimental to any rhino reintroduction.
- Fires in the proposed IPZ are a concern and an early burning programme is recommended rather than fire prevention or control, due to management constraints.
- In terms of policing the area the focus will be from Save Runde base with forward bases recommended at Marhumbini and the upper Pombadzi. The upper Pombadzi base may compromise the wilderness tourism zone.
- A public-private partnership was proposed for the IPZ to overcome the paucity of funding and resources. This concept would also include aspects to address the Chitsa issue as well.

2.7.5.3 Hippo

The number of hippo in the park is currently estimated at 187 animals. All of these occurred in the Runde river and associated pans (Figure 36). Historically hippo were found in both the Mwenezi and Save rivers but the reduction of flow and siltation in the Mwenezi has led to their local extinction in this river. Hippos may avoid the Save as it borders on communal land and there may be some persecution of the animals in this habitat.

Figure 36: Hippo trends in Gonarezhou
(Zisadza et al, 2010)

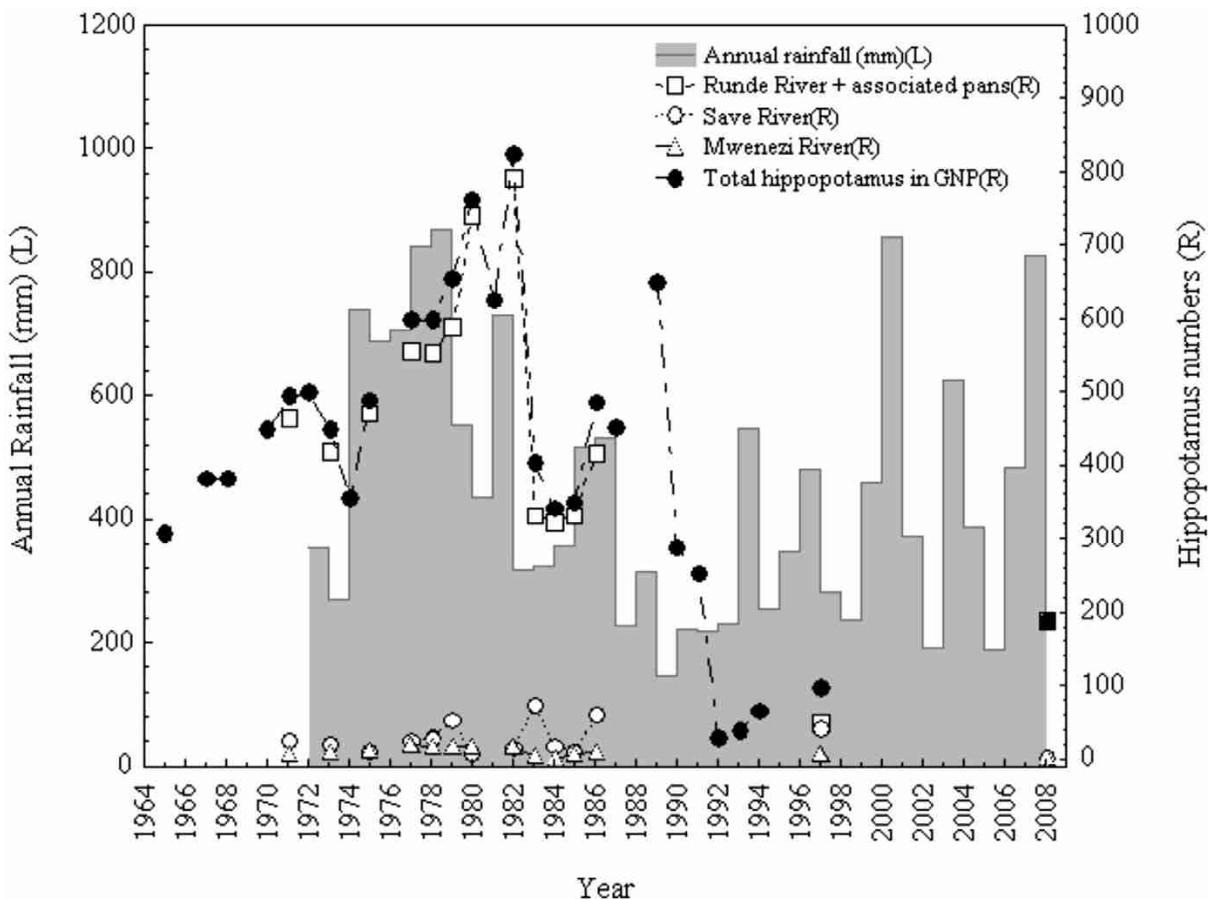


Table 16: Hippo population estimates and removals - Gonarezhou

Year	Pop. estimate	Number culled	Year	Pop. estimate	Number culled	Year	Pop. estimate	Number culled
1967	382		1976		30	1984	341	
1970	447		1977	599		1985	348	
1971	489		1978	597		1986	485	
1972	499		1979	655		1987	451	145
1973	383	145	1980	761		1991	650	
1974	373		1981	624		1992	28	
1975	489		1982	822		1993	38	
			1983	404	300	Total		620

2.7.5.4 Management of Large Mammals

Management of large mammals in the park has been by introductions and removals. In the past there have been two main introductions, both of which have gone locally extinct, the black rhino for the second time.. .

- Lichtensteins's Hartebeest (66 from Gorongoza in 1972)
- Black rhino (49 from the Zambezi Valley between 1969 and 1971)

Currently on offer from the Save Conservancy are the following animals and a habitat assessment indicates that these animals should be translocated into the park.

• Wildebeest	700
• Impala	500
• Zebra	250
• Eland	150
• Giraffe	40

In 2009 several lion were translocated into the park from Malilangwe and released near the Chilojo Cliffs. They had moved back to their point of origin two days later.

Removals of animals form the park have been through culling and capture. In addition, illegal removals through poaching should also be considered as should the effect on the wildlife during the catastrophic 1991/1992 drought.

Management culling operations for elephant and hippo are discussed in the sections above and are not repeated here. Impala appear to have been culled at several times in the past but records do not exist except for the one during the 1992/1993 drought when 3,500 were removed to conserve grazing and to provide meat to people in the neighbouring communal lands.

The 1991/1992 drought was precipitated by several years of low rainfall and culminated with less than 100 mm of rain at both Chipinda Pools and Mabalauta in 1992. In spite of emergency feeding and removal programmes an estimated 1 500 elephant and 2 700 buffalo died as a result, along with significant numbers of other species (Table 17).

Table 17: Estimated animals that died in Gonarezhou - 1991/1992 drought (From 1993 Park Plan)			
Species	Numbers	Species	Numbers
Elephant	1,500	Buffalo	2,700
Zebra	1	Roan	2
Hippo	620	Wildebeest	5
		Waterbuck	1

The official policy to control tsetse fly during the 1960s was to firstly kill all wildlife in designated zones. Initially two corridors were declared – the North-East South-West corridor (850 km^2) which was below the Chivonja Hills in the Pombadzi area and ran all the way down to Mwenezi River. This area was later extended (320 km^2) to include the country to the south of the hills – and the Guluene Chefu corridor (740 km^2) running from the previous corridor to the Mozambican border. Initially the policy was to kill all wildlife but this was later amended to selected species such as warthog, kudu, bushbuck and buffalo. Teams of people were employed to carry out the killing and it is estimated that nearly 13,000 animals were recorded as being killed between 1964 and 1970 (Table 18).

Figure 37: Tsetse control corridors

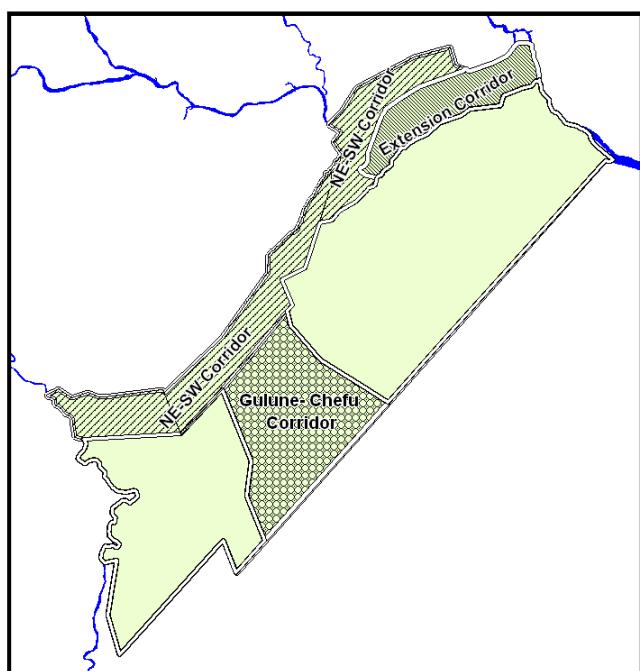


Table 18 Numbers of large mammals killed between 1964-1970 by Tsetse eradication teams (data from 1993 Park Plan)

Species	Numbers Killed	Species	Numbers Killed	Species	Numbers Killed
Baboon	98	Hippopotamus	12	Reedbuck	85
Buffalo	207	Hyena	4	Roan	17
Bushbuck	413	Impala	1,606	Sable	28
Bushpig	169	Jackal	2	Steenbuck	2,542
Duiker	3,441	Klipspringer	243	Suni	12
Eland	72	Kudu	1,835	Warthog	254
Elephant	660	Leopard	2	Waterbuck	60
Giraffe	20	Nyala	160	Wild dog	2
Grysbuck	583	Oribi	31	Wildebeeste	11
Hartebeest	6	Ostrich	3	Zebra	160
Total					12,738

2.7.5.5 Species of Special Concern

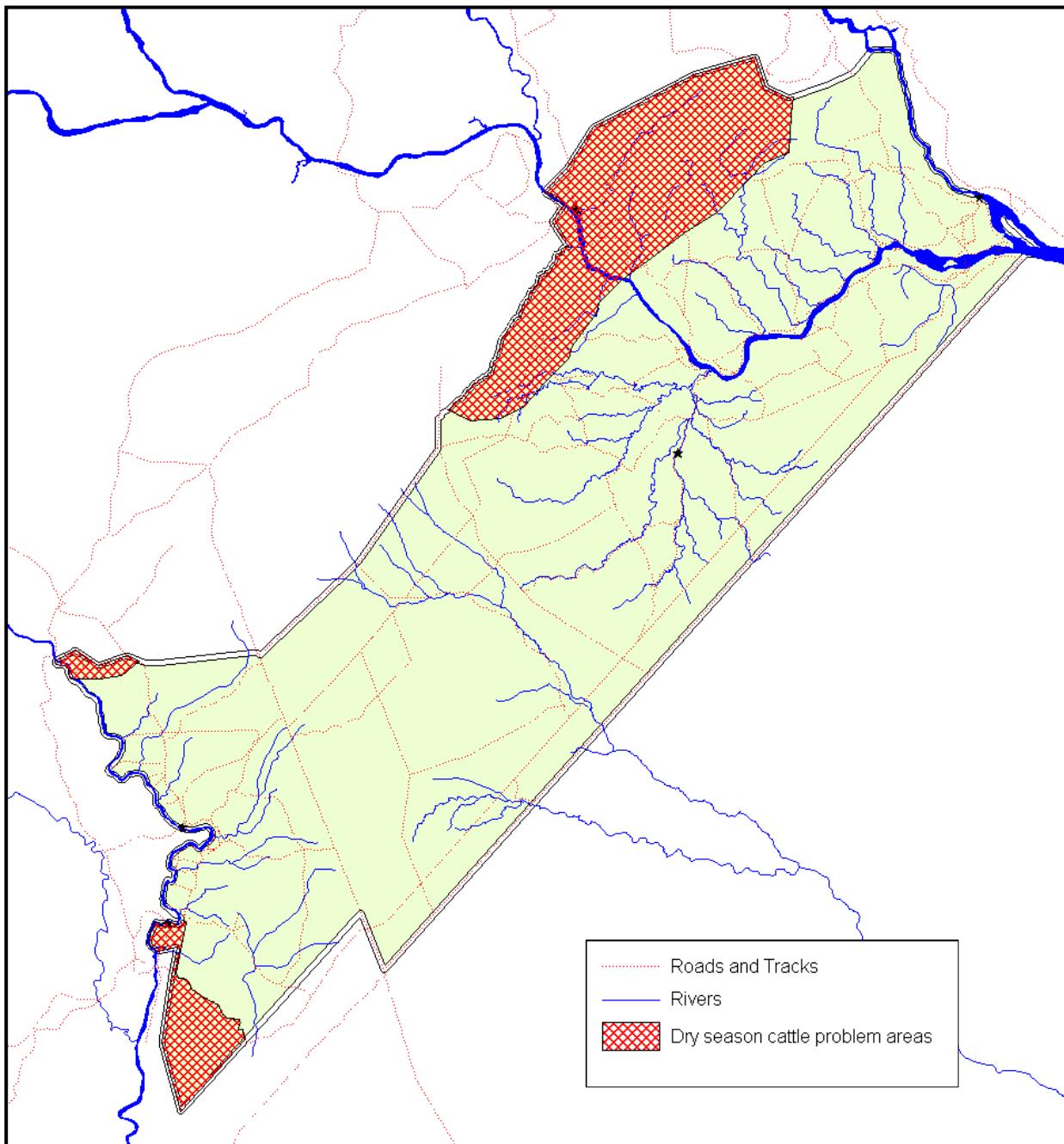
Species of special concern are species which either in Gonarezhou, or in the species general area of distribution, occurs as populations which are vulnerable due to small population sizes, poaching and disease issues, declining habitat and the need for large home ranges. For the Gonarezhou the following are considered to be species of special concern:

Carnivores	Herbivores	Others
wild dog lion cheetah	roan sable, tsessebe	killifish, lappetfaced vulture

2.7.5.5 Cattle

Although not part of the reason for conservation cattle are users of the park. Numbers using the park increase during the dry season especially in the north (related to the Chitsa occupation) and near Mabalauta (Figure 38).

Figure 38: Problem areas for cattle in Gonarezhou



2.7.6 Research and Monitoring

There is often a fine line between research and monitoring. In general research projects are carried out to address an issue of concern to management and often have a defined timeline. Monitoring is an ongoing activity and many monitoring activities can emerge from research projects.

2.7.6.1 Research

Table 19: Current research projects carried out in and around Gonarezhou

Category	Study
Vegetation	Impact of African elephants on <i>Acacia tortilis</i> woodland structure in northern GNP
	The influence of elephants and fire on structure and composition of <i>Androstrachys johnsonii</i> woodland in GNP
	An assessment of woody vegetation status around perennial water points in GNP
	Remote Sensing patterns of primary productivity in the GLTP in relation to land use and land tenure
	Vegetation Survey of GNP
	Alien Invasive Species in GNP
Wildlife Surveys	Aerial Survey of Elephants and other Large herbivores in GNP, Zinave NP and surrounds
	Assessment of the status and distribution of <i>N. furzeri</i> (killifish)
	Assessment of hippo trends
	Assessment of crocodile trends
Wildlife	Elephant distribution and dispersal
	Human effects on multispecies wildlife communities in South-east lowveld
	Waterhole monitoring in and around Mabalauta and surrounding communal areas to establish interaction of wild and domestic ungulates at water points
	Lowveld Carnivore Project – Wild Dogs and Lions
Management	An assessment of illegal human activities impact on the natural ecosystems of GNP
Livestock related	Wildlife and livestock densities
	Regional risk factors linked to Zoonosis transmission at the Wildlife/Livestock/Human interface
	Survey of livestock and wildlife disease
	Undertake survey of livestock and wildlife movements around GNP (collared cattle/buffalo?). And also in the GLTP
	Spatial distribution of grazing area in wildlife-livestock interface
	Redressing asymmetry in resource allocation through co-operation among diverse livestock and wildlife systems in South East Lowveld
	Research on the interaction between domestic and wild ungulates
	Bovine Tuberculosis surveillance
Physical Environment	River Health Monitoring Programme
	Gully reclamation in Southern GNP

2.7.6.3 Research Priorities

A preliminary list of research priorities has been generated for the park and includes the following:

Table 20: Preliminary research priorities for Gonarezhou	
Category	Research Priorities
Vegetation	<ul style="list-style-type: none">Digital vegetation map - updated and ground truthedFixed point photography - building on historical work - comparison of historical vegetation cover - remote sensing?Invasive plant species - extent, species involved. GIS. Invasive species management plan.
Fish	<ul style="list-style-type: none">Fish populations - general - status of the Save, Runde, Mwenezi fish populations. Species, numbers, age structure - impacts?Fish populations - specific - status of the Kilifish population - illegal offtake?Fish populations - invasive species. Occurrence, extent - invasive management plan?
Reptiles and Amphibians	<ul style="list-style-type: none">Herpetology - status and distribution of herpetofauna?Amphibians - status and distribution of amphibians
Birds	<ul style="list-style-type: none">Lappet-faced vulture - status of breeding population
Carnivores	<ul style="list-style-type: none">Carnivores - numbers, pack sizes, range (special reference to wild dogs, lions)
Herbivores	<ul style="list-style-type: none">Elephant numbers, population structure, movement. Dry season range. Impact on vegetation. Elephant management plan?
GIS	<ul style="list-style-type: none">GIS layers for database - roads (including condition), rivers, elevation, all infrastructureLand-use in adjoining areas - population densities, livestock densities, vegetation, settlements. GIS

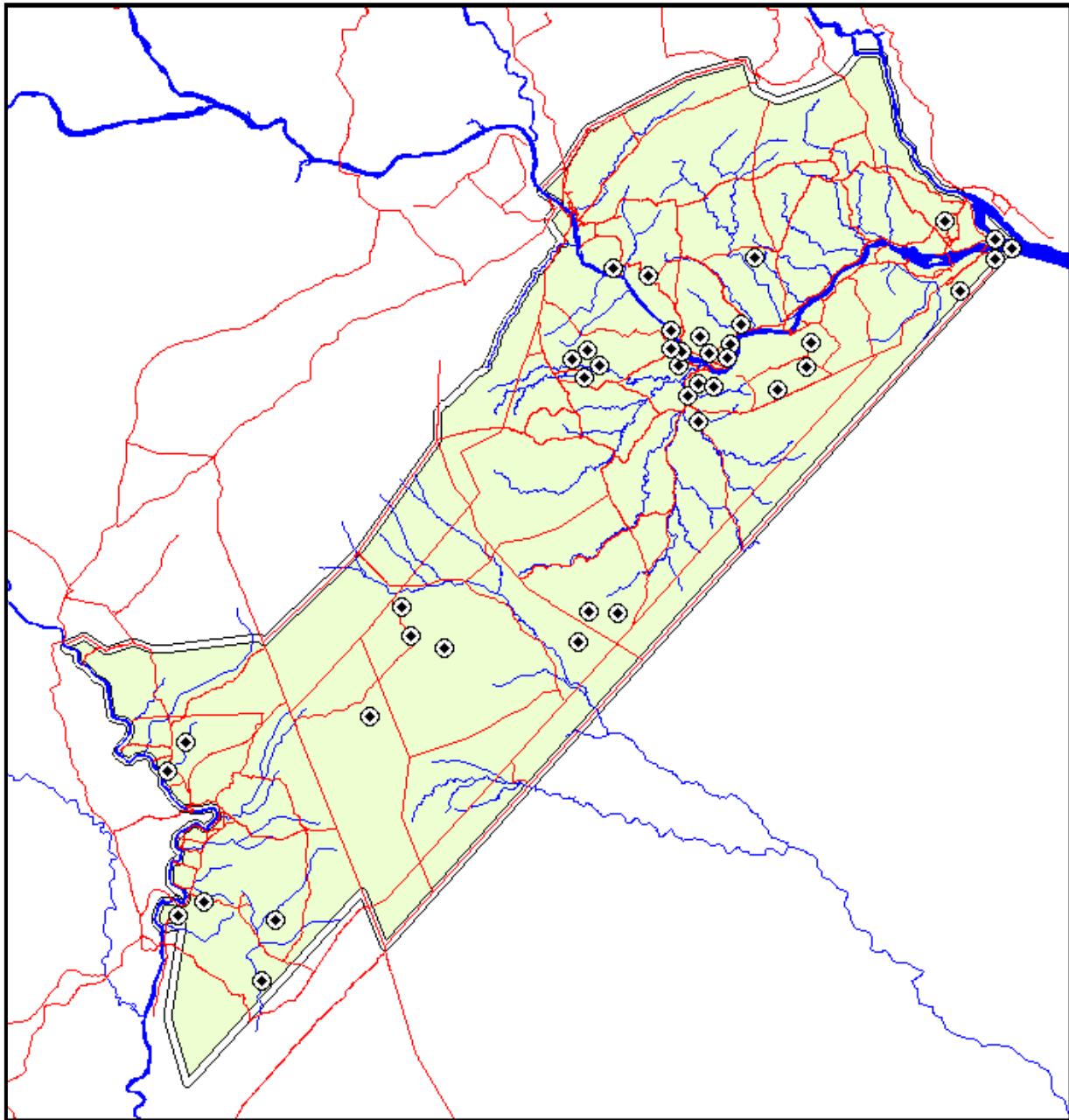
- Establish ecology base which includes comprehensive library, catalogued archives, computer hardware and software, basic lab, maps

2.7.6.2 Monitoring

A number of monitoring projects are carried out in and around Gonarezhou. Many of these are long-term and having been ongoing since the park was established. Others are more recent and are in response to changing circumstances. An increasing number of monitoring programmes are carried out by affiliated institutions and many of these concentrate on the cattle livestock interface, especially in the Mabalauta area.

Table 21: Monitoring programmes currently carried out in and around Gonarezhou		
Aspect	Details	Comments
Climate	<ul style="list-style-type: none"> • Rainfall • Temperature 	<ul style="list-style-type: none"> • Manuscript on climate change prepared and submitted for publication
River Health <i>14 sites on the Save, Runde and Mwenezi</i>	Annual assessments to include <ul style="list-style-type: none"> • Macro-invertebrate assessments • Fish • Habitat Assessments 	<ul style="list-style-type: none"> • Started in 2008 • Report in preparation
Wildlife	<ul style="list-style-type: none"> • Mortality & age structure • Status & distribution 	<ul style="list-style-type: none"> • Regular aerial surveys • Development of comprehensive and accessible database from patrol sightings
Fire	<ul style="list-style-type: none"> • Web-based-fire mapping • Fire guards, block burning, fire records • Socio-ecological issues 	<ul style="list-style-type: none"> • Several publications, plus some in press
Law enforcement	<ul style="list-style-type: none"> • Monthly & quarterly reports 	<ul style="list-style-type: none"> • Development of accessible database
Diseases	<ul style="list-style-type: none"> • Bovine tuberculosis • Anthrax 	<ul style="list-style-type: none"> • Some published work • Needs to be both inside and outside park • Anthrax outbreak on Malilangwe in 2009
Vegetation Monitoring	<ul style="list-style-type: none"> • Alien invasive species • Vegetation panoramas 	<ul style="list-style-type: none"> • Revision of vegetation map and classification of the park underway
Gully reclamation	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
Human-Wildlife Conflict	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Liaison with Chiredzi and Chipinge RDC for records
Safari Hunting	<ul style="list-style-type: none"> • Trophy quality • Locations 	<ul style="list-style-type: none"> • Liaison with Chiredzi and Chipinge RDC for records
Photographic Tourism	<ul style="list-style-type: none"> • Visitor numbers • Use of sites 	<ul style="list-style-type: none"> • Site monitoring system to be developed

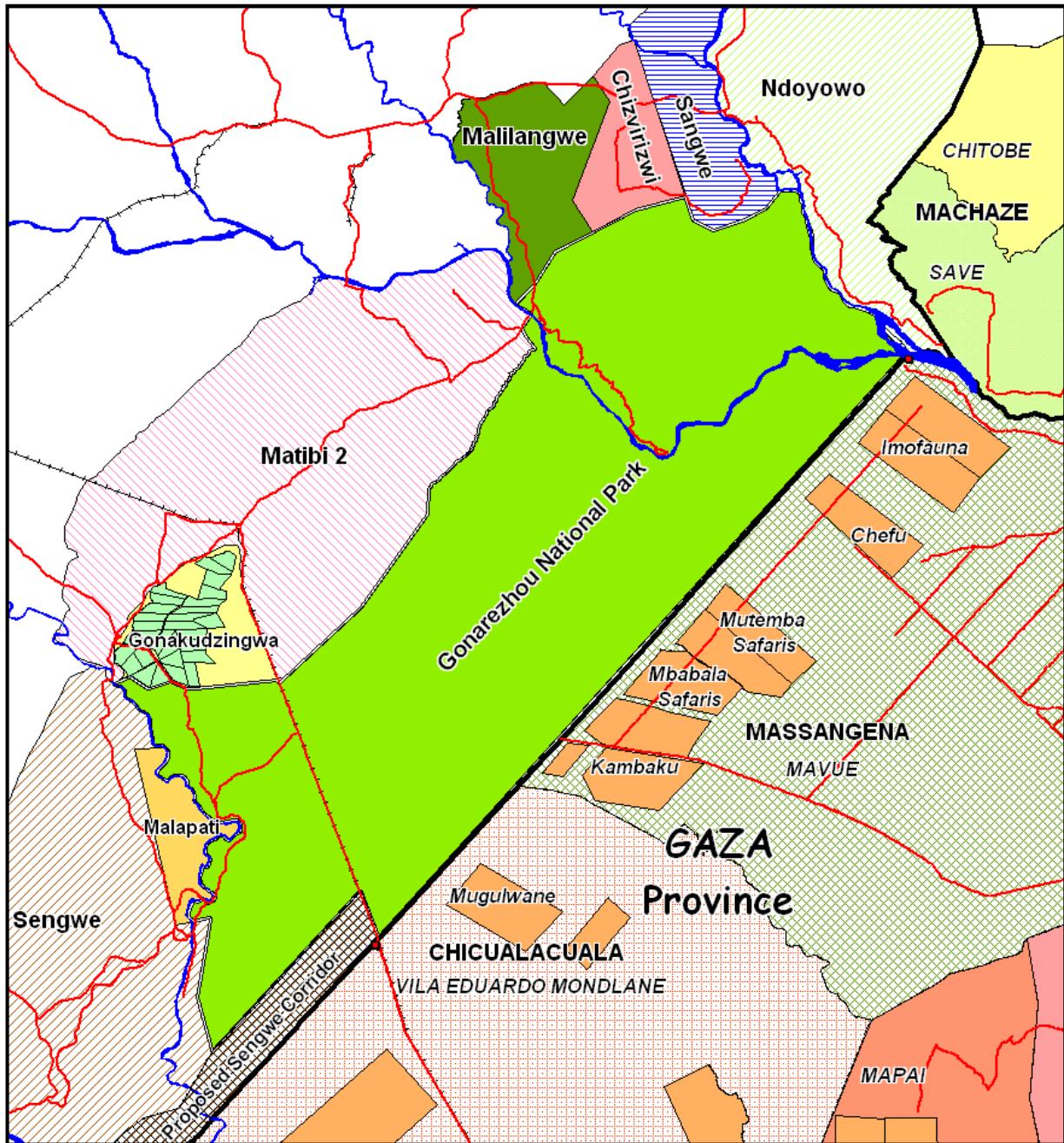
Figure 39: Known photopanorama points
(From Tafangenyasha, 1997)



2.8 REGIONAL RESOURCES

The Gonarezhou National Park does not exist in isolation; rather it is an integral part of the conservation and livelihood structures in the south-east lowveld of Zimbabwe. In addition, a significant part of its border forms part of the Mozambican border. Finally it is part of the Great Limpopo Transfrontier Park, a trans-boundary conservation initiative that includes conservation areas in Zimbabwe, Mozambique and South Africa. Gonarezhou and its immediate regional context is shown in Figure 40.

Figure 40: Gonarezhou in its regional context



2.8.1 Zimbabwe

2.8.1.1 Parks and Wildlife Estate

The Malapati Safari Area is 150 km² and was declared in 1975. Malapati, along with three other areas in Zimbabwe, was initially declared as a safari area on communal land and utilisation of this land was to benefit the community. Sometime since independence the complete control of this land appears to have reverted back to the Parks Authority who now lease the utilisation rights to the Chiredzi Rural District Council.

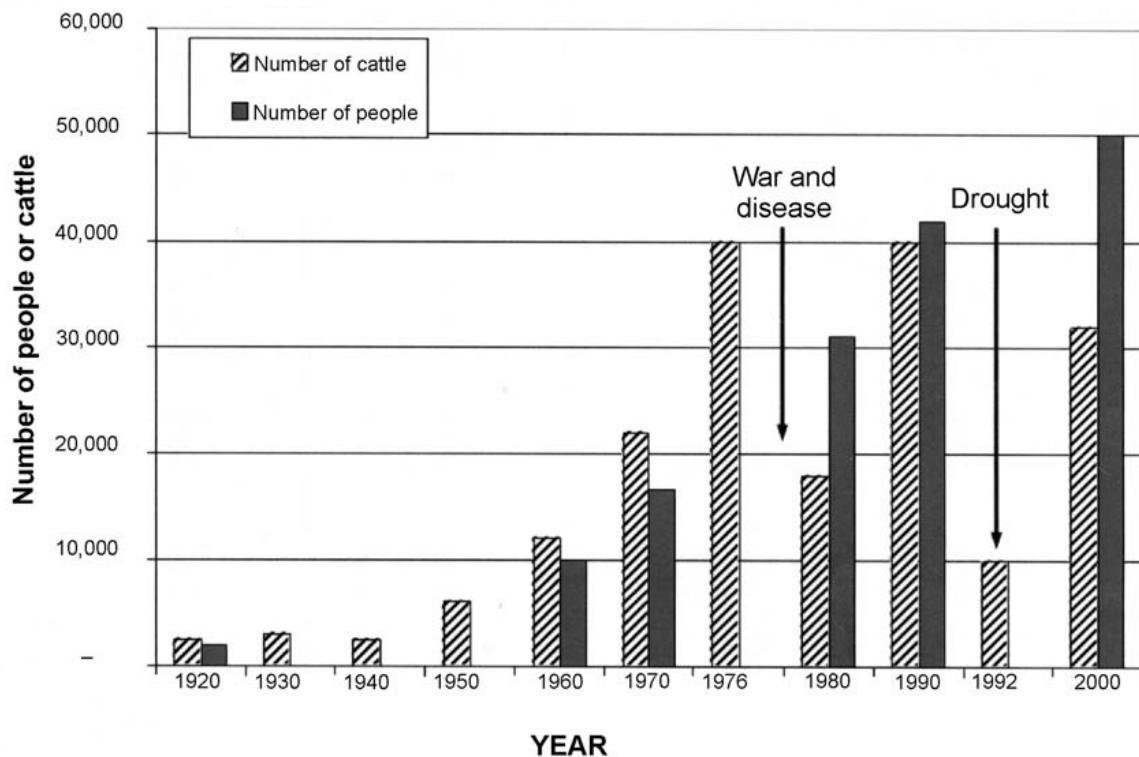
2.8.1.2 Communal Lands

There are four communal lands in Zimbabwe with common boundaries to Gonarezhou. Brief comments on these are shown below (Table 22)

Table 22: Communal lands adjacent to Gonarezhou	
Communal Land	Comments
Ndoyowo	Part of Chipinge District. Mahenya Ward adjacent to Gonarezhou which has both safari hunting and a tourism initiative.
Sangwe	Part of Chiredzi District.
Matibi 2	Part of Chiredzi District.
Sengwe	Part of Chiredzi District.

People and livestock numbers have been steadily increasing in the communal lands and the trend is illustrated by that for Matibi II (Figure 41).

Figure 41: People and cattle numbers in Matibi 2
 (Figure from Cumming, 2005)



2.8.1.3 Sengwe Corridor

The Sengwe Corridor occupies a highly strategic location with respect to the GLTP. It is imperative that this link is established because, without it, Gonarezhou would not form an integral part of the GLTP. This need has been identified and the Sengwe Corridor has been formally established through an extensive planning process.

The specific objectives of the Corridor are as follows:

1. To ensure compliance with international treaty obligations and the overall conservation objectives of the GLTP;
2. To enable a physical linkage in the form of a conservation corridor between the Gonarezhou National Park and the Kruger National Park to enable:
 - a. Wildlife habitats and movement between the two national parks
 - b. Tourist flows and associated development linked to the corridor and overall development of the GLTFP
 - c. Regional economic development;
3. To provide opportunities for local communities to manage and derive benefits from the natural resources to be conserved in the proposed wilderness corridor.

One of the biggest stumbling blocks to the corridor being a reality is the Sengwe mine field (Figure 42) but there are plans to remove this and make it safe. Some people were settled in the area and have been moved out.

Figure 42: Sengwe mine field



2.8.1.4 Irrigation Schemes

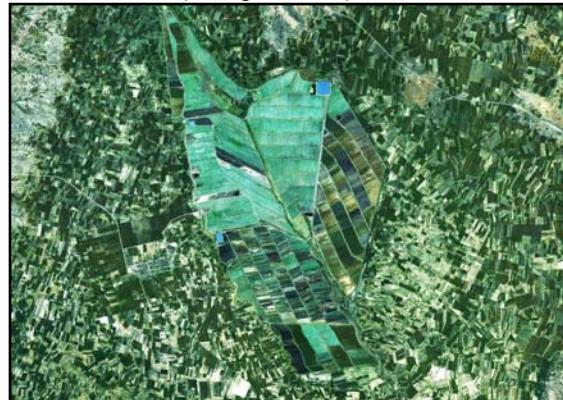
Irrigation has been a long-standing concept in the south-east lowveld and its effectiveness is most clearly seen in the sugar estates established in the area. Many of the rivers and dams in the south-east lowveld are part of a complex system of storage and water transfer. The major dams include Mutrikwe, Bangala and Manjirenje in the Runde catchment. These feed the Triangle, Mkwashine and Hippo Valley sugar estates. The Chisumbanje and Middle Save irrigation areas take water from the Save river while the Manyuchi Dam feeds the Mwenezana irrigation scheme in the Mwenezi catchment.

There are a number of operational and potential irrigation schemes and these include

- Tshovani
- Gudo's Pool, St Joseph and Rupangwana (Save river)
- Chionja (Runde)
- Malikango, Manjinji (Mwenezi)

Potential sites on basalt soils which would require more water, one in Matibi 2 if Tokwe dam is constructed. Also along the Mwenezi south of Manjinji Pan

Figure 43: Chisumbanje irrigation
(Google Earth)



2.8.1.5 Malilangwe Estate

The Malilangwe Trust is a wholly Zimbabwean owned non-profit organisation that focuses on harmonising conservation activities, community development outreach programs and commercial tourism. The Trust owns the property known as Malilangwe which shares a common boundary with Gonarezhou. The 400km² property is completely fenced and has an active conservation, research, wildlife management and community programme.

2.8.1.6 Potential Wildlife Corridors

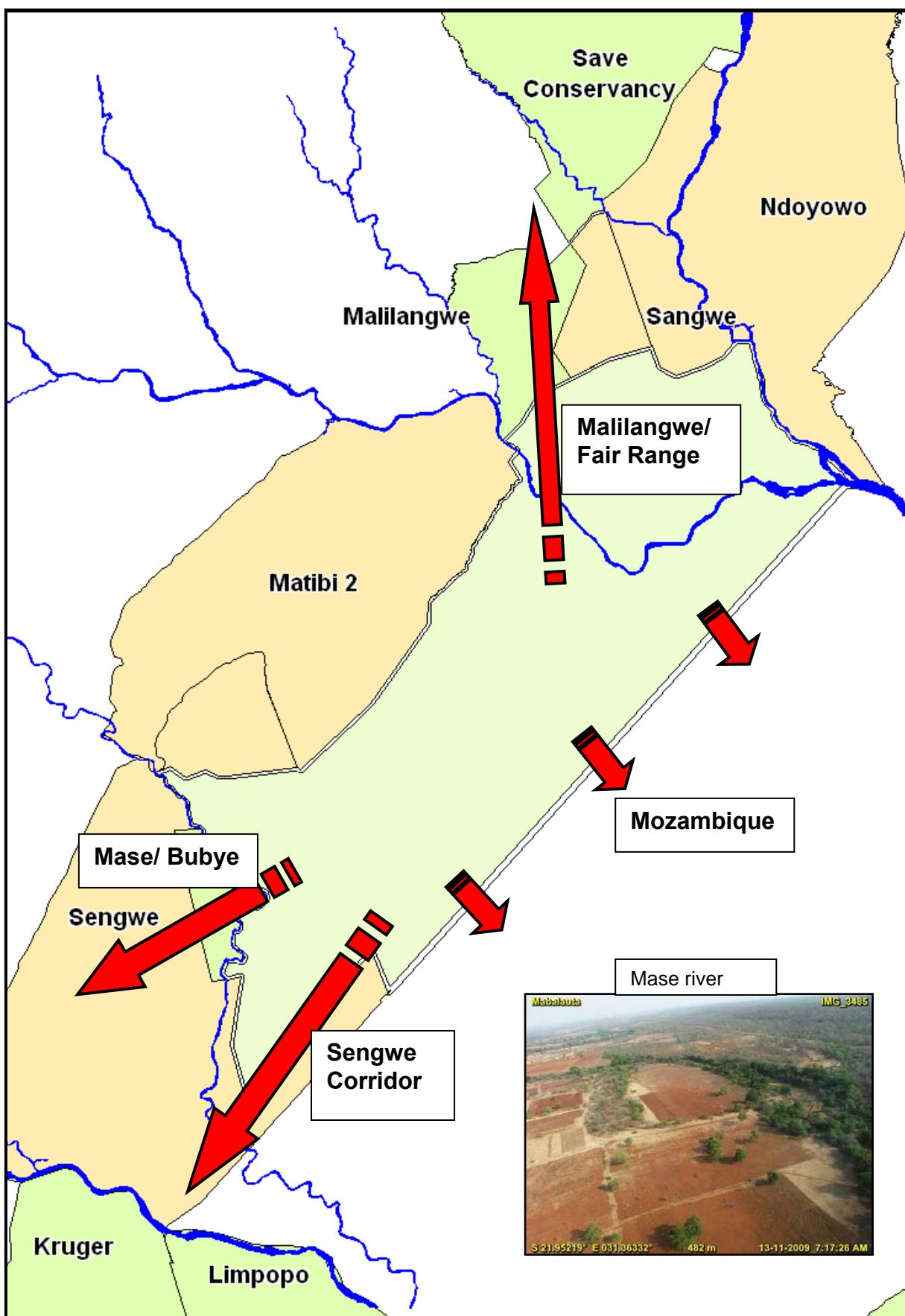
It is important that Gonarezhou National Park does not exist in isolation as a protected area. Movement of wildlife across administrative boundaries does occur and the main areas are as follows:

Table 23: Potential wildlife corridors

Area	Comments
Malilangwe	To the north of Gonarezhou and currently considered to be a very tenuous linkage to the Save Conservancy. Problems include the fencing of Malilangwe and settlements between the park and the conservancy.
Sengwe Corridor	The “official” link to the rest of the GLTP. No settlement but mine field a problem
Mase/Bubye	To the west of the park. Increasing settlement along the Mase river is a problem for connectivity.
Mozambique	The park has 130 km boundary with Mozambique. Largely a waterless area movements into this area are thought to be small at present.

The main corridors are shown on Figure 44.

Figure 44: Potential wildlife corridors in the south-east lowveld



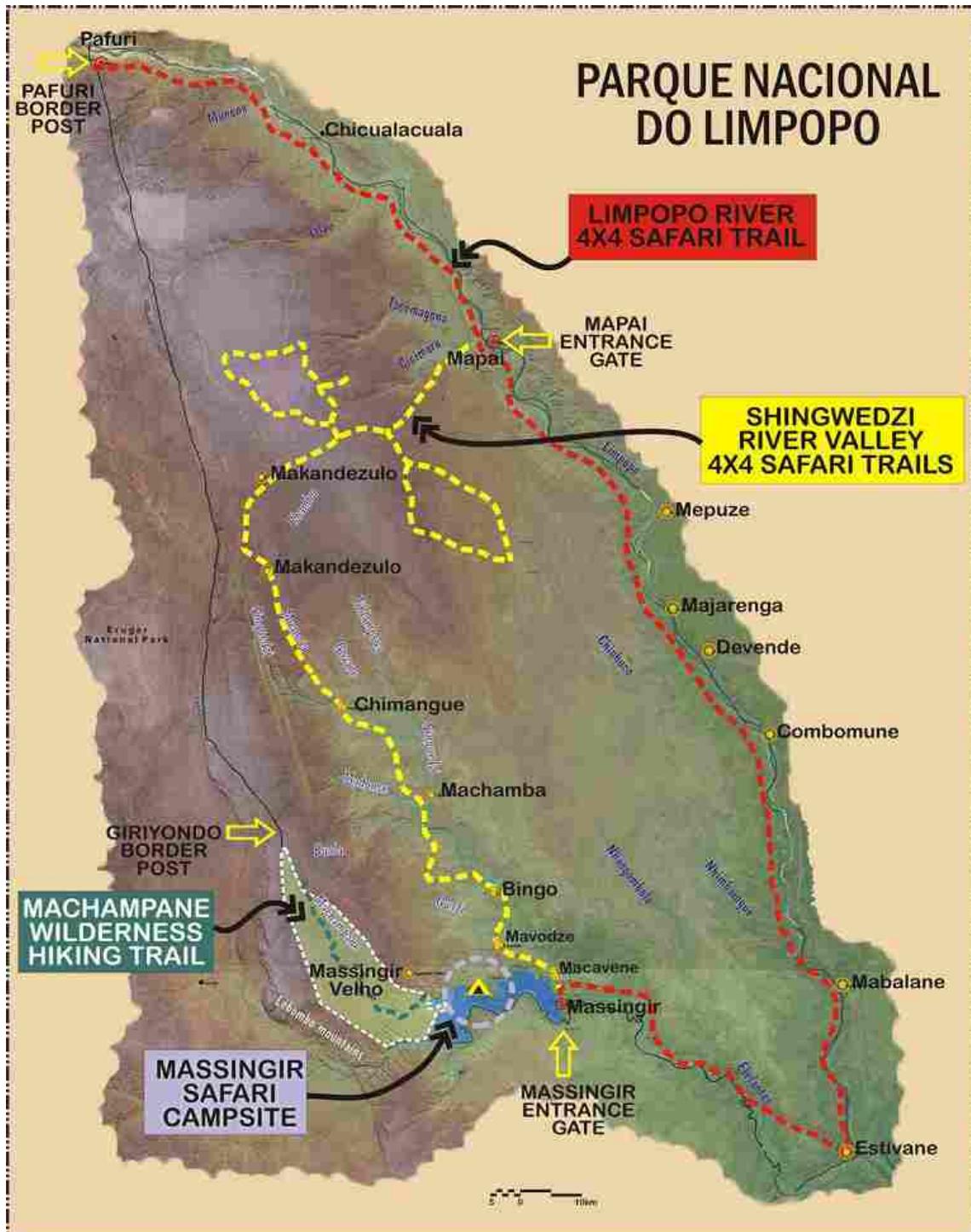
2.8.2 Mozambique

2.8.2.1 Limpopo National Park

The Limpopo National Park in Mozambique abuts the Kruger National Park and is approximately 10,000 km². Formerly a hunting area (or coutada) the area was declared a national park in the late 1990s. Tourism is still under development in this area and the following notes are relevant.

- Wilderness and 4x4 trails are the thrust of their tourism programme so can be considered as “competition” for the GNP
- Low numbers of visitors at present
- Low wildlife numbers and parts of the park settled

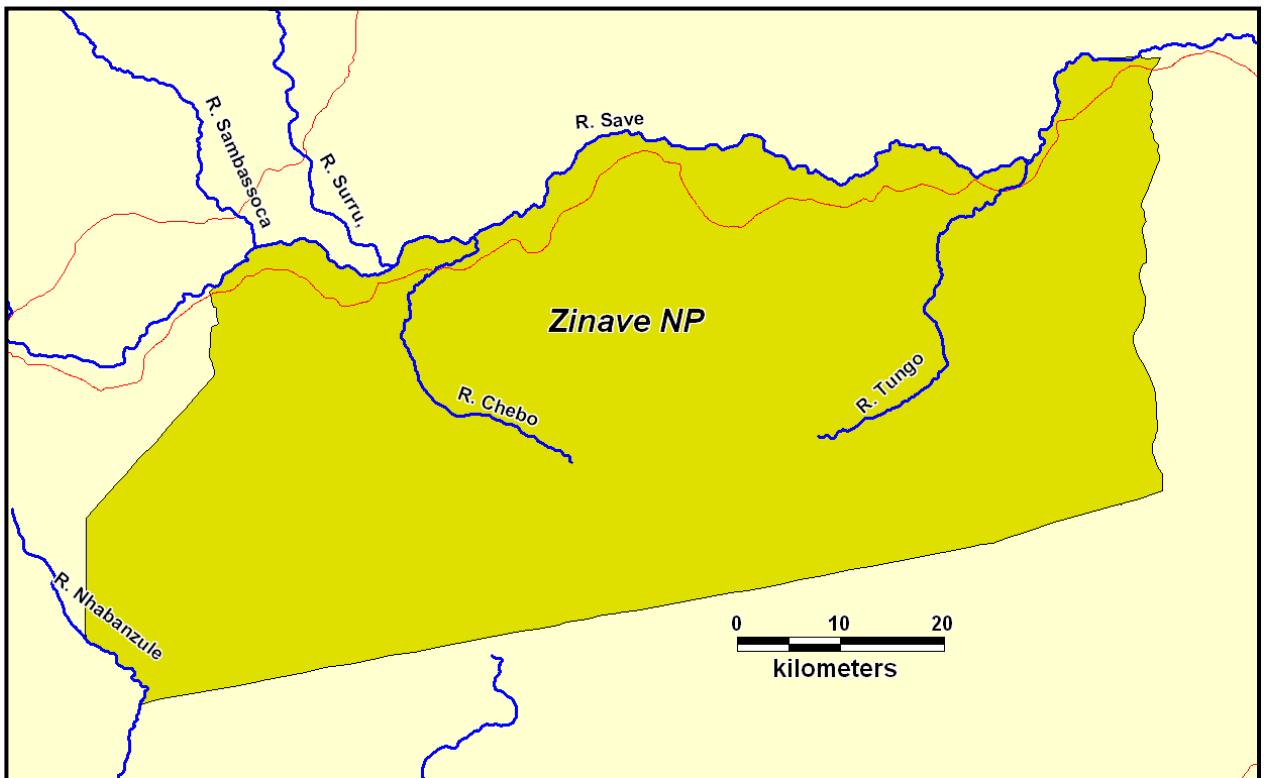
Figure 45: Limpopo National Park



2.8.2.2 Zinave and Banhine National Parks

Zinave National Park was proclaimed by Decree nº. 47/73 of 26 June. It is situated in the district of Mambone, Inhambane province and is approximately 4,000 km².

Figure 46: Zinave NP
Boundaries approximate



Banhine National Park was proclaimed in 1972 (Decree 46/73 of the 26th of June) and consists mainly of open grassland plains with slightly elevated areas with Mopane and mixed woodland areas. Some depressions are subject to flooding in years of high rainfall. It is situated in the district of Chigubo, northern Gaza province and occupies an area of approximately 7000 km².

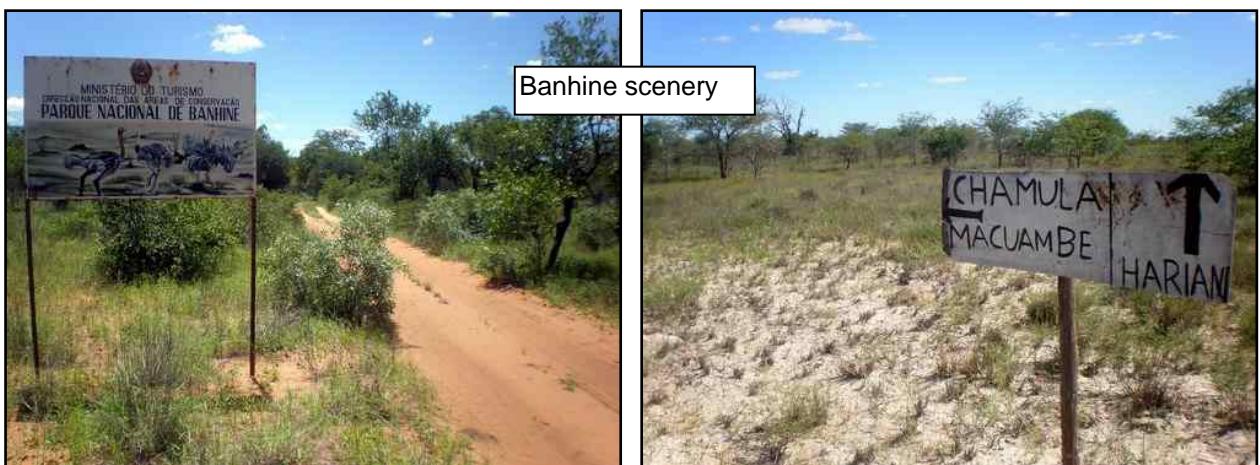
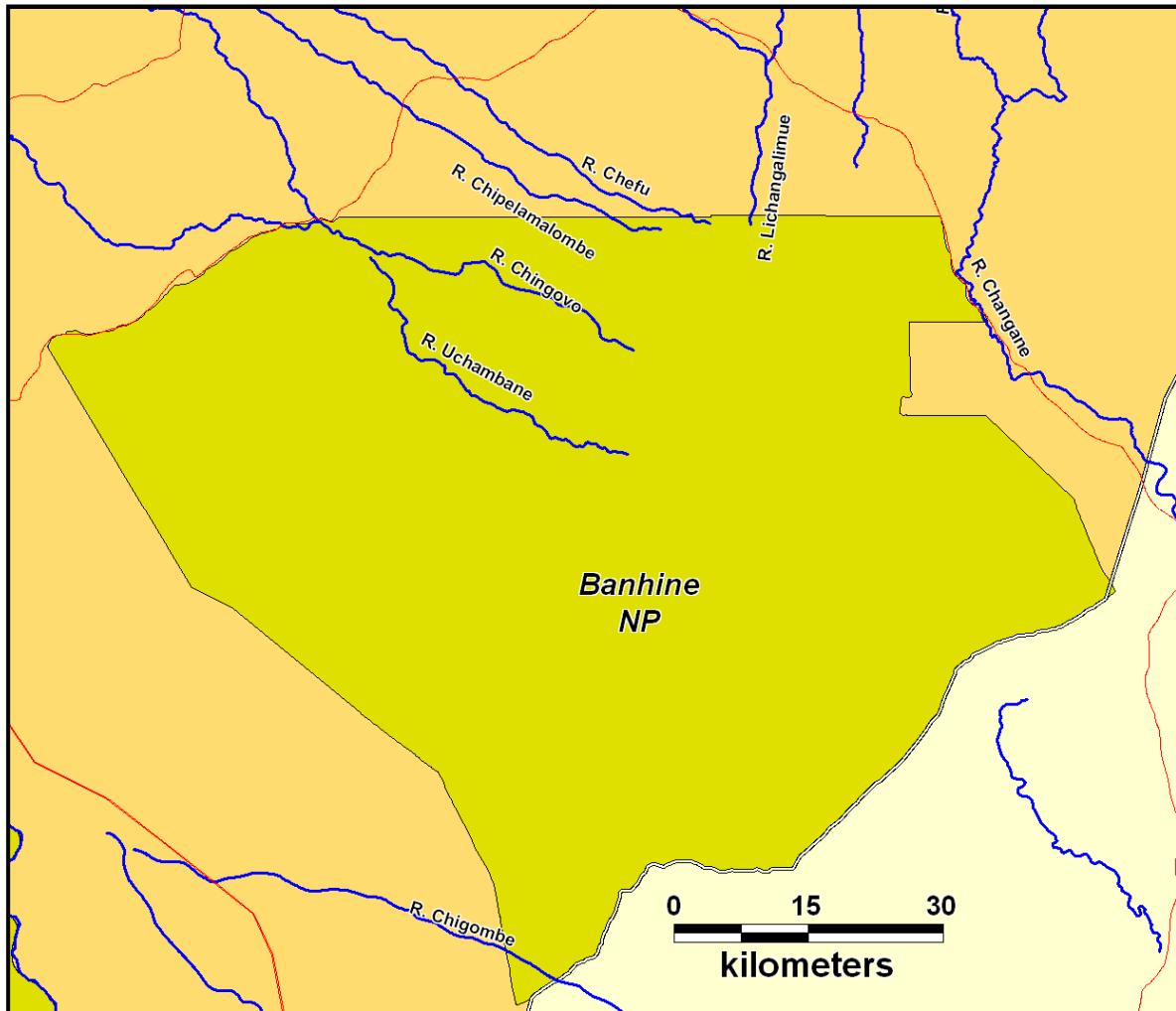


Figure 47: Banhine NP
Boundaries approximate



2.8.3 South Africa

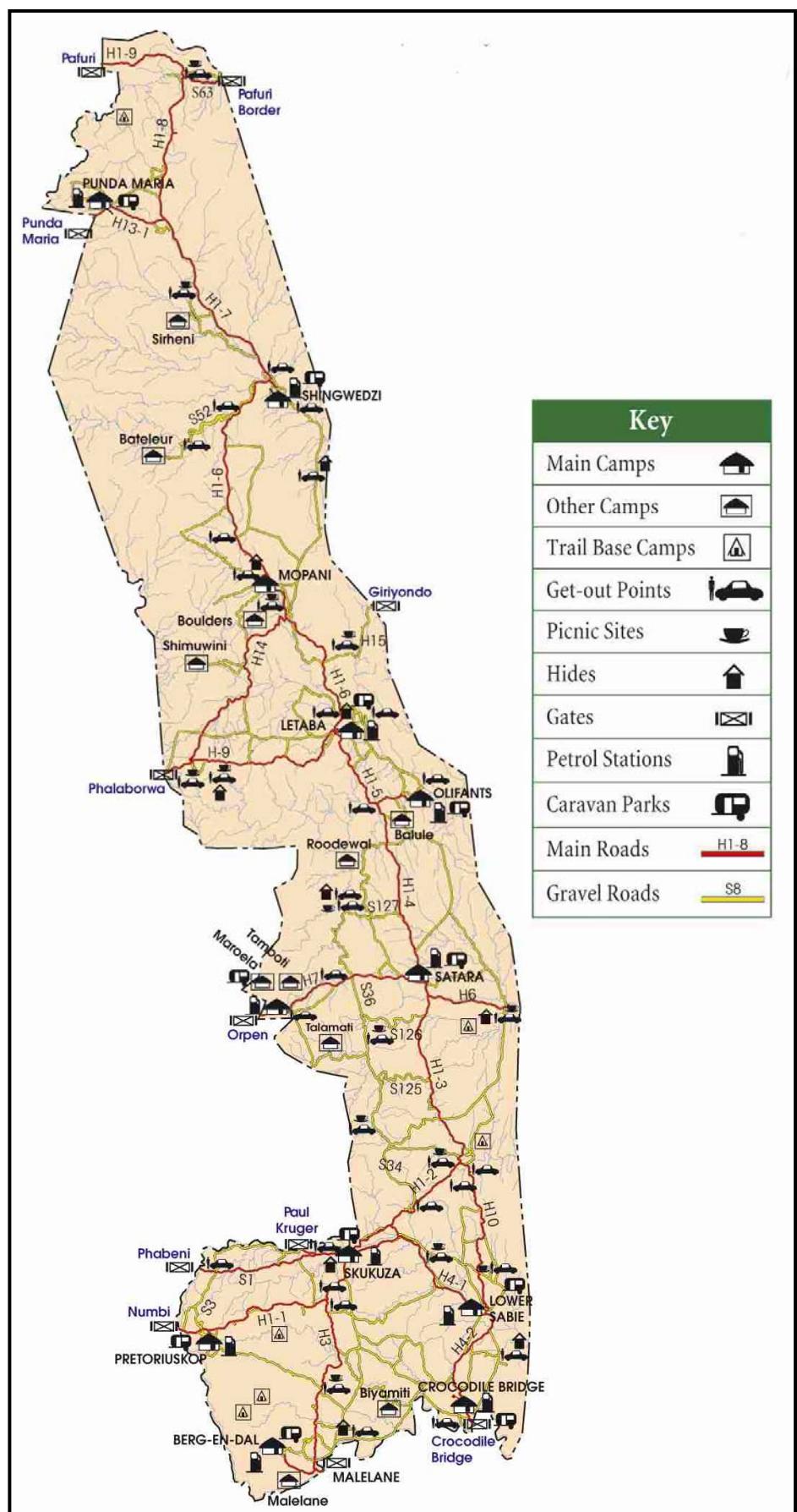
2.8.3.1 Kruger National Park

The Kruger National Park is approximately 20,000 km² but the area under wildlife and tourism is increased considerably when private sector initiatives are included.

The following brief notes describe the status of tourism in the Kruger NP.

- 1.5 million visitors year
 - Successfully markets a range of accommodation and experiences
 - Some market dissatisfaction with crowding
 - Will focus on redeveloping their “wilderness” during the next five years.
 - Kruger has camps away from key features and they are still booked. Rather than placing them at the base of the key park attractions....

Figure 48: Kruger National Park



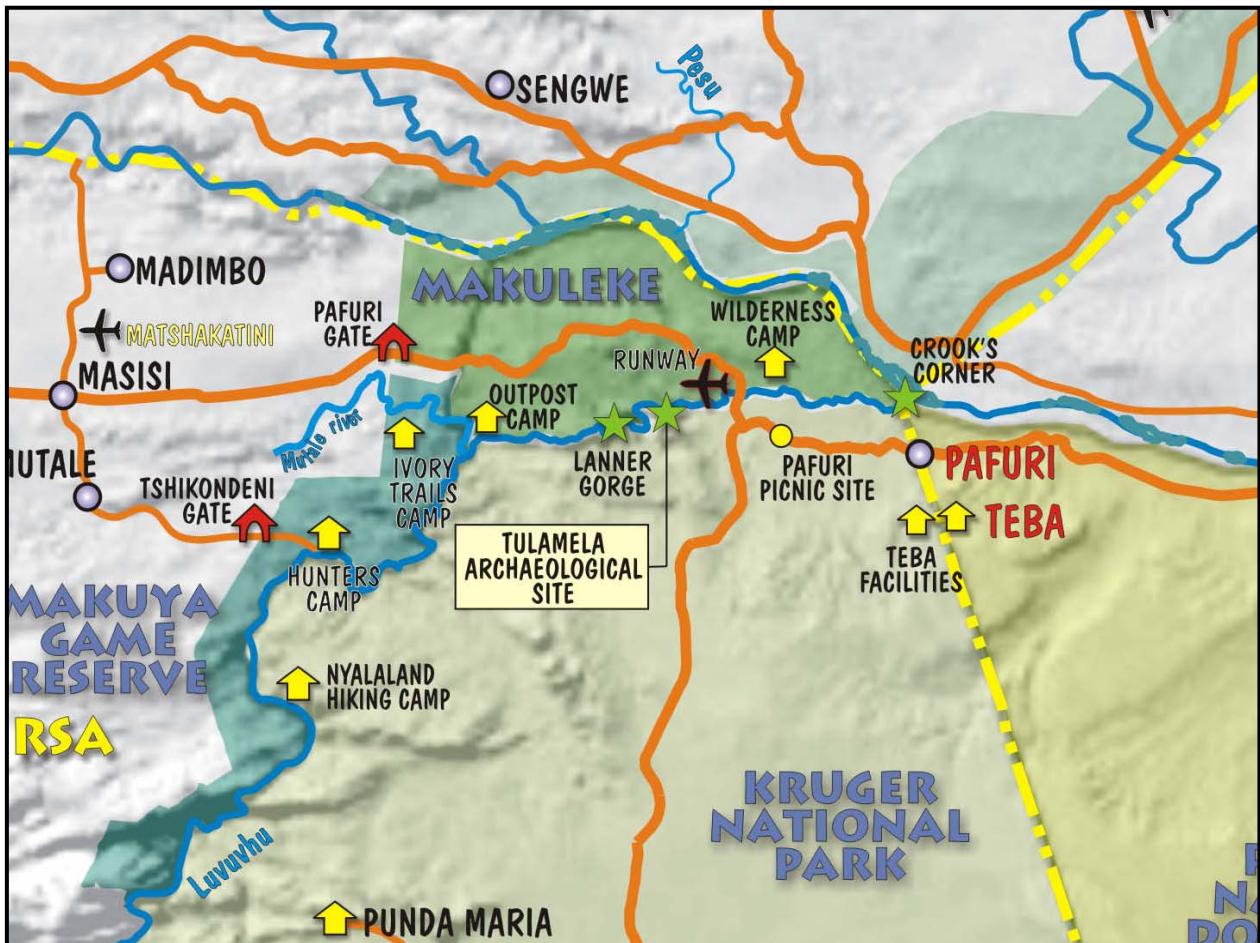
2.8.3.2 Makuleke Contractual Park & Makuya Game Reserve

The Makuleke Region was occupied by the Makuleke Community for some 140 years prior to their forced removal in 1969 to expand the Kruger National Park. In the 1990s, the Makuleke community lodged a successful land claim resulting in the return of their land. This return was conditional on the land being used only for ecotourism and subject to the environmental management of Kruger National Park.

It appears that two agreements have been entered into with the private sector. One with Wilderness Safaris who has developed Pafuri Camp and the other with "The Outpost".

According to their website the Outpost is a "true community lodge", the Outpost was built with labour provided by the Community and now operates with staff drawn almost entirely from the Community. The Outpost pays 8% of its turnover to the Community as a concession rental and a further 2% of its turnover is paid to a Trust formed for the benefit and welfare of the Community. At the end of the 30 year concession period, the entire lodge is returned to the Community, the objective being for community members to have obtained the necessary skills to operate The Outpost for their own benefit.

Figure 49: The Makuleke Concession Area.



2.8.4 Stakeholder Analysis

An important component of any management plan is good relations with neighbours and stakeholders. Accordingly identification of these stakeholders is important and Table 24 provides a summary of the main stakeholder groups for Gonarezhou.

Table 24: Identified stakeholders for Gonarezhou	
Group	Details
Government	<ul style="list-style-type: none"> • ZPWMA • EMA • Chiredzi RDC • Chipinge RDC • Veterinary and tsetse control • Customs and Immigration <ul style="list-style-type: none"> • Mwenezi and Beit Bridge RDCs • Police • Army • DAs Office • Office of the President
NGOs	<ul style="list-style-type: none"> • Frankfurt Zoological Society • Wildlife and Environment Society of Zimbabwe • Lowveld Carnivore Project
Conservancies	<ul style="list-style-type: none"> • Malilangwe Trust • Save Conservancy • Hippo Valley <ul style="list-style-type: none"> • Chiredzi River Conservancy • Bubye River Conservancy
GLTP	<ul style="list-style-type: none"> • South African National Parks • EmoFauna • District Authorities in South Africa • District Authorities in Mozambique • Peace Parks Foundation
Research Institutions	<ul style="list-style-type: none"> • Zimbabwean Universities (University of Zimbabwe, University of Science and Technology – Bulawayo, University of the Midlands, Chinhoyi University, Bindura University, Great Zimbabwe University – Masvingo, Zimbabwe Open University) • External Universities (Wageningen University) • Mushandike College of Wildlife Management • CIRAD • CNRS
Agricultural Sector	<ul style="list-style-type: none"> • Triangle Sugar Estates • Hippo Valley Sugar Estates • Mkwashine Estates • Mwenwezana Estates
Local Communities (Chiefs and MPs)	<ul style="list-style-type: none"> • Mahenye • Mtandahwe • Ndali/Chitsa • Chibwedziwa • Chingele <ul style="list-style-type: none"> • Chizvirzvi • Boli • Gonakudzingwa • Pahlela • Malapati
Private Sector	<ul style="list-style-type: none"> • Tour operators • Concerned local citizens • Adjacent lodges • Hunting companies

CHAPTER 3: CURRENT MANAGEMENT AND UTILISATION

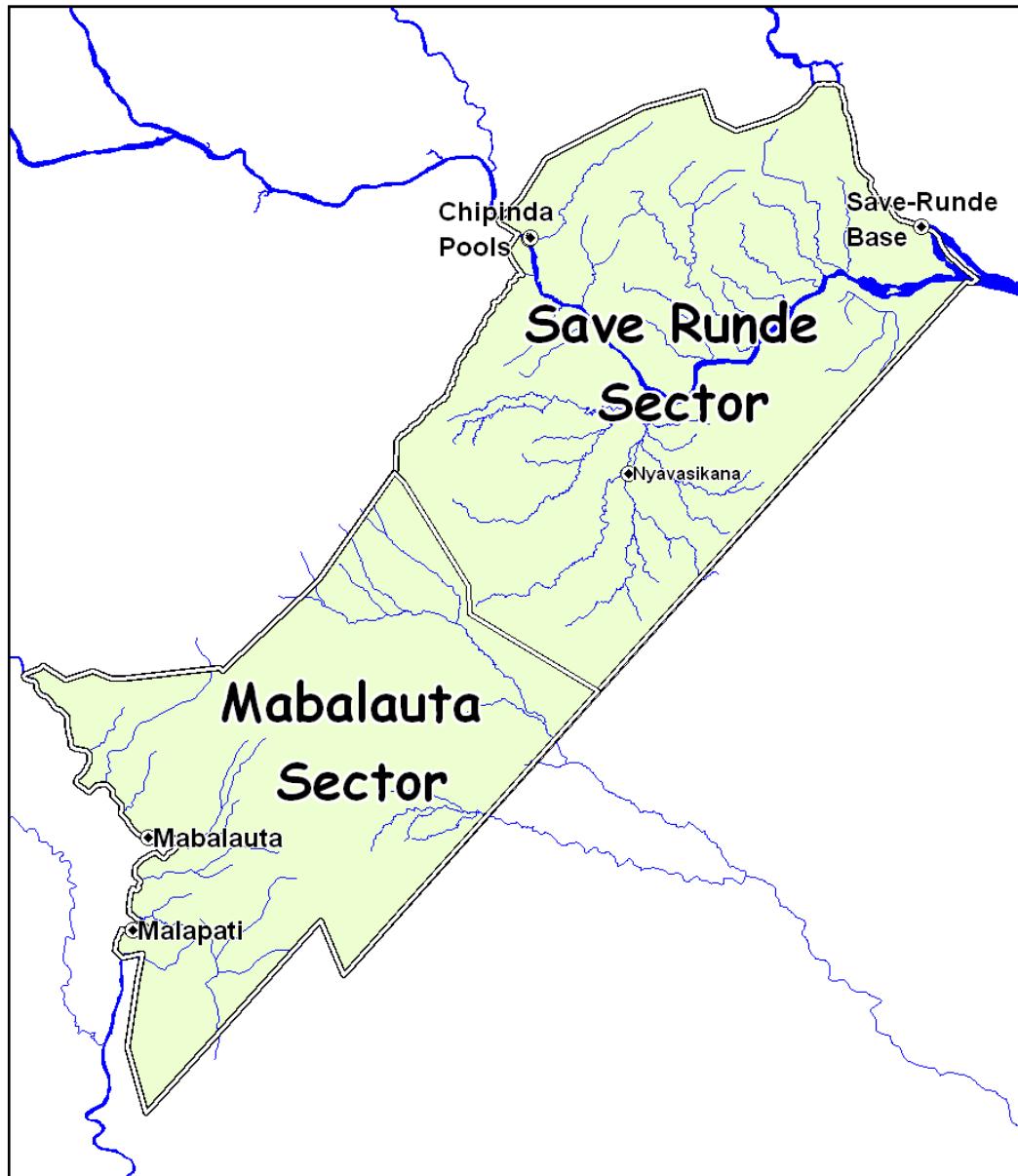
This chapter provides a brief outline of the current management and utilisation status of the Gonarezhou National Park and the surrounding areas (with respect to wildlife and environmental issues).

3.1 MANAGEMENT OF GONAREZHOU

Although gazetted as a single park the Gonarezhou is effectively run as two separate units. The Save Runde Sector is managed from Chipinda Pools with a sub station located on the Save river. A third, but currently unutilised sub-station is located south of the Chilojo cliffs at Nyavasikana.

The Malabaluata Sector is managed from Mabalauta with a sub-station at Malapati. The Malapati sub-station is also responsible for the management of the Malapati Safari Area.

Figure 50: Management Sectors and management stations for Gonarezhou



3.2 INFRASTRUCTURE AND EQUIPMENT

3.2.1 Roads, River Crossings and Airstrips

There are approximately 1 400 kilometers of road inside and along the boundaries of Gonarezhou.
Roads are used for both tourism and management purposes

Figure 51: Roads in and around Gonarezhou

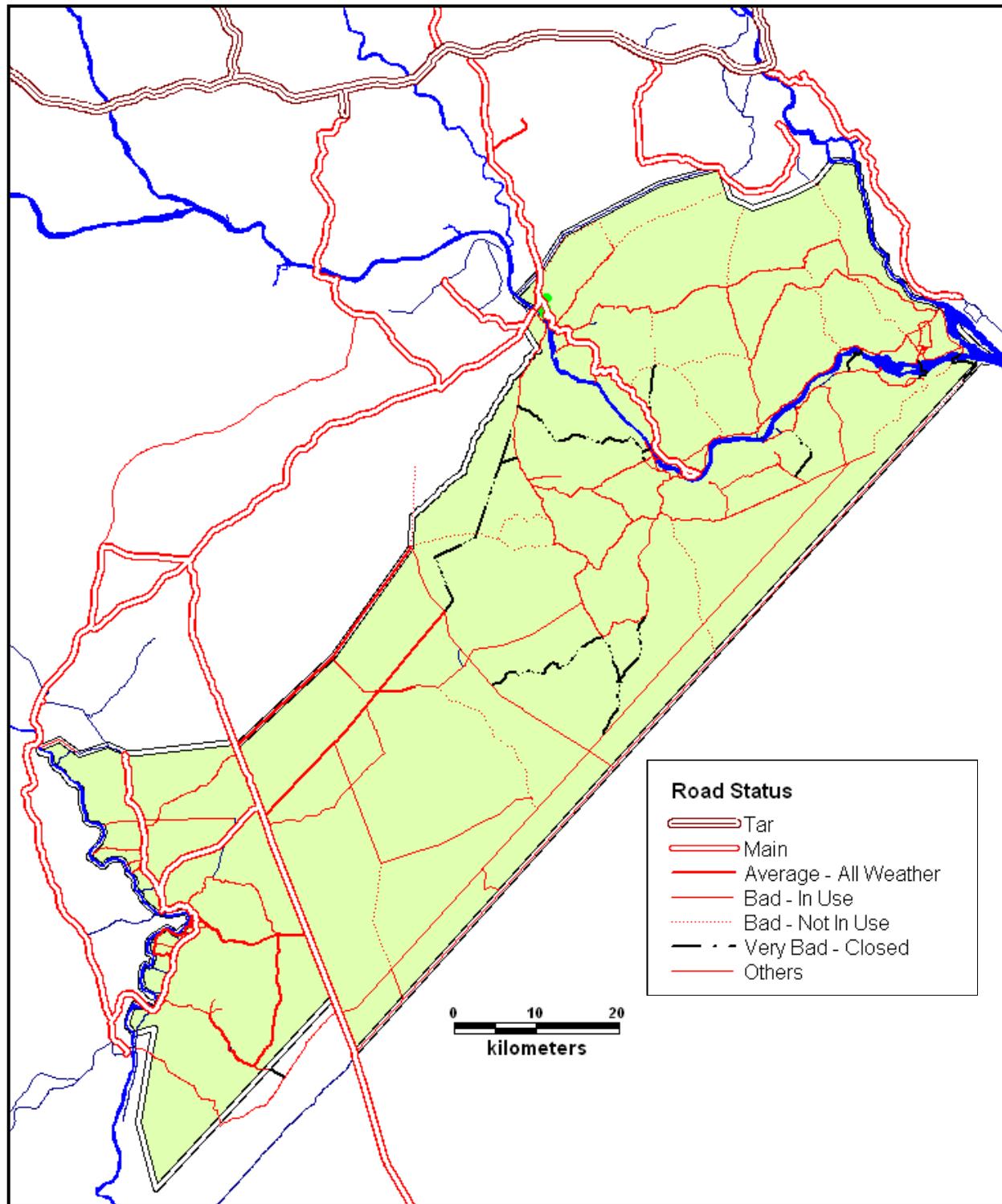


Figure 52: Fence lines and important river crossings in Gonarezhou

The road network in Gonarezhou has largely been developed along utilitarian lines rather than with tourism in mind. Many of the roads in use today follow fence lines which demarcated tsetse control areas. These are mainly straight lines where many of the original fence poles remain (Figure 52).

There is a need to reconcile the road network in Gonarezhou to make it more interesting for tourists – but also to ensure that it works for management purposes as well.

A new road providing access to the Chilojo Cliffs from the north bank of the Runde was completed in 2006 and this has changed the whole character of the area. Previously access to the cliffs was from the southern bank and involved a long drive. A visit to the cliffs was a full days drive and many people camped overnight. The new road means that access to the cliffs can be a little more than an hour from Chipinda Pools. This easy access will mean more frequent day visitors to the site.

The status of river crossings, especially on the Runde effectively divides Gonarezhou into two parts during the rains. If the Runde is down in full flood the only access to Mabalauta is via the main road between Harare and South Africa.

A high level bridge near the Chipinda Pools HQ was washed away during the El Nino and the low level causeway at Chilonja south of Chiredzi is in urgent need of repair. There are several other crossing points on the Runde which are useable during low water. The crossing at Chipinda (Madawo's Causeway) is the only one which is rebuilt every year.

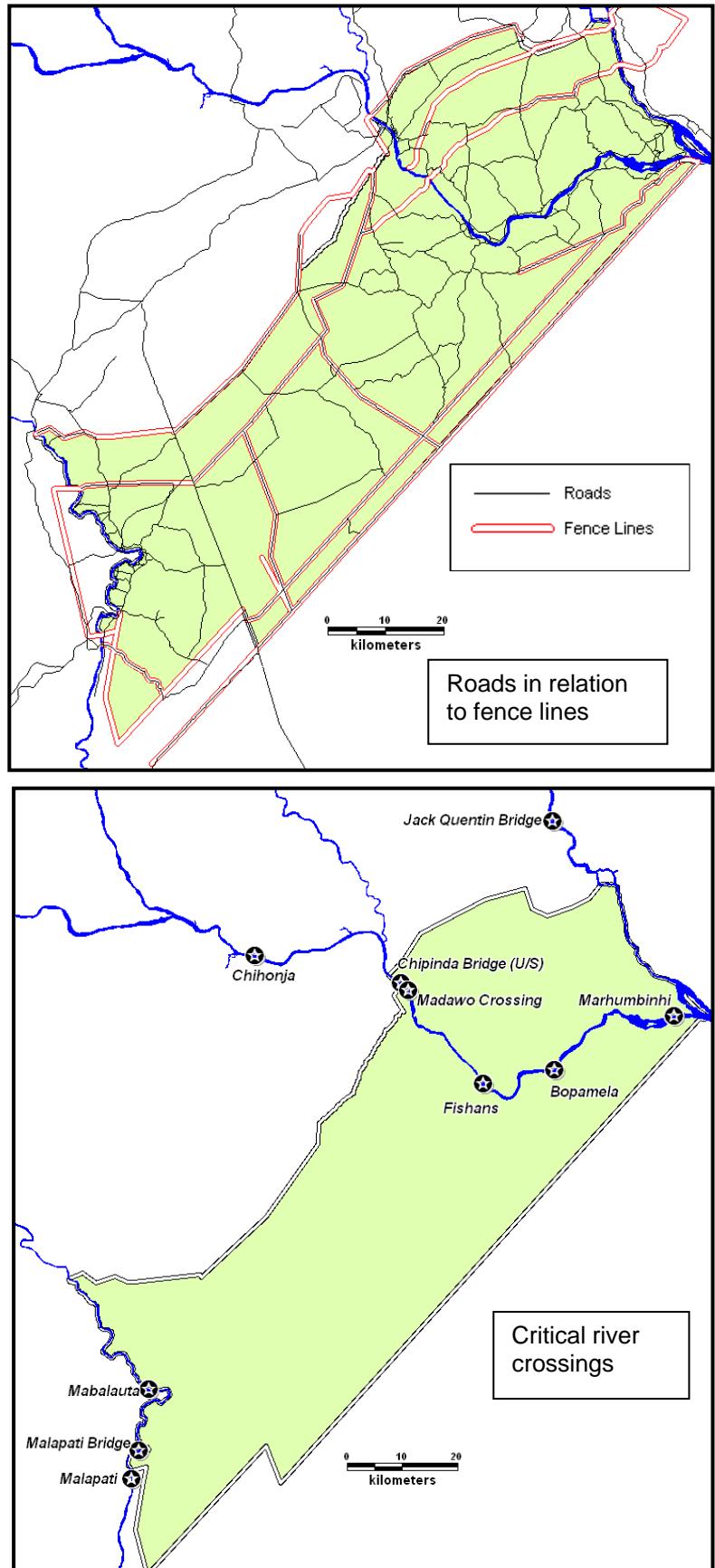


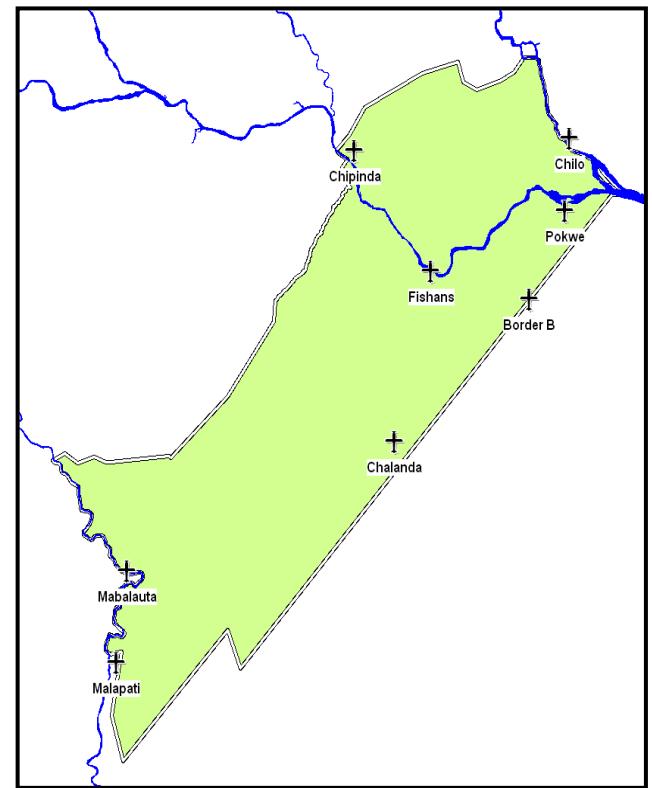
Figure 53: Important crossings



There are seven airstrips in the Park if we include Malapati (Table 25 and Figure 54). The Chilo airstrip is an important all weather airstrip and is located just outside the park in Mahenya ward.

Table 25 and Figure 54: Airstrips in Gonarezhou

Name	Type	Length	Surface
Chipinda	All weather	1 000m	Gravel
Mabalauta	All weather	900	Grass
Fishans	Dry season	800 m	grass
Chalanda	Dry season	800 m	grass
Border B	Dry season	1 000m	grass
Pokwe	Dry season	600m	grass
Malipati	All weather	1 000m	grass
	Condition	Use	
Chipinda	Good	Mgmt/Tourism	
Mabalauta	Fair	Mgmt/Tourism	
Fishans	Fair?	Mgmt only	
Chalanda	fair	Mgmt only	
Border B	fair	Mgmt only	
Pokwe	bad	Mgmt only	
Malipati	fair	Mgmt/Tourism	



3.2.2 Staff Housing, Offices and Workshops

The two main management centres – Chipinda Pools and Mabalauta – have well developed staff housing and office facilities. There has been significant investment in staff housing at the Save-Runde base but the offices here are in a poor state. In general it should be said that much of the housing needs to be renovated. The types and numbers of housing are indicated in Table 26.

Existing staff structures are old and in need of urgent renovations, and there is a need for additional accommodation, to cater both for the current staff establishment, as well as to take into consideration future increases in staff numbers and the need to supply suitable accommodation for seasonal contract labour.

Table 26: Staff housing available in the Gonarezhou

House types	Chipinda Pools	Mabalauta	Save Runde	Malapati
Managers House	4	4	0	0
F13	5	5	0	0
F15	11	6	6	6
R 27	4	4	0	0
R 26	8	4	0	0
Single quarters (# rooms)	28	31	0	0

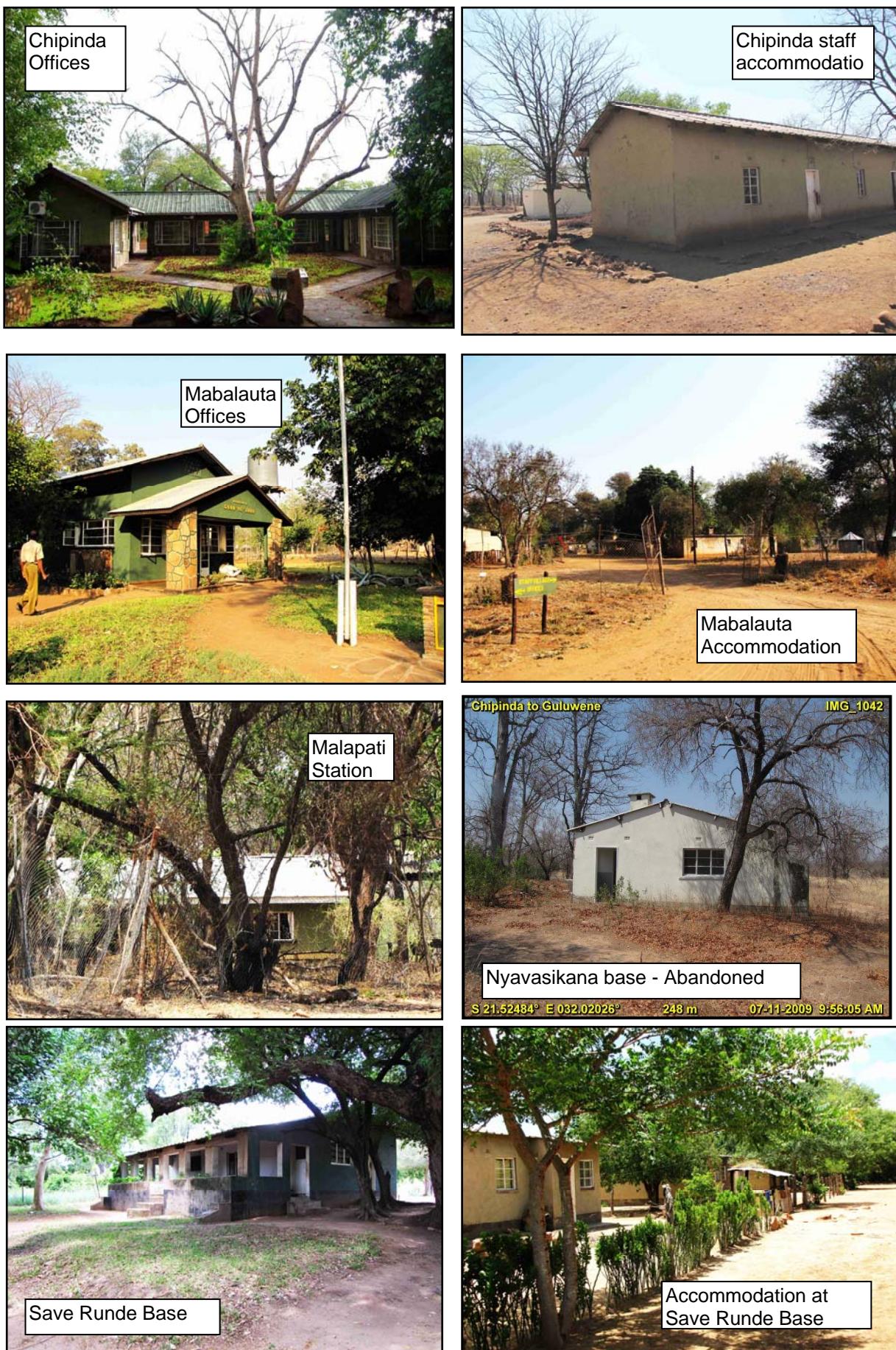
The status of other buildings at all stations is shown in Table 27.

Table 27: Other buildings and infrastructure shortages in Gonarezhou				
Station	Type	Existing	Condition	Requirements
Chipinda Pools	Office	1	good	Renovate, and construct research block
	Workshop	1	good	Need for additional storage room
	Butchery		poor	Renovation needed
	Aircraft hangar	1	poor	Need additional hangar and renovation of the existing hangar
	Storeroom	1	poor	Need additional expanded storage facility
	Radio room	1	good	
	Tourist office	1	good	Need expansion and improvement
	Clinic	0		Construction required
Base camp	Office	0		Construction required
	Radio room	1	poor	Needs renovation and extension
Mabalauta	Office	1	fair	Needs renovation and extension
	Workshop	1	poor	Needs renovation and extension
	Butchery	1	fair	Needs renovation
	Storeroom	1	fair	Needs renovation and extension
	Radio room	0		need new one
	clinic	0		need new one
Malipati	Office	1	poor	Needs construction
	Storeroom & radio room	1	poor	Needs renovation and extension

Water for all stations and the Simuwini tourism facility is provided from the nearby rivers. Only Save-Runde has a borehole but this is currently unserviceable (Table 28). The Zimbabwe National Water Authority, (ZINWA), has traditionally been in charge of all domestic water supplies in Gonarezhou. ZINWA is still operational in Chipinda Pools but in Mabalauta, Malipati and Save-Runde Base camp this duty was formally taken over by ZPWMA in 2004. Due to a combination of an ageing and ill-maintained infrastructure and periodic shortages of key supplies, water provision are at times erratic and often insufficient to meet demand.

Table 28: Status of the water supply infrastructure in Gonarezhou				
Location	Authority	Source of water	Type facility	Status and suggested action
Chipinda Pools	ZINWA	River	Cement roofed reservoir	Serviceable, but mother line needs replacement
Save-Runde	ZPWMA	Borehole	Cement reservoir without roof	Unserviceable – pump and engine needs total replacement
Mabalauta	ZPWMA	River	Plastic tanks	Unserviceable – pump and engine needs total replacement
Simuwini Tourist	ZPWMA	River	Plastic tanks	Unserviceable – pump and engine needs total replacement
Malipati	ZPWMA	River	Plastic tank (too small)	Unserviceable – pump and engine needs total replacement

Figure 55: Aspects of Gonarezhou infrastructure



3.2.3 Equipment

As with many protected areas, useful and serviceable equipment is a problem. Chipinda Pools has three light trucks while Mabalauta has one (Table 29). These four vehicles need to service all the park management needs. In addition vehicles are often out of service in the park as they are also used for administrative business which requires trips to Chiredzi, Masvingo and Harare.

Table 29: Equipment inventory					
Type	Chipinda	Mabalauta	Type	Chipinda	Mabalauta
Land Cruiser	5	2	Water Bowser	2	2
Tractor	3	1	Compacter	1	1
Tipper Truck	1	1	Front end loader	0	0
Truck	1	0	Dozer	0	0
4 Wheel Trailer	1	1	Boat	1	0
Tipper Trailer	2	0	Firefighter	2	1
Mower	2	1	Backpack spray (fires)	10	0
Tow Grader	2	1	Welding machine	1	1
			Motorized grader	0	0

The radio network is being improved and Table 30 lists the current status of radio equipment in the Gonarezhou. A repeater station has been established on Makandima hill.

Table 30: Radio equipment analysis for GNP				
	Repeaters	Handsets	Vehicles	Base
Chipinda	2	16	3	2
Mabalauta	1	13	1	2
Save Runde				
Malapati				

3.2.4 Staff welfare

Chipinda Pools has a 2-classroom school that caters for education of children up to Grade 6, with three teachers employed by Government. No education facilities are available at either Save-Runde base camp or Mabalauta. The informal strategy of staff at Save-Runde Base camp and Malipati sub-station is to leave school going children with relatives in town who have access to schools. Mabalauta staff rent houses in Chikombedzi at their own cost to leave children during the week to attend school, and if a vehicle is available at the station it takes children in on Monday mornings, and collects them again on Friday. Logistically and financially the matter of educating of school children for staff is complex and costly, and a strategy for each station within GNP must be developed to deal with the issue of education of staff children.

The approved PWMA establishment offers a position of a medical officer in both Chipinda Pools and Mabalauta which are currently filled. The medical officers are taken to Chiredzi each month to access basic medical supplies from the Council hospital. Although supplies have not always been available in the last few years due to the economic challenges facing Zimbabwe, the position is currently improving.

It is imperative that the on-site basic health care facilities are maintained and that periodic refresher training of staff is conducted. Monthly baby clinics must be conducted at each station. Transport for

staff requiring medical attention beyond the capabilities of the facilities at station level will be provided. AIDS awareness programmes should be constantly updated and implemented. Malaria prevention programmes will be carried out, and basic first-aid training courses for field rangers conducted annually.

3.3 STAFFING AND ENFORCEMENT ACTIVITIES

3.3.1 Staffing

There are currently 110 staff assigned to Gonarezhou and these numbers are roughly split between Chipinda Pools and Mabalauta (Table 31). (Not sure if these numbers include staff posted to Save-Runde and Malapati on a rotational basis?). A further 90 staff have been approved for the park but it is unlikely that these staff could be housed on station with a significant upgrade to the staff housing.

Position	Chipinda Pools		Mabalauta		Total shortage
	Current	Approved	Current	Approved	
Area Manager	1	1	1	1	0
Senior Wildlife Officer	2	4	1	4	5
Wildlife Officer			1	0	0
Senior Ranger	2	4	2	4	4
Ranger 1	5	14	9	13	13
Ranger 2	1	12	8	20	23
Ranger 3	19	35	16	29	29
Senior Ecologist	1	1	0	0	0
Ecologist	1	2	0	0	1
Senior Ranger – Scientific Services	0	1	0	0	1
Ranger 1 - Scientific Services	0	1	0	0	1
Ranger 2 Scientific Services	1	2	0	0	1
Ranger 3 - Scientific Services	0	2	0	0	2
Medic	1	1	1	1	0
Clerk	0	1	1	1	1
Reservationists	0	1	2	2	1
General hand	3	4	1	4	4
Lodge attendant	0	2	3	4	3
Linen attendant	1	2	1	2	2
Handy man	4	0	0	0	0
Ranger 3 - (Stores man)	1	0	0	0	0
Ranger 3 - (Workshop assistant)	2	0	1	0	0
Ranger 3 - (Drivers)	1	0	2	0	0
Ranger 3 - (Gate attendants)	2	0	0	0	0
Ranger 3 - (Night watchman)	2	0	2	0	0
Ranger 3 - (Radio operator)	1	0	2	0	0
Ranger 3 - Commercial services	5	0	0	0	0
TOTAL	56	90	54	85	91

3.3.2 Enforcement Activities

Enforcement activities are based around extended patrols which are usually seven to 14 days. In addition, day patrols are carried out as well as responses to reported illegal activities. Other activities such as removal of cattle from the park, establishing informer networks, manning observation posts etc are also part of the enforcement activities (Table 32).

Table 32: Enforcement activities in Gonarezhou

Type of law enforcement activity	Chipinda Pools		Mabalauta	
	Current	Target	Current	Target
Patrols – Extended (7 - 14 day)	5	20	6	20
Day patrols (local Patrols)	5	60	20	60
Mobile Patrols (rapid response)	1	5	2	5
Tourist monitoring	0	4	0	4
Meetings with police and community	0	1	0	1
Monitoring of hunting quotas	0	1	0	1
Observation Posts	n/a	n/a	n/a	n/a
Follow-ups	n/a	n/a	n/a	n/a
Informers	n/a	n/a	n/a	n/a
Cattle sweeps	n/a	n/a	n/a	n/a

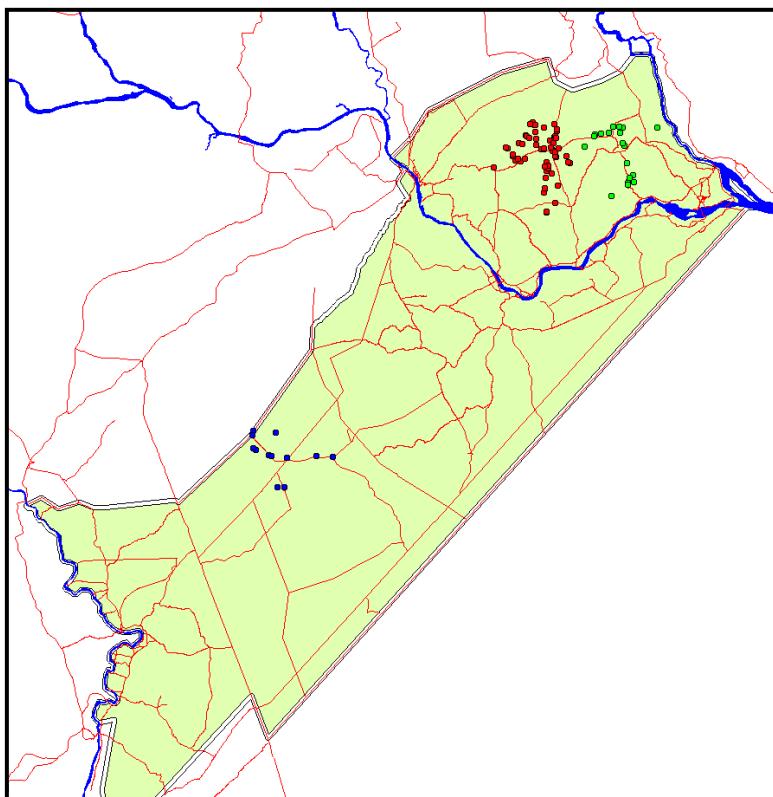


Figure 56: Sample of three extended patrols during 2009

All stations are in process of developing a computerised database for entering information collected on patrols. In addition to the specific information the data base can also be used to analyse and plan enforcement activities. The figure shows three arbitrary extended patrol positions extracted from the database as an example.

3.3.3 Human-Wildlife Conflicts and Problem Animal Control

Problem animal control outside the Park boundary also falls under the jurisdiction of GNP management, and the policy and guidelines directing the actions of rangers involved in PAC should be very clear, and implemented in close collaboration with adjoining communities and stakeholders.

Records of problems animals from the Chiredzi RDC between 2003 and 2007 show that although there is a problem, it is not as bad as in some other areas. There were 64 recorded problems during these five years and 63% of these were due to herbivores (buffalo, elephant, hippo and eland). The remainder were due to predators (leopard, lion, hyena and crocodile) and the breakdown is shown below (Table 33).

Table 33: Characterisation of human-wildlife conflicts in the Gonarezhou area 2003 to 2007
Data from Chiredzi RDC – Details in Appendix 4

Species	Comments
Eland	Single record from Buffalo Range resettlement where it destroyed cotton
Elephant	65% of herbivore records. Almost all were damaged crops and property but one case of a baby dying inside a hut that was destroyed.
Hippo	38% of herbivore records. Almost all for crop damage but two cases of people being injured
Buffalo	Two records of threats or injury to people
Leopard	Three cases of killing cattle and goats
Lion	Nearly 40% of the predator records. All for killing cattle.
Hyena	Three records for killing cattle and goats
Crocodile	30% of predator record. Four people killed. Two records of goats taken

Figure 57: Aspects of park management



3.3.4 Non-Governmental Organisations

3.3.4.1 Frankfurt Zoological Society

The Frankfurt Zoological Society (FZS) was established in 1858 and is an internationally operating conservation organisation based in Germany. The Society is an independent, non-profit organization whose projects are financed through membership fees, private donations, bequests and investment returns through a Foundation. Financial support also comes from third-party funds such as other foundations and charitable trusts. FZS is committed to conserving biological diversity and has been involved in 70 conservation projects in 30 countries. In Zimbabwe it has established the Gonarezhou Conservation Project and a ten Memorandum of Understanding was signed in 2007. The objective and specific outcomes of this project are shown below.



Objective:

Project purpose: Effective and sustainable management of Gonarezhou National Park implemented in partnership with stakeholders

Specific Outcomes and Strategic Themes:

Outcome 1: Direct threats to species and ecosystems reduced

- Direct interventions to mitigate threats (*fire management, boundaries, catchment health*)
- Resource protection and law enforcement (*operational LE & plan, logistical support*)
- Ecosystem, species and threat monitoring (*wide ranging programme*)
- Direct interventions to improve ecosystem and species viability (*rhino reintroduction*)
- Relevant management-oriented research (*elephant movement, vegetation, buffalo disease*)

Outcome 2: Ecosystem and protected area management effective, transparent and adaptive

- Site-specific management planning (*GNP ratified*)
- Administration and management systems (*support for admin and infrastructure*)
- Infrastructure & equipment provision (*roads, vehicles, buildings, communications, workshop*)
- Training and mentoring, experience sharing visits (*in-house training*)

Outcome 3: Communities sustainably managing natural resources

- Traditional ecological knowledge and management systems (*cultural site inventory*)
- Community empowerment, equality and governance (*PPCP options explored and established*)
- Community-based natural resource management, monitoring & protection (*monitoring training*)
- Conservation compatible community livelihoods and well-being (*framework for NRM*)
- Relevant management-orientated research (*sustainability of safari hunting*)

Outcome 4: Policies, legislation, partnerships and awareness

- Local or national forums & grassroots' activities (*partnerships and support to existing forums*)
- Networking, partnerships, dialogue and advocacy (*GLTP inputs*)
- Environmental education (*assessment and establishment*)

Outcome 5: Ecosystem and protected area management sustainably financed

- Business planning (*business plan, tourism leases, funding explored*)
- Tourism development and management (*planning, infrastructure, publicity*)

FZS has had a significant input into workshops, infrastructure and equipment over the last three years and will attempt to address many of the issues raised by the General Management Plan, based on priorities and available funding.

3.4 TOURISM IN GONAREZHOU

3.4.1 Background To Tourism

Introduction

Gonarezhou is a place of varied and scenic beauty, with the main physical attractions being the large rivers (Mwenezi, Save and Runde) and the world-famous Chilojo Cliffs. The vegetation of the park is varied and runs through miombo derived woodlands and sandveldt vegetation on higher areas to mopane woodlands on the lower ground. Historically, the park has not been considered a good wildlife viewing destination for a number of reasons. These include low numbers of most species, a poaching history, the secretive nature of some animals and the terrain. However, the situation appears to be changing and the wildlife experience is improving. But wildlife viewing in the Gonarezhou is both a challenging and rewarding experience.

The Gonarezhou wilderness is one of the most saleable assets that the park has. The problems of access to the park, and the depressed state of the tourism industry in Zimbabwe during the last decade, has left the park with a relatively undeveloped interior where all accommodation are limited to campsites with basic facilities. The lack of permanent accommodation facilities within the park opened up an opportunity to plan for the park using wilderness as its key feature.

Access

The location of the Gonarezhou, well away from other tourism circuits in Zimbabwe, means that access for the general tourist is difficult. Most visitors to the park are self-drives and more than 80% of these are of Zimbabwean origin. There is an international airport at Buffalo Range but currently there are no scheduled flights into the area. Few tourist operators use the park at present.

Access within the park is also difficult and it is only possible to cross the Runde inside the park in the dry season. This effectively cuts the park in two during the rains and access between the two main tourism areas (Chipinda and Mabalauta) is limited at this time. Many of the roads are in poor condition.

There are a number of “official” access points into the Park but only one is manned at present – Gonakudzingwa. Visitors report to either Chipinda Pools or Mabalauta on arrival. There is need to consolidate the number of entry points into the Park, and to construct basic gate and entry facilities at designated entry points.

GLTP and Market Position

The Gonarezhou National Park is part of the Great Limpopo Transfrontier Park which also includes the Kruger NP (in South Africa) and the Limpopo NP (in Mozambique). It is important that the three parks compliment each other and do not compete for the same market. South Africa is a regional economic powerhouse and has marketed the Kruger as a mass tourism destination in the past. However, they are now moving away from this and are trying to sell the wilderness aspects of the park, but they are in no position to compete with Gonarezhou. The Transfrontier Conservation Area treaty regarding the GLTP was signed by the Presidents of Zimbabwe, Mozambique and South Africa but the ZPWMA is responsible for the agreements relating to the treaty.

Existing Tourism

Historically the South East Lowveld of Zimbabwe has been an area which has received relatively little attention as a tourism destination. A combination of factors, including access that is mostly restricted to the dry season, major droughts in the early 1980's and 1990's, unscheduled closures and its significant distance from the main tourism centres in Zimbabwe, has contributed to the fact that GNP has not extensively been utilised as a regional and/or international tourism destination.

Gonarezhou has traditionally catered for local visitors seeking a wilderness experience, with amenities focused on providing camping facilities and basic self-catering accommodation. All tourism facilities have been provided by ZPWMA to date.

Current tourism is focussed on the Runde and Mwenezi rivers with exclusive campsites located along both of these rivers. There are three public campsites with shelters and ablutions areas, two being located in the HQ areas of Chipinda Pools and Mabalauta with the third at the exit of the Runde Gorge (Chinguli).

Nine self-catering lodges have been built at Swimuwini, a few kilometres from the Mabalauta HQ station. These have recently been connected to the ZESA grid. Two more lodges are under construction at Chipinda Pools.

In total there are 383 “beds” available in Gonarezhou National Park, but many of the exclusive campsites are only used sporadically.

Table 34: Current accommodation available in the Gonarezhou NP

Type of accommodation	Save-Runde		Mabalauta		TOTAL bednights available GNP
	No. of sites	No. of beds	No. of sites	No. of beds	
Exclusive Campsites	17	170	6	60	230
Public Campsites	2	89	1	36	125
Lodges			9	28	28
TOTAL		259		124	383

Fourteen concession sites were allocated to investors in 2006 but none of these were developed which led to the ZPWMA withdrawing the sites in 2009 (See Appendix 4).

Activities

The main activities on offer in the park include game viewing from vehicles and limited walking. Fishing was a very popular activity but has been regulated during the last few years and is currently restricted to identified sites along the Runde and Mwenezi rivers.

Although in principle guided walking safaris in the company of ZPWMA rangers are possible, this activity takes place very rarely at present. Walking safaris by commercial operators have been carried out, as have guided 4x4 trails. The development of these types of activities is considered to be an important component of tourism in the Gonarezhou.

Adjacent Areas

The Gonarezhou is surrounded by hunting concessions, both in Zimbabwe and Mozambique. Most of the hunting takes place along the boundaries of the park and it is the source of the trophies taken by the hunters. Many hunting areas in Zimbabwe are administered through the CAMPFIRE programme and the Rural District Councils (in this case, Chiredzi and Chipinge) will distribute the proceeds from the hunting to the appropriate community.

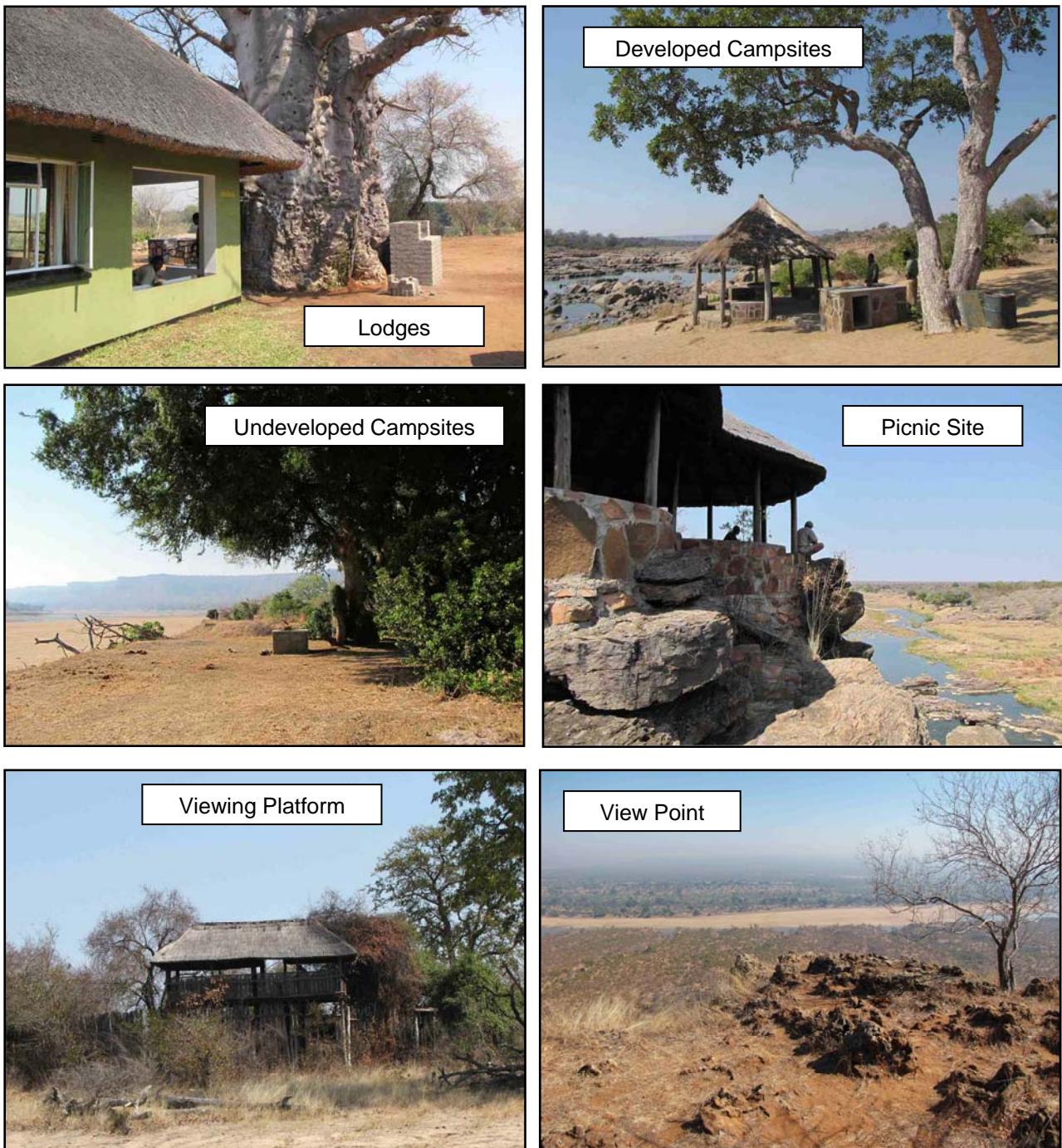
3.4.2 Current Administration of Tourism

There are currently three types of accommodation in Gonarezhou National Park. These are all run and maintained by the ZPWMA. They are listed below with the numbers of “beds” available for each type of facility:

- Lodges 28 beds
- Developed Campsites 20 “beds”
- Undeveloped Campsites 200 “beds”

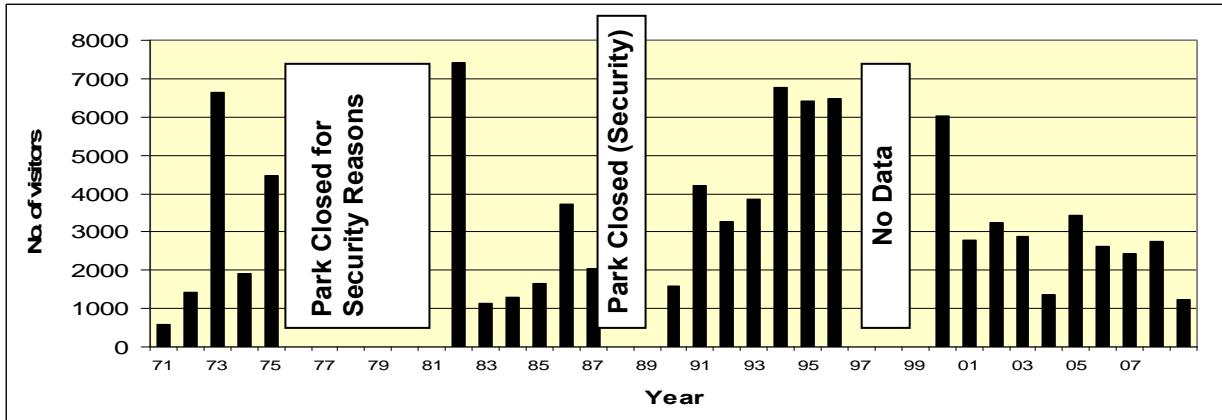
Developed campsites are those where water, ablutions and a caretaker are provided. In addition, there a number of viewpoints, picnic sites and one viewing platform (at Manyanda Pan; Figure 58)).

Figure 58: Examples of ZPWMA tourism facilities in Gonarezhou



Current use of the park for tourism is low and has been in decline since 2000. Less than 3000 visitors were recorded in 2008 which is under half of the peaks seen in the early 1980s and late 1990s (Figure 59).

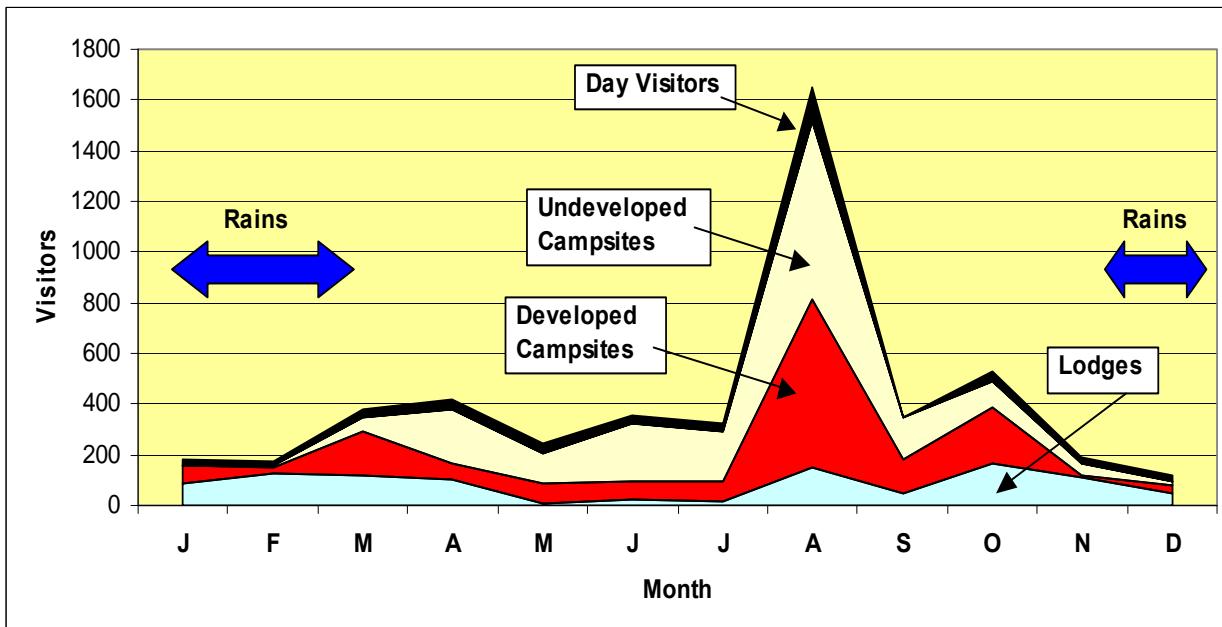
Figure 59: Visitor numbers to Gonarezhou 1971 to 2008



However, it appears that these figures are generated by entry only and do not take into account the length of stay in the park. Detailed data for was obtained for 2008 from the entry register which indicated that there were nearly 5,000 “tourist days” while the data above indicates less than 3,000 entries for the same year.

Three months (July, August and September) accounted for nearly half of the visitor days while August alone accounted for over 30% of the total. The five month rainy season (November to March) accounted for less than 20% of visitor days (Figure 60). This is due to the combination of poor camping weather and the fact that many parts of the park are inaccessible during this period.

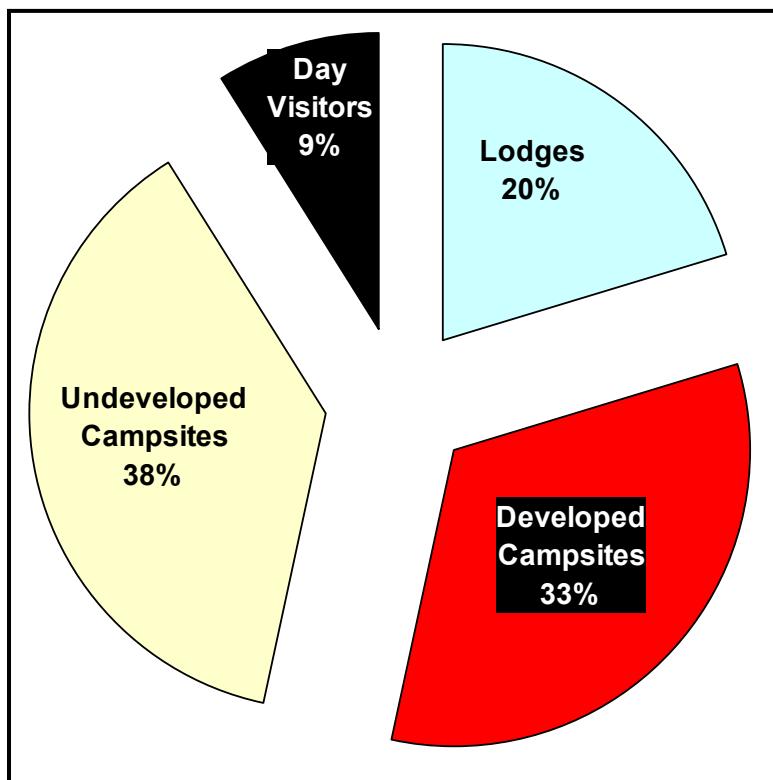
Figure 60: Visitor days in Gonarezhou during 2008



The majority of visitors were to Chipinda Pools (70%). Most visitors to Mabalauta (almost 70%) stayed in the lodges at Swimuwini.

The undeveloped campsites were the most popular category of accommodation accounting for 38% of nights spent in the park. The developed campsites were also popular with 33% of nights while the lodges accounted for 20%. Day visitors accounted for less than 10% of visitor days (Figure 61). Previous analyses of the data, which were based on entries rather than stays, indicated a higher percentage of day visitors,

Figure 61: Facility use by visitors in 2008

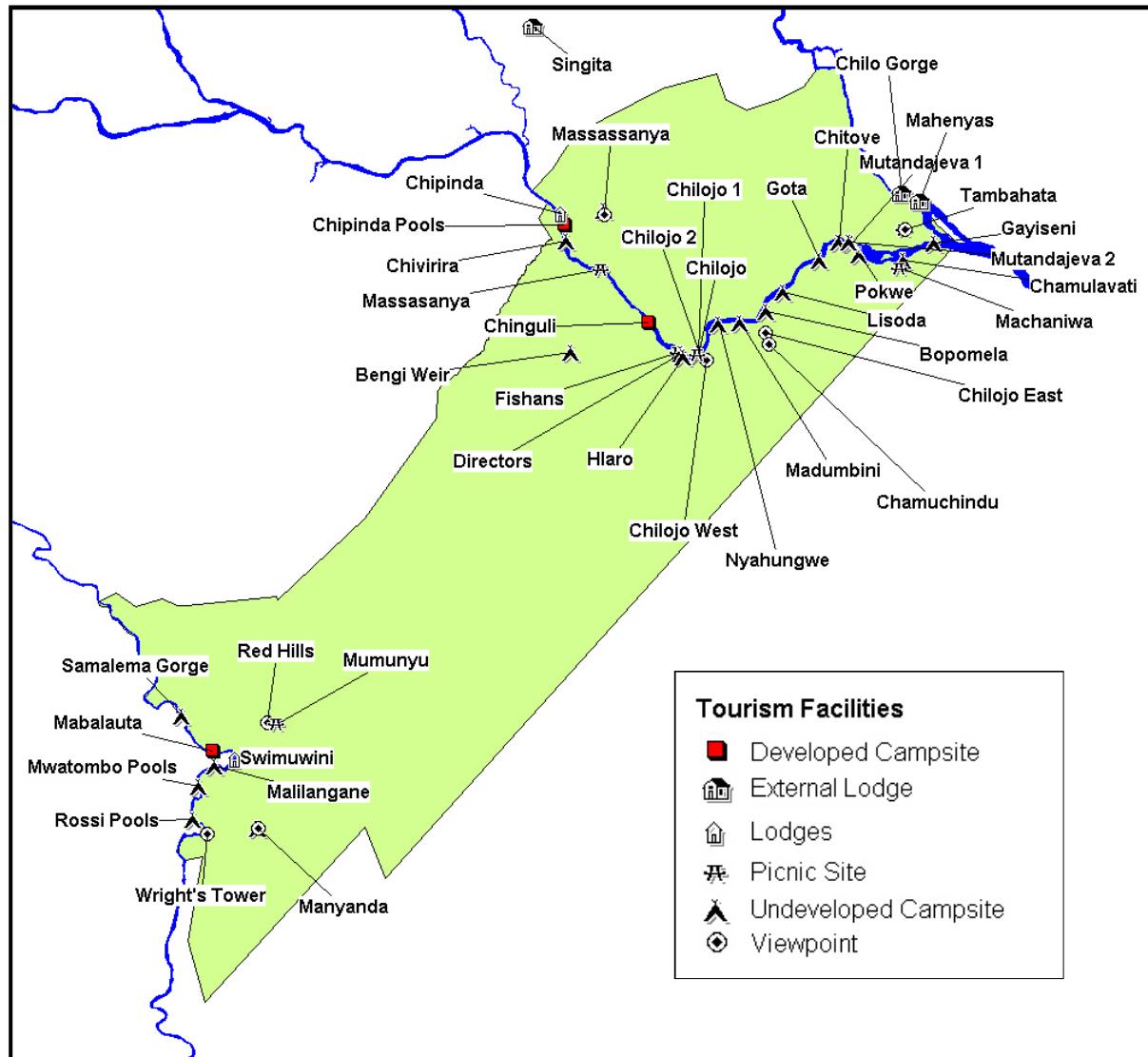


The most popular undeveloped campsite during 2008 were the two Chilojo sites opposite the cliffs accounting for 73% of visitor days. The three sites near the cliffs (Director's, Hlaro and Fishans accounted for 12% of visitor days. Benji was another important site with 7% of visitor days. The remaining 8% were spread over Massassanya, Chitove, Bopomela and Mutandajeva. Rossi Pools and Manyanda Pan were the only undeveloped sites used in Mabalauta.

Most visitors stayed for three or four nights. Some visitors remained camping for two weeks, mostly at the undeveloped sites.

Approximately 80 to 90% of visitors to the park are Zimbabweans and questionnaires – both in the past and currently – indicate that most of them come to Gonarezhou for the Chilojo Cliffs and the “wilderness experience”. Wildlife and game viewing opportunities do not feature significantly on the list. However, it should be noted that in the early 1990s regional visitors (mostly South African) to Gonarezhou constituted nearly 35% of visitors. This was a marked increase from the early 1980s where regional visitors were around 5% of the total. This is an indication that the regional market exists and could easily be brought back with careful marketing.

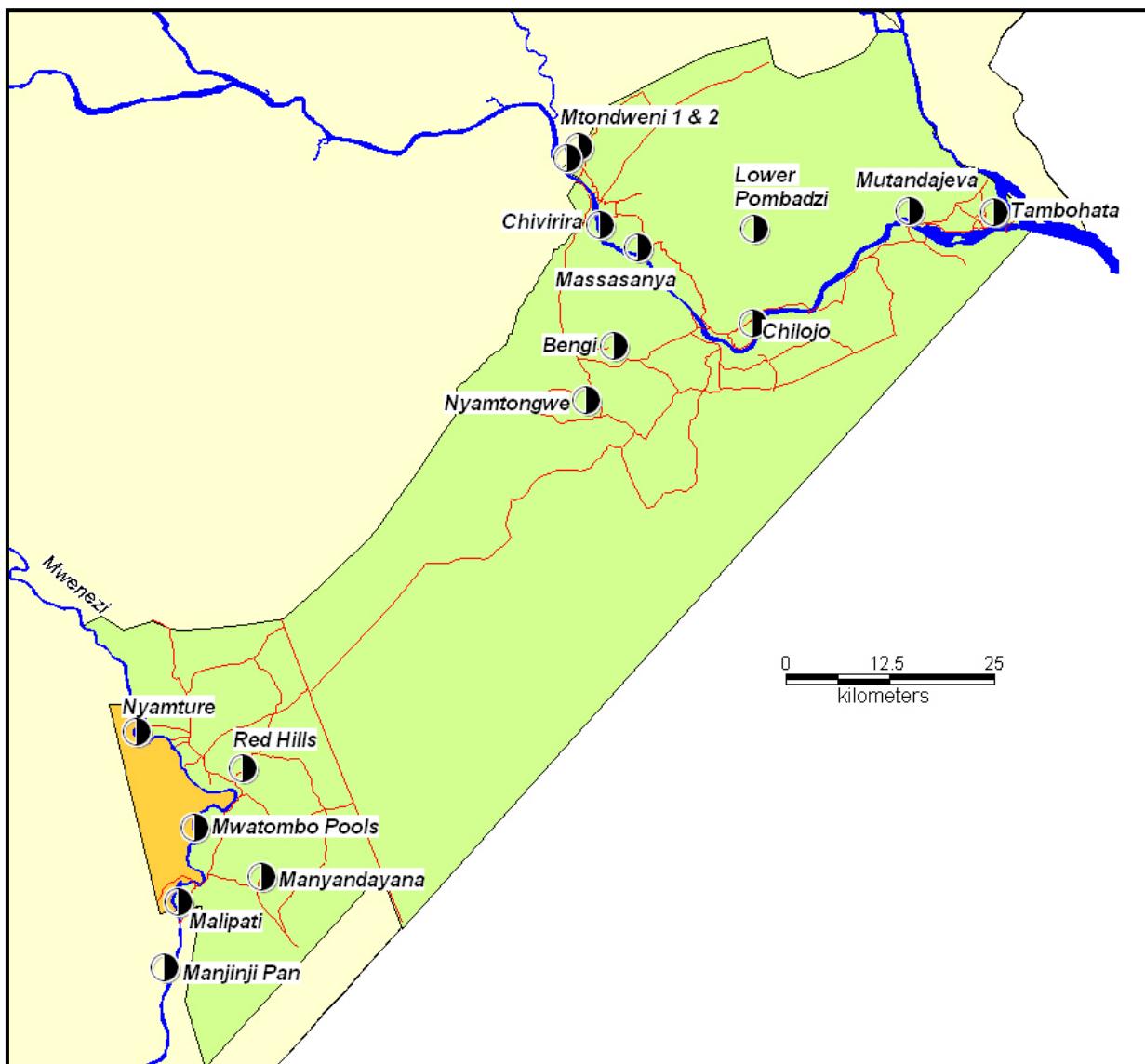
Figure 62: Current tourism sites in Gonarezhou



Fourteen sites for tourism development were advertised in 2005 and in 2006 leases were issued for number of these (Figure 63). In this report these tourism concession sites are considered under a separate heading as they were advertised without reference to a comprehensive tourism development plan for the Gonarezhou.

All leases were withdrawn prior to the development of the tourism component of the management plan.

Figure 63: Previous tourism sites on offer in Gonarezhou

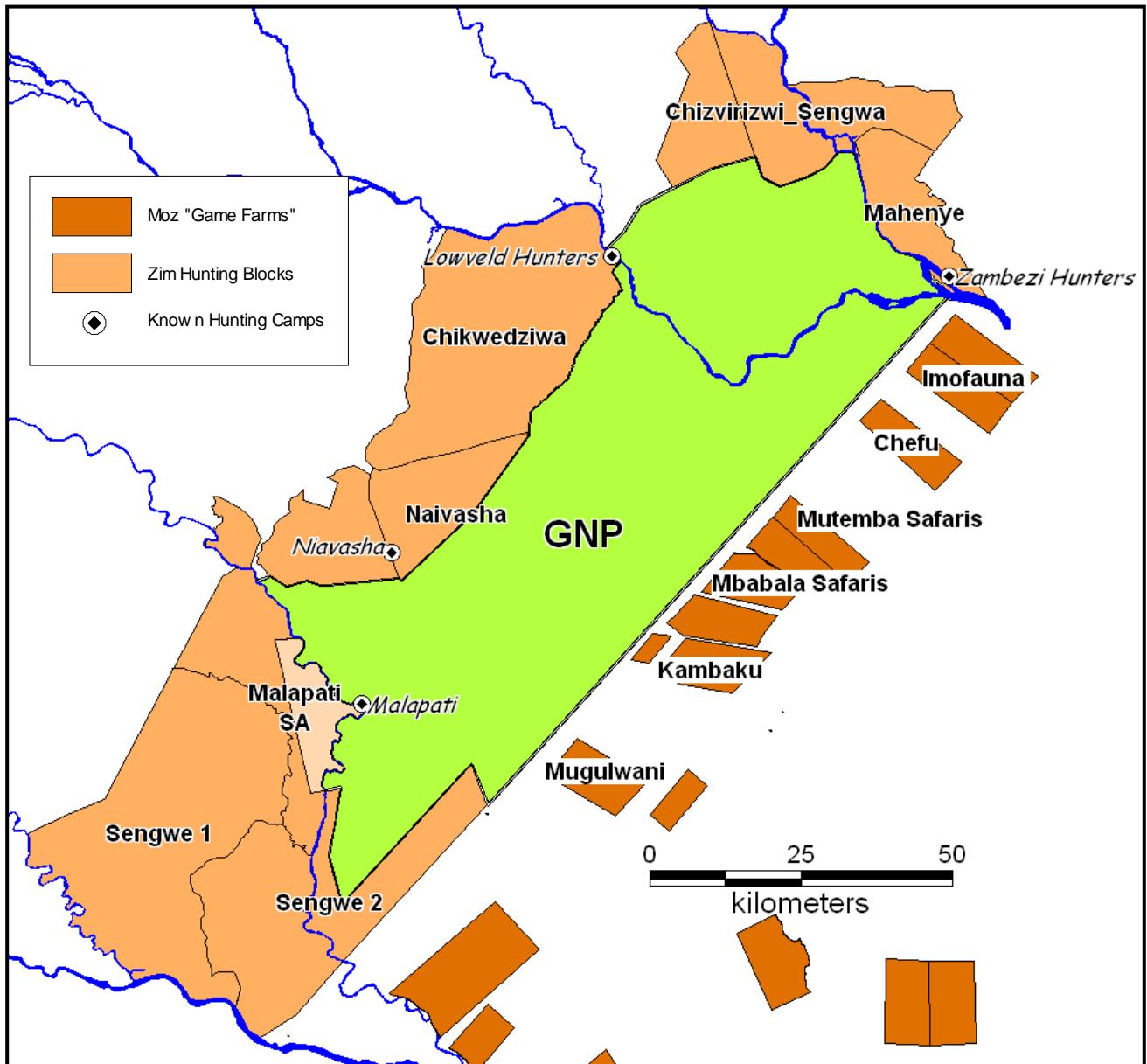


3.5 TOURISM IN ADJACENT AREAS

3.5.1 Safari Hunting – Quotas, Use and Income

Gonarezhou National Park is almost completely surrounded by hunting concessions on the Zimbabwean side and by “game farms” on the South African side. The Malapati Safari Area is adjacent to Mabalauta in the south. Generally speaking all hunting is done along the park boundary with the possibility of a big “Gonarezhou Tusker” being the main drawcard. Buffalo and leopard are also important species in the south.

Figure 64: Wildlife utilisation areas adjacent to the Gonarezhou NP



3.5.2 Description of the Hunting Industry

There are 12 hunting areas on the Zimbabwean side, which includes the Malapati Safari Area. These hunting blocks fall into two districts – Chiredzi and Chipinge

Table 35: Zimbabwean hunting blocks adjacent to Gonarezhou NP

RDC	Communal Land	Hunting Block	Comments
Chipinge	Ndoyowo	Mahenye (Ward 30)	Both blocks share a single quota and are hunted by the same company – Zambezi Hunters
		Mutandahwe (Ward 29)	
Chiredzi	Sangwe	Chizvirizwi (Wards 25, 3, 4 & 5)	Both blocks share a single quota and are hunted by the same company – Lowveld Hunters
		Chizvirizwi (Resettlement Area)	
	Matibi 2	Chikwedziwa (Wards 6, 8, 9, 10)	Lowveld Hunters
		Naivasha (Ward 22 – part of GNP?)	Shangani Safaris
		Gonakudzingwa (Small scale farming blocks with title)	Quota issued to individuals with title
		Gonakudzingwa (Ward 12?)	
	Sengwe	Malapati CA (Ward 13)	SSG Safaris
		Malapati SA	SSG Safaris (Excluded from Sengwe CL)
		Sengwe 1 (Wards 13, 14 & 15)	
		Sengwe 2 (Wards 14 & 15)	Acacia Safaris

Table 36: 2009 Quotas for hunting areas adjacent to the Gonarezhou NP in Zimbabwe

	Chitsa	Niavasha	Sengwe 1	Sengwe 2	Chibwedziva	Malapati Fixed	Malapati Opt.	Malapati Total	Mahenye	Totals
Elephant M	4	5	2	4	5	4	2	6	5	31
Elephant F	0	0	0	0	1	1	0	1	0	2
Leopard	2	4	2	2	1	3	1	4	3	18
Lion M	1	1	1	1	1	2	0	2	2	9
Buffalo M	0	8	5	Open	2	7	5	12	1	27
Buffalo F	0	2	0	0	0	0	0	0	0	2
Bushbuck	1	1	2	2	1	1	1	2	2	11
Crocodile	2	1	1	1	2	2	0	2	2	11
Sable	0	1	1	2	0	0	0	0	0	4
Eland M	0	1	0	0	0	1	0	1	0	2
Kudu M	0	8	0	1	1	5	0	5	2	17
Nyala	0		0	2	0	4	0	4	0	6
Waterbuck M	0	2	0	3	0	5	0	5	3	13
Klipspringer	0	5	0	0	0	1	0	1	3	9
Zebra	0	8	0	1	0	2	1	3	0	12
Hippo	3	1	1	1	3	0	0	0	2	11
Baboon	20	50	10	10	10	5	5	10	30	150
Bushpig	1	10	0	0	1	0	0	0	1	13
Civet	2	1	0	0	1	0	0	0	3	7
Duiker	4	6	1	1	1	2	0	2	5	20
Genet	1	1	0	0	1	0	0	0	2	5
Giraffe	0	5	0	0	0	0	0	0	0	5
HoneyBadger	1	1	0	0	1	0	0	0	2	5
Impala M	3	30	5	5	5	15	10	25	7	80
Impala F	0	10	0	0	0	0	10	10	0	20
Jackal	5	8	3	3	0	0	0	0	2	21
Kudu F	0	2	0	0	0	0	1	1	0	3
Porcupine	1	5	1	0	1	0	0	0	2	10
Serval	0	0	25	25	12	0	0	0	0	62
Hyena	10	20	1	0	0	0	1	1	4	36
Steenbok	0	8	1	0	0	0	0	0	0	9
Suni	0	0	0	0	0	0	0	0	0	0
Vervet	12	7	3	3	5	0	0	0	10	40
Warthog	1	0	0	0	1	0	0	0	3	5
Waterbuck F	1	0	0	0	0	0	0	0	0	1
Wildcat	0	0	1	1	1	0	0	0	3	6

Figure 65: Utilisation of the main species in hunting blocks surrounding Gonarezhou

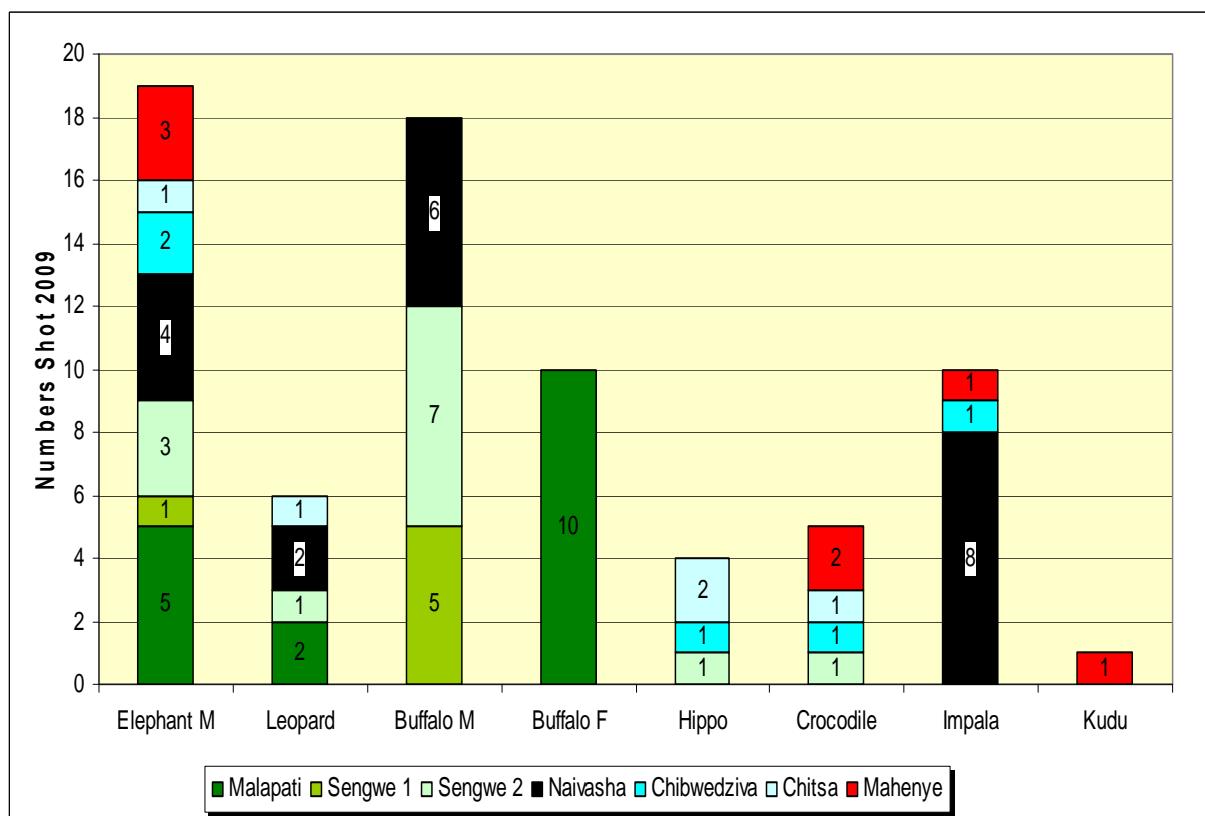
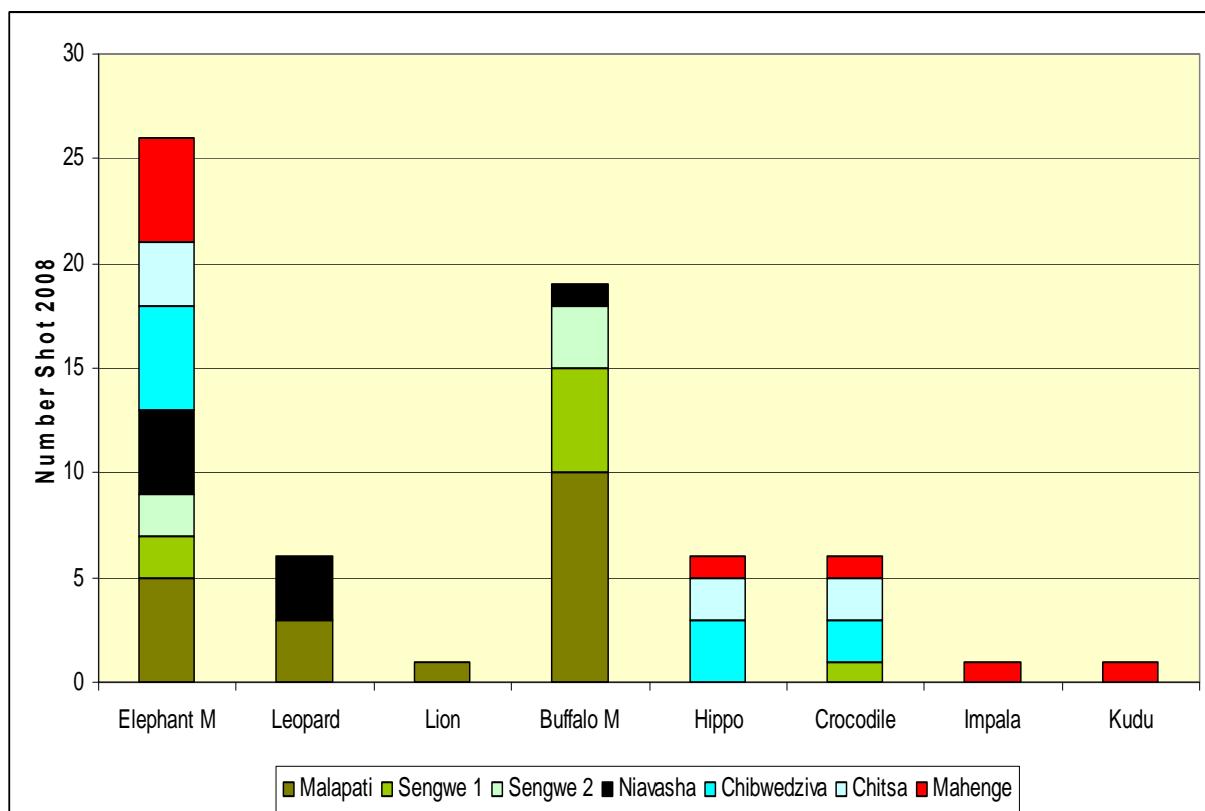


Figure 66: Graphical representation of offtake of major species around Gonarezhou in 2009

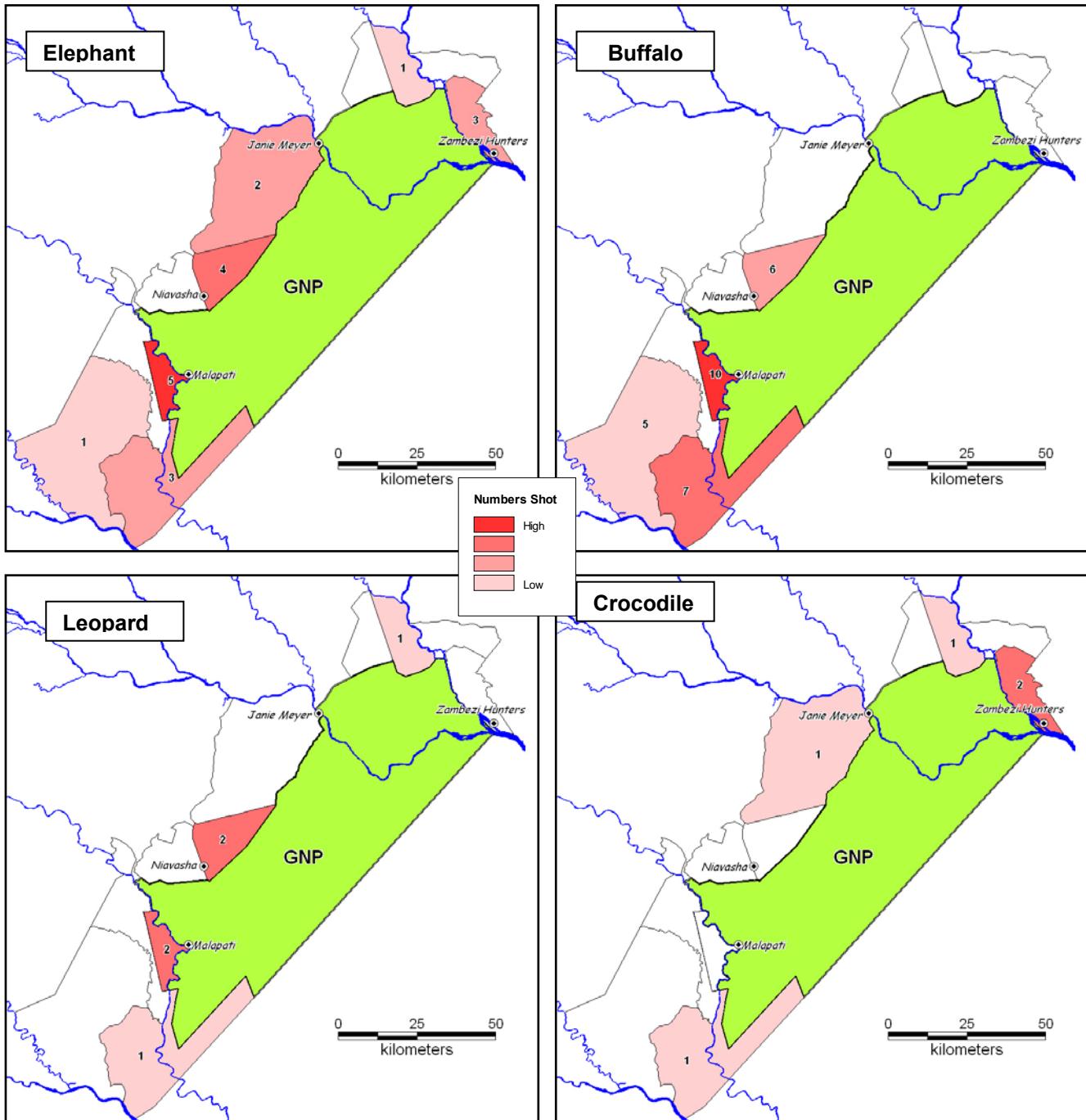


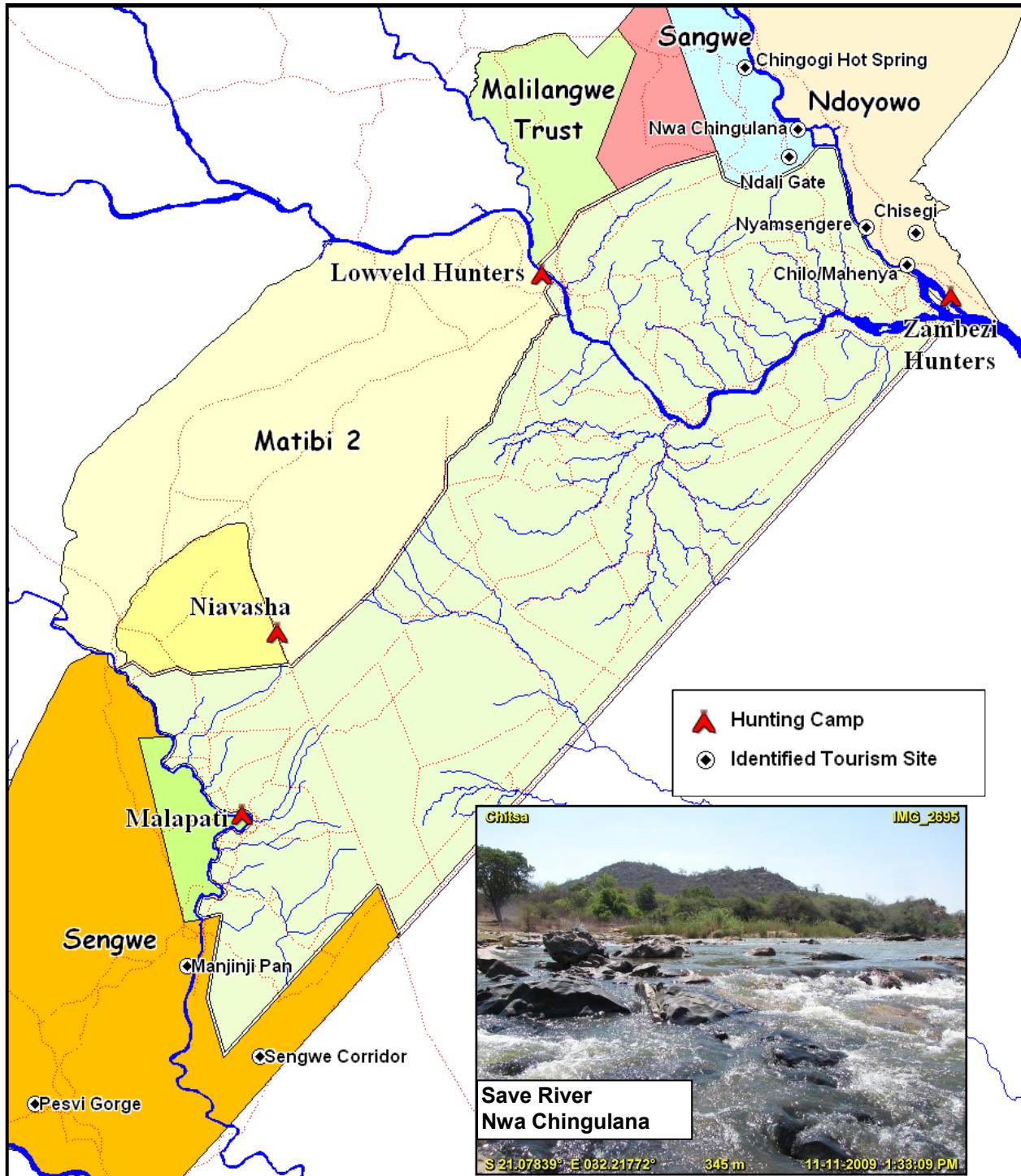
Table 37: 2009 Hunting quotas for areas adjacent to Gonarezhou NP in Mozambique

	Imofauna	Mutemba	Gaza	Mbabala	Totals
Elephant	0	0	0	0	0
Buffalo	10	4	2	10	26
Lion	2	2	1	2	7
Leopard	1	2	1	0	4
Nyala	3	0	1	4	8
Sable	3	1	0	3	7
Eland	3	1	1	5	10
Kudu	8	5	5	5	23
Zebra	1	1	1	1	4
Wildebeest	8	0	0	0	8
Hippo	10	1	1	0	12
Bushbuck	0	0	0	4	4
Waterbuck	5	1	0	5	11
Impala	8	5	5	10	28
Crocodile	10	3	3	0	16
Klipspringer	0	0	0	4	4
Duiker	10	0	11	20	41
Bushpig	0	0	0	5	5
Porcupine	0	2	1	4	7
Baboon	0	2	2	0	4

3.5.3 Community Tourism

The communities have identified several sites outside the park that may be suitable for tourism. Some of these sites are currently in use as hunting camps by the safari companies (Figure 67). The possibilities to develop some of these sites should be pursued by both the communities and by the Authority. If there is a conflict between a site inside and outside the park within the same area preference should be given to the development of the community site.

Figure 67: Existing and potential sites for community tourism

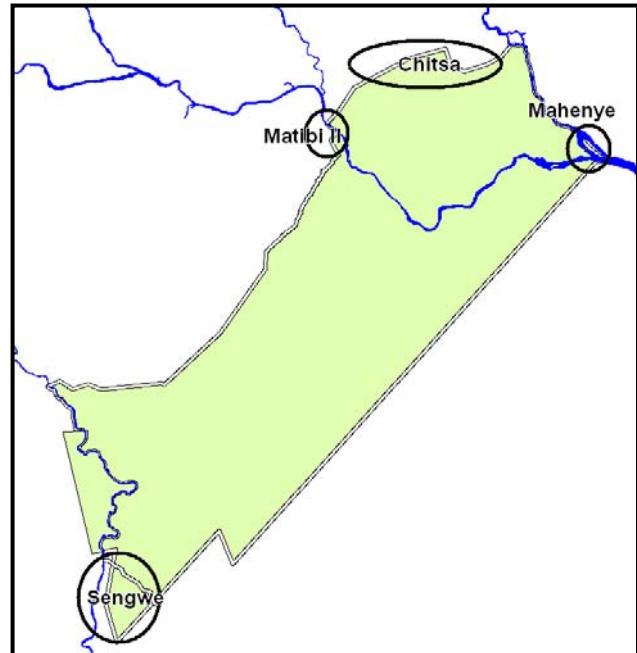


3.6 BOUNDARY ISSUES

Figure 68: Current boundary disputes for the Gonarezhou National Park

There are several unclear parts of the boundary of the park and these, if not resolved, can lead to disputes that can threaten the integrity of the park. The reasons for these disputes are largely historical. The Chitsa issue in the Ndali area is a boundary dispute that has evolved into a political issue. The locations of the currently known areas of boundary disputes are shown in Figure 68.

It may be an opportunity during the life of this plan to resolve these boundary issues once and for all.



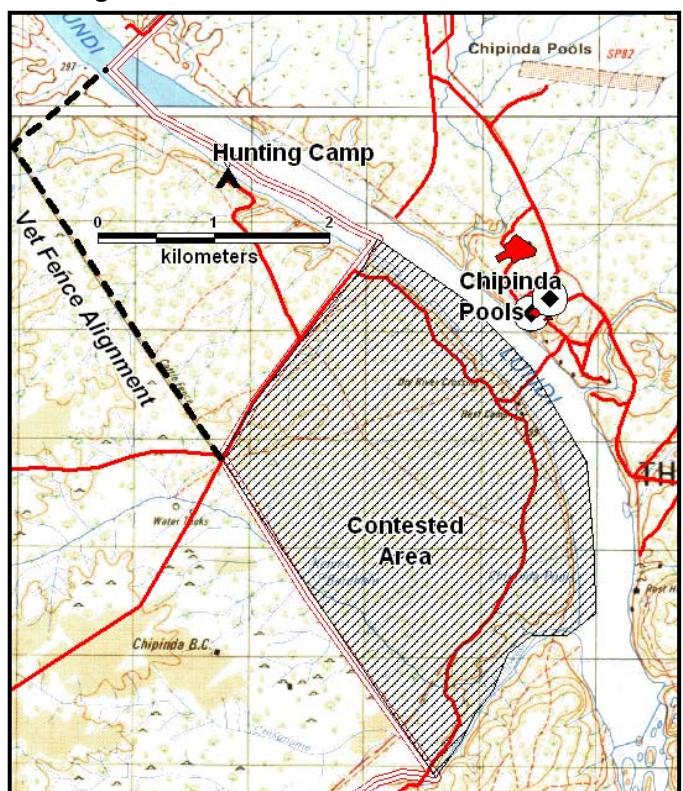
3.6.1 Matibi II

The Matibi II disputed area is a small parcel of land directly across the Runde river from the Chipinda Pools headquarters. The Gonarezhou National Park description avoids the issue by referring to the description of the Matibi II Communal Land. The Matibi II Communal Land description reads as follows:

The area of land bounded by a line drawn from the confluence of the Makambi and Lundi rivers down the Lundi River to its confluence with the Chingwesi river and up that river to its confluence with the Mazvikota River;

According to this description the contested area is indeed part of Matibi II. However, this land is overlooked from the tourism areas of Chipinda Pools and hence it is important to give it some kind of conservation status. Negotiations with Council over this issue are long overdue.

Figure 69: Contested area in Matibi II

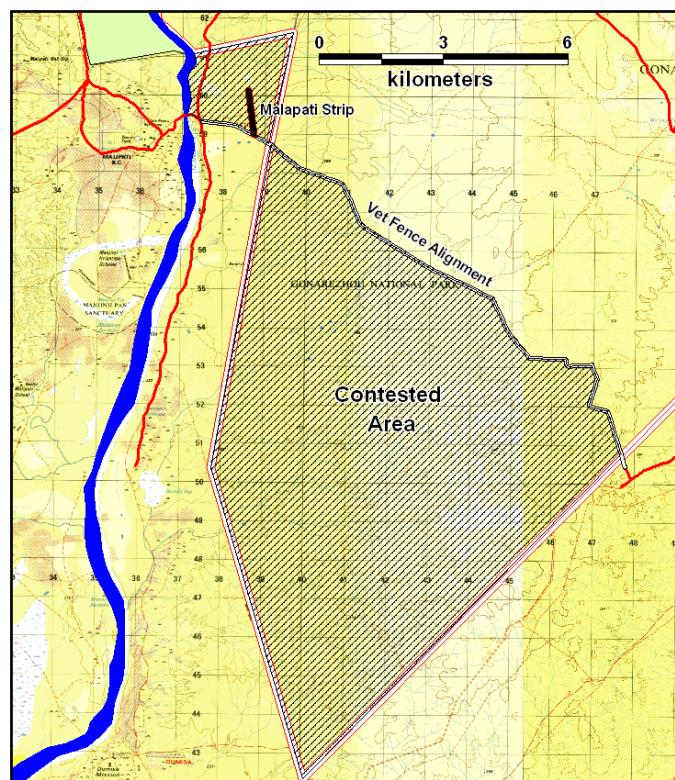


3.6.2 Sengwe

As with the Gonarezhou description in relation to the Matibi II Communal Land, the description for the Sengwe Communal Land follows a similar pattern. The Gonarezhou description refers to the Sengwe Communal Land description which in turn refers to documents housed in the office of the Surveyor General. The maps in the Surveyor General's office will show beacon numbers which are not shown on the 1:5000, standard sheets. Both descriptions (Sengwe and Gonarezhou refer to a game fence.

The issue is complicated because a more recent veterinary fence was constructed from Malapati in a south-easterly direction. Many residents take this new fence to be the boundary alignment. There is another problem in that the veterinary fence cuts off the area adjacent to the Malapati airstrip and this land is believed by the ground ZPWMA staff to be a part of the park and cattle and people are actively evicted. There is some urgency to resolve the issue of boundary alignment in this area so that all stakeholders know where they stand. It seems likely that the boundary shown on the map is the correct one.

Figure 70: Contested area in Sengwe



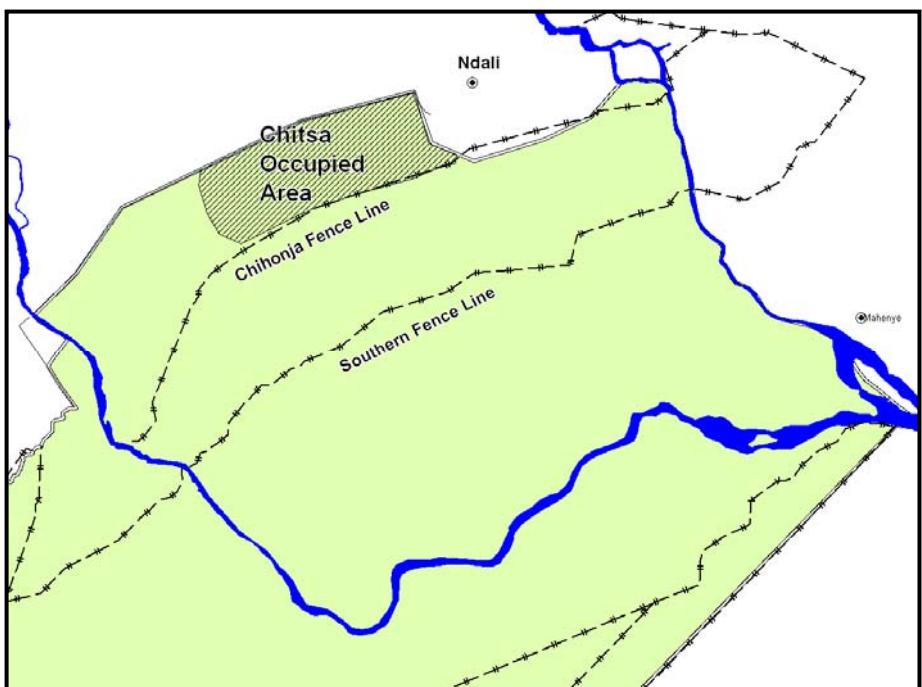
3.6.4 Ndali (Chitsa)

The occupation of the northern section of the Gonarezhou National Park by the Chitsa people is a complicated and sensitive issue and the description here is limited to a brief outline of the history and facts.

It is imperative that some resolution on this issue is reached as soon as possible as the occupied area is part of the proposed rhino IPZ.

The area under dispute is approximately 100 km² and is the land to the north of the Chivonja Range.

Figure 72: Contested area in Ndali



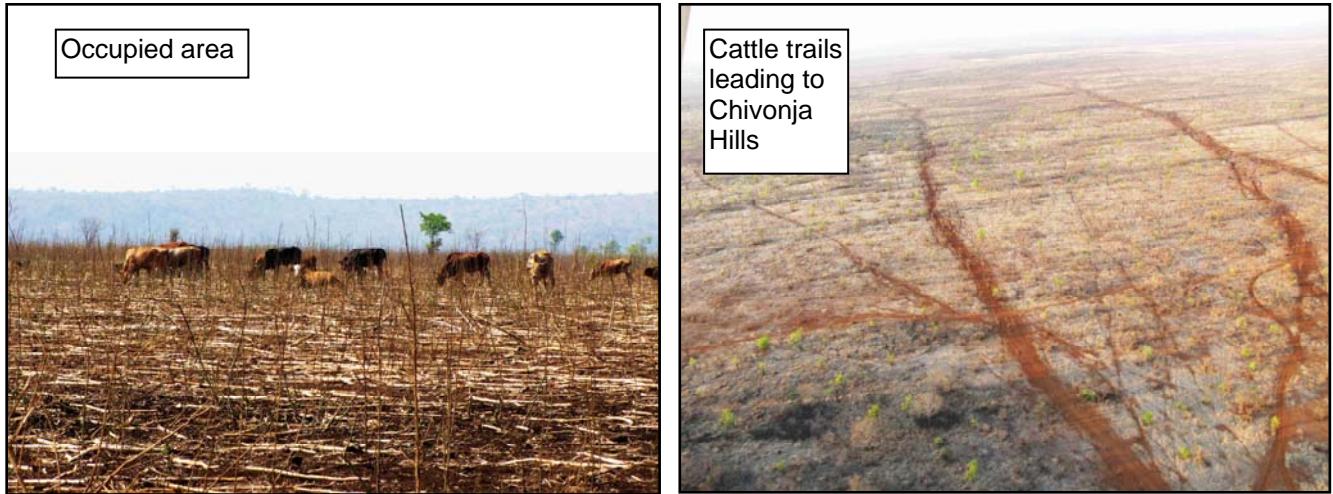
That Headman Chitsa and his people were living in the park around the Save Runde junction area is not in dispute. It is also not in dispute that they resisted the removals that occurred during the 1950s.

They claim to have been moved twice – first back to the area behind the Chivonja fence line, an area they refer to as Seven Jack. Then they were removed from this area to the Ndali area when a cattle fence was erected along the current Gonarezhou northern boundary. They claim that this second removal was a temporary measure to carry out tsetse control activities and that they would return after the operation was complete. Some community members refer to the “southern” fence line on the map above as the fence line that marks the edge of their land.

Headman Chitsa is using the invasion of the park to challenge the authority of the ZPWMA and to reclaim at least part of the communities ancestral lands. However, the invasion is also being used to draw attention to a chieftainship dispute. Headman Chitsa was demoted from the status of a Chief in the 1950s, probably as a result of his opposition to the removal from the park. The claim for the restitution of this chieftainship is strong, but opposed by the current traditional leader in the area – Chief Tshovani.

The occupation of the park was carried out during the confusion surrounding the “fast-track” land reform process which began in 2000. The informal invasion was formalised when agricultural extension land use planners pegged the area in 2001 and ten new villages were laid out on parks land. This led to the district issuing the Chitsa people with official permits to reside on the land. Unfortunately this took place without the official knowledge and consent of the Ministry of Environment and Tourism.

Figure 73: Aspects of the Chitsa occupied area of Gonarezhou



The Chitsa issue has been the subject of a number of studies and scientific papers and has received much attention. However, none of this has led to any resolution. Some suggested ways forward include:

- Officially recognising the claim and amending the description of Gonarezhou so as to exclude the “Chitsa area. However, there are fears that could trigger a series of similar claims in other parts of the Parks and Wildlife estate.
- Removing the settlers from the park and negotiating co-management rights over the contested area (see Makuleke in Section 2.8.3). Sites were identified but are not without their problems
- Removing the settlers and providing them with irrigation facilities

The restitution of the Chitsa Chieftainship may also play a part in any successful conclusion to the issue.

CHAPTER 4: THREATS, ISSUES AND CONCERNs

Planning is largely about addressing threats, issues and concerns facing the protected area. Accordingly, the final stage of the resource inventory and background documentation was the identification of these threats, issues and concerns. They are broken down into the broad management programmes used for the planning and each contains a listing prior to more details. Fuller description are found in the text of this document. Many of the issues listed are of concern to more than one programme.

4.1 BIODIVERSITY AND NATURAL RESOURCES MANAGEMENT ISSUES AND CONCERNs

**Table 38: Summary of threats, issues and concerns
Biodiversity and Natural Resources Management Programme**

Vegetation	<ul style="list-style-type: none"> • Invasive exotic species • Elephant impact • Fire - frequency and timing • Degraded vegetation • Changing vegetation • Infrastructural developments 	Water	<ul style="list-style-type: none"> • Declining water volumes and quality • Upstream dams • Siltation • Restricted dry season water • Artificial water points • Large pans with a fluctuating water regime • Poor land use practices in surrounding areas
Management	<ul style="list-style-type: none"> • Poorly organised information • No clearly defined research policy • Illegal settlements - Chitsa • Restricted knowledge base • Possible tourist hunting threat 	Wildlife	<ul style="list-style-type: none"> • Illegal fishing • Poaching – commercial and subsistence • Hunting ethics • Wildlife-livestock interface • Diseases • Recent local extinctions • Fencing • Low predator numbers • Elephant concentration in Gonarezhou • Introductions and translocations • Uneven wildlife distribution • Dry season overstocking
Others	<ul style="list-style-type: none"> • Loss of biodiversity • Climate variability • Erosion and gullies • Uncleared minefields 		

**Table 39 : VEGETATION threats, issues and concerns facing the
Biodiversity and Natural Resources Management Programme**

Issue/Concern	Description
Invasive exotic species	Invasive exotic species are a developing concern in Gonarezhou. A recent study suggests that Lantana is already well established in the northern region and there are significant threats to the riparian woodland from a number of species. Studies on the problem are underway and methods to deal with these plants need to be devised and implemented.
Changing vegetation	The 1973 vegetation map shows a significant part of the Pombadzi area being classified as a miombo type (specifically with extensive stands of <i>Brachystegia glaucesens</i>). There are reports of closed canopies of this species in the area. Today the area is largely open grassland with remnant large trees. Fire, elephants and climate are all thought to have played a role.

Table 39 : VEGETATION threats, issues and concerns facing the Biodiversity and Natural Resources Management Programme

Issue/Concern	Description
Degraded vegetation	In places, the Gonarezhou vegetation has been significantly impacted by human activities, fire and elephants (see below). Apart from the miombo area described below there are many areas in the park that are regarded as being degraded or significantly modified from their original form to be a cause for concern. The main agents of change have been tsetse control operations, fire and elephants, the latter two being discussed in more detail below.
Elephant impact	The elephant population of the Gonarezhou is currently estimated to be over 9,000 animals, probably two or three times what was considered the “optimal” number in the past. A recent vegetation survey indicates that most vegetation in the park has been disturbed or damaged by elephant this is likely to increase given the current population size. Some experts believe that, if unchecked (either by management or naturally), the elephant will be the biggest test to the integrity of the Gonarezhou in the years to come. However, control and management of mega-herbivores such as elephant is a complicated subject and inextricably linked with human population growth and changing land use. The debate is not concluded and many believe that elephant management should follow a non-interventionist approach which would allow natural cycles to control elephant numbers. The most famous example of this was in Tsavo NP in Kenya in the 1970s where elephants were instrumental in transforming the park vegetation before the population crashed.
Fire	Uncontrolled fires are a feature of Gonarezhou which usually occur between August and December, the vast majority of which have been caused by humans. Fire records have been kept since 1969 which show that fires are not uniformly distributed throughout the park, with some areas being repeatedly burnt (e.g. Pombadzi) while others are seldom or irregularly burnt. On average of 22% of the park is burnt annually. However, as much as 80% of the park has been burnt in a single year (1978). The extent of the area burnt each year is strongly correlated with the mean annual rainfall for the preceding year.
Infrastructural developments	Vegetation can be affected by badly sited or poorly designed infrastructural developments. For example, management infrastructure or tourism development has the potential to degrade riverine vegetation (e.g. Save-Runde Base).

Table 40 WATER threats, issues and concerns facing the Biodiversity and Natural Resources Management Programme

Issue/Concern	Description
Declining water volumes and quality	The three main rivers of the Gonarezhou – the Save, Runde and Mwenezi are at the end of the catchment areas and hence water quantity and quality is affected by upstream users. Flows in all rivers have declined and pollution is a potential threat. Associated with the declining flows is siltation, which is most noticeable in the Mwenezi. There is a general lack of knowledge with regards to river system management and the rights of downstream users. It should be noted that users in Mozambique are also affected as the Mwenezi is part of the Limpopo catchment while the Save and Runde are feeders of the Save river in Mozambique.

**Table 40 WATER threats, issues and concerns facing the
Biodiversity and Natural Resources Management Programme**

Issue/Concern	Description
Upstream dams	There are several large dams in all catchments but the Runde seems to be the most severely affected with the Muturikwe, Bangala and Manjirenji dams established to supply water to the Triangle, Hippo Valley and Mkwasine sugar estates. The Mwenezi has been severely impacted by the Manyuchi dam. In addition to the existing dams there are nearly 20 more proposed sites with four of these being in the planning stage. The largest these – Tokwi-Mukorsi - will be the largest dam in Zimbabwe after Kariba, if constructed.
Irrigation schemes	This is directly related to the declining water volumes and quality but some details are included here for interest. Major irrigation schemes near Gonarezhou include Triangle, Chisambanje, Hippo Valley, Mkawsine and Mwenezana.
Siltation	Directly linked to the above issues is that of siltation of the river sections within the park. The Mwenezi is probably the most seriously affected and the hippo has disappeared from this river, largely due to the lack of suitable habitat. Some of the larger pools in the Runde have either shifted or disappeared (e.g. Pokwe Pool)
Restricted dry season water and dry season “overstocking”	Often, the only water available at the height of the dry season in the Gonarezhou is in the larger rivers. Essentially this means the Mwenezi, Save and Runde. However, in some years some of the larger pans will retain water and as well as some of the larger pools in secondary rivers such as the Pombadzi. This will concentrate wildlife in the dry season and this may well be the ecological bottleneck that will cause increasing elephant damage to become evident.
Artificial water points	In the 1970s and 1980s the management policy for the park was to provide artificial water for wildlife. A significant number of boreholes were drilled and the associated infrastructure erected (piping, troughs etc). However, all of this infrastructure has fallen into disrepair and currently no boreholes are working. In addition, two dams were constructed on the Benji and Massasanya rivers and these still remain, with the area around Benji dam exhibiting significant damage from elephants and other wildlife. The current policy in many protected areas, including Kruger NP, is to move away from artificial water provision, except in exceptional circumstances (e.g. if a fence or road blocks historical water access). The issue is further complicated by the situation along the boundary with Mozambique where the Government is establishing “game farms”. It is possible that these will provide artificial water which may draw animals out of Gonarezhou.
Large pans with a fluctuating water regime	There are two large pans in the vicinity of the Save-Runde junction – Tambahata and Machiniwa which can be spectacular sheets of water in some years and completely dry in others. In addition, the central areas of the park have a number of large pans which also respond to the local rainfall situation and it can be difficult to predict the water holding characteristics of these on a year to year basis.
Poor land use practices in surrounding areas	Life for subsistence farmers in the south-east lowveld is harsh mainly due to the low and seasonally variable rainfall. Increasing human populations will place greater demands on the environment

Table 41: WILDLIFE threats, issues and concerns facing the Biodiversity and Natural Resources Management Programme

Issue/Concern	Description
Illegal fishing	Illegal fishing in the larger pools remaining in the rivers and the larger pans is a concern during the dry season. This threat is both from visitors ignoring the bag limits and from residents of the adjacent communal lands.
Poaching	Poaching is currently at a relatively low level within Gonarezhou, although there was an incident in 2010 of 10 elephants being shot at one time in the northern sector. Both subsistence and commercial poaching do occur and perhaps the most common poachers caught are fishermen. Setting of snares and grazing of cattle are also common in some areas of the park.
Hunting ethics	Virtually the whole of the safari industry in the areas surrounding Gonarezhou relies on wildlife, and particularly elephants, crossing the boundary. Luring of wildlife out of the park and possible hunting within the park are thought to be a problem, but more research is needed to ascertain the extent of this problem.
Cattle grazing	Cattle are grazed within the park, especially along the western and southern boundaries. At certain times of year the sight of cattle inside the park is relatively common in the Mabalauta area.
Diseases	The Gonarezhou is a wildlife-livestock interface, especially cattle are commonly grazed and watered within the park. There are a number of serious diseases which are threats to both cattle and wildlife, particularly buffalo. These include foot-and-mouth, bovine tuberculosis, brucellosis and anthrax and monitoring and the containment of outbreaks is a priority. Diseases affecting carnivores are also a threat.
Recent local extinctions	Of the large mammal fauna two species have become locally extinct in the Gonarezhou. These are the black rhino and the Lichtenstein's Hartebeest. The black rhino extinction is unique in that it has happened twice in the last 40 years.
Fencing	Although most of the fences within the Gonarezhou are non-functional there are other fencing possibilities in the wider area which are perceived as being threats to wildlife corridors and ecological linkages. These include the fencing of the Malilangwe and the fencing of the game farms in Mozambique. Other fences may be required for disease control, especially in relation to international boundaries and these should be resisted where possible.
Low predator numbers	The numbers of predators in the park are low compared to other similar protected areas. The numbers of lions are remarkably low (estimated to be around 40 animals) and the major reason for this is thought to be their persecution outside the park through snaring and hunting. Other predators of concern are the wild dog, cheetah and leopard. Hyena numbers are more comparable with other areas and the relationship between the two probably needs more study.
Elephant concentration in Gonarezhou	The 2009 aerial survey estimated over 9,000 elephants for the Gonarezhou and almost all of these were restricted to the park. There was little dispersal to areas outside the park. Some dispersal is known to occur as hunters do shoot animals in the adjacent hunting blocks and a satellite tracking study shows that some individuals move out of the park, but, by and large, the elephants remain concentrated in the park.

Table 41: WILDLIFE threats, issues and concerns facing the Biodiversity and Natural Resources Management Programme	
Issue/Concern	Description
Introductions /translocations	Two locally extinct species are being considered for reintroduction into the park – the black rhino and Lichstenstein's Hartebeest. A feasibility study was carried out for the black rhino in 2005 but this probably needs to be updated prior to any reintroduction. Lions have been translocated into the park but immediately returned to their point of origin (Malilangwe). In addition the authority has recently been offered some animals from the Save Conservancy that include 700 wildebeest, 500 impala, 250 zebra, 150 eland and 40 giraffe. An assessment has been carried out which recommends that this go ahead. Gonarezhou needs to develop a strategy for introductions and translocations.
Uneven wildlife distribution	Wildlife is unevenly distributed throughout the park, especially in the dry season. This is more of a tourism issue.

Table 42 : MANAGEMENT threats, issues and concerns facing the Biodiversity and Natural Resources Management Programme	
Issue/Concern	Description
Poorly organised information	During the compilation of this management plan and the background material it became apparent that the information base could be better organised. The Chipinda library/Research section contains a valuable store of historical information and this needs to be properly organised. Digital information needs to be accessible and backed up.
No clearly defined research policy	In addition, there seemed to be a great deal of uncoordinated research going on, largely due to the fact that there is no "official" research policy and direction for the Gonarezhou. Much of the research is related to the wildlife-livestock interface and is carried out in the Mabalauta area.
Illegal settlements - Chitsa	The invasion of the Ndali area of the park by the Chitsa people is a well publicised and documented threat to the integrity of the park. There is no denying that the Chitsa people have strong historical claims on the park but the situation has been unresolved for over ten years. The situation on the ground is that a significant section of the park north of the Chivonja hills has been settled and cleared for agriculture. The scope and complexity of the problem is such that it is difficult to summarise but it is urgent that it is resolved in the near future
Restricted knowledge base	With only a limited amount of information available management is in the face of uncertainty and hence needs to be adaptable.
Possible tourist hunting threat	Several times in the past few years the ZPWMA has indicated that the ration quota could be sold to safari hunting clients as a way of generating funds. Currently there is no ration hunting in Gonarezhou as meat is supplied through a partner agency. However, the possibility of hunting being permitted in the park may resurface.

Table 43: OTHER threats, issues and concerns facing the Biodiversity and Natural Resources Management Programme

Issue/Concern	Description
Climate variability	Climate variability, and its longer-term cousin global warming, are major threats to Gonarezhou as we know it. The future is difficult to predict but there may be significant changes in the rainfall and river flow patterns that will affect the vegetation and wildlife. Climate variability may have already played a part in vegetation change in the north of the park.
Loss of biodiversity	With climate change, vegetation damage, invasive species siltation and declining water flows comes the threat of loss of biodiversity. The original species inventories were undertaken in the 1960s and 1970s and there has been very little work since then.
Erosion and gullies	There are several sites of concern with respect to erosion, especially in the southern part of the park. A gully monitoring and reclamation plan has been initiated to deal with the problem.
Uncleared minefields	During the Zimbabwean liberation war a minefield was laid between the Gonarezhou National Park and the Mozambican border in the Sengwe Communal Land. This part of the Sengwe Communal Land area has been designated as the Sengwe Corridor, an important linkage to the Limpopo and Kruger National Parks. These minefields are a threat to the wildlife and human life.
Mining activities	Prospecting activities are currently being carried out on the boundary of the Park in the Ndoyowo Communal Land. Coal deposits have been found north of the Park and there is renewed interest to exploit these. Rio Tinto previously held prospecting rights inside Gonarezhou and coal-bed methane extraction could be a possibility in Matibi II.

4.2 SUSTAINABLE TOURISM ISSUES AND CONCERNS

Table 44: Summary of threats, issues and concerns Sustainable Tourism Programme			
Infrastructure	<ul style="list-style-type: none"> • Poor access • Poor road network • Roads not designed with tourism in mind • No bridge over the Runde • Major road and railway bisects the park • Few tourism facilities 	Administration	<ul style="list-style-type: none"> • Pressure for development • Effectively two parks • Inadequate resources • Economics vs Conservation • Boundary Issues • Little progress in Sengwe • Slow GLTP Progress
Environmental	<ul style="list-style-type: none"> • Nervous and aggressive wildlife • Increasing elephant population • Declining water flows in rivers • Upstream Dams • No water in many parts of the park • Supplemented water Issues • Large pans with a fluctuating water regime 	Tourism Product	<ul style="list-style-type: none"> • Poor GLTP linkage • Poor image of Zimbabwe • Poor marketing • Unrealistic investor expectations • Poor tourism monitoring • Little hunting and photographic integration • Zimbabwean access becoming more expensive • Tourism product not diversified • Little revenue from tourism • Little accessible information • Harsh and hot environment (Including diseases) • Large parts of the park unutilised • Extensive areas with poor game viewing • Tourism carrying capacity not defined – inside and outside • Poor GLTP linkage • Reservation problems • Problems with leases
Community	<ul style="list-style-type: none"> • No detail on cultural sites • No community involvement in tourism/ park • Poor communications • Problem animals • Livestock prevalent in many parts of the park • Chitsa issue not being resolved at local level 		

Table 45: INFRASTRUCTURE threats, issues and concerns facing the Tourism Programme	
Issue/Concern	Description
Poor Access	Access for tourists to the south-east lowveld is poor. The area is well away from the other established tourism circuits of Victoria Falls, Mana and Nyanga and hence is never an add-on to these destinations. There is an international airport at Buffalo Range and an upgrade has been discussed for many years. However, some kind of critical mass may be needed before this upgrade actually becomes a reality.
Poor road network	The road network in the park is not well developed, especially in the north. Many of the roads and tracks have been allowed to deteriorate and some are no longer passable without significant investment in road works. The Mabalauta area has a better developed all-weather network but away from this the standard of the tracks drops significantly. A recent development has been the upgrading of the track between Chipinda Pools and the Chilojo Cliffs into an all-weather road.

Table 45: INFRASTRUCTURE threats, issues and concerns facing the Tourism Programme

Issue/Concern	Description
Roads not designed with tourism in mind	As with many parks, the road network was developed 50 years ago and was not designed with tourism in mind. Many of the roads in the park are straight as they follow old fence lines. This type of alignment is functional rather than being interesting and there is an urgent need to re-align some of these tracks.
No bridge over the Runde	Access across the Runde river is problematic since the demise of the Runde high-level bridge in 2001. Currently there are several low water crossing points within the park with the one at Chipinda Pools (Madawo Crossing) being built-up. All of these crossings become unusable once the river rises and the Madawo Crossing needs to be re-constructed annually. This effectively limits activities from Chipinda Pools to the northern bank of the river.
Major road and railway bisects the park	The main railway to Maputo from Zimbabwe and the proposed Harare to Maputo road link runs through the park. Although traffic on this route is currently light the circumstances may change especially as this road is scheduled to be surfaced sometime in the future. There are many examples of main roads through national parks and they are always a management challenge. This is exacerbated in the Gonarezhou as noise from the railway line can significantly impact on the wilderness aspect of the park.
Few tourism facilities	At present there are few tourism facilities within the park. Roofed accommodation for guests is limited to the ZPWMA lodges at Swetuini

Table 46: ENVIRONMENTAL threats, issues and concerns facing the Tourism Programme

Issue/Concern	Description
Nervous and aggressive wildlife	Gonarezhou has a reputation for nervous wildlife, which is often seen disappearing into the bush at the approach of tourists. While this may have been true it appears that the wildlife in certain areas has become more habituated to vehicles and good wildlife sightings are becoming more frequent. Gonarezhou also has a reputation for aggressive elephants and there are a number of attacks on record.
Increasing elephant population	The recent elephant survey of Gonarezhou and the surrounding areas shows a significant increase in the numbers of elephants. Most of the estimated 9,000 animals (upper limit of the estimate) are concentrated in the park. Given that many experts believe that the park is only capable of supporting half of this number, there is a potential for significant habitat modification to occur. There may also be a substantial die-off of elephants in a bad drought.
Declining water flows in rivers	All of the major rivers flowing through the park have been dammed upstream and flows are thought to have significantly declined as a result. There is an urgent need to quantify this decline and engage in discussions with other users in an attempt to mitigate these effects.
Dams	Related to the above is the issue of dams. The Mwenezi is dammed at Manyuchi and any water issues appear to be between sugar growers only and the park is not considered at all. There is the possibility of a new dam on the Runde which has the potential to significantly affect water flows in this river and the ZPWMA needs to be involved in any environmental assessments of this structure.

Table 46: ENVIRONMENTAL threats, issues and concerns facing the Tourism Programme

Issue/Concern	Description
No water in many parts of the park	At the height of the dry season surface water is limited to the large rivers, the two dams and some large pans (depending on the rainy season). This then is the ecological bottleneck that will determine the upper limit of wildlife populations in the park.
Supplemented water issues	In the past management attempted to resolve the water problem by drilling a significant number of boreholes and pumping water into selected pans. Current thinking, based on the experiences in other areas (including Kruger), is not to allow and supplemented water. However, there is always pressure from operators to allow pumping of pans to attract wildlife to their facilities.
Large pans with a fluctuating water regime	The two large pans near the Save-Runde confluence (Tambahata and Machiniwa) have a fluctuating water regime. Although full, and a magnet for wildlife and birds, during the preparation of this plan they are periodically dry throughout the entire season. This makes it difficult to base any tourism facilities in these areas.

Table 47: COMMUNITY threats, issues and concerns facing the Tourism Programme

Issue/Concern	Description
No detail on cultural sites	There are a number of references to the cultural significance of sites in the park but to date this has not been properly mapped and detailed.
No community involvement in tourism	Communities are not involved in tourism within the Gonarezhou National Park at present. However, it must be stated that communities and the Rural District Council benefit through the safari hunting taking place on land surrounding the park. All of these hunting activities rely on the existence of Gonarezhou. In addition, there are two community linked tourism establishments on the eastern border of the park which make significant use of the Tambahata area.
Poor communications	In general, there has been poor communications between the ZPWMA in Gonarezhou and the surrounding communities.
Problem animals	Wildlife from the park, especially elephants, are a continual problem for the surrounding communities
Livestock prevalent in parts of the park	As the dry season progresses, and especially during drought years, cattle are found in many parts of the park. This in response to poor grazing in the communal areas and the presence of water in the larger rivers.
No direction on Chitsa issue	The invasion of the north of the park has become a political issue and now cannot be resolved at the local level.

Table 48: ADMINISTRATIVE threats, issues and concerns facing the Tourism Programme

Issue/Concern	Description
Pressure for development	There has been considerable pressure for development of the park. Recently 14 lodge sites were awarded, some of them at inappropriate sites. The possibility of this pressure returning in the future should always be considered
Effectively two parks	Although gazetted as a single national park the area has two separate management centres – Chipinda Pools and Mabalauta who directly report to the regional office. This tourism plan is for the whole park and not for two separate chains of command.

Table 48: ADMINISTRATIVE threats, issues and concerns facing the Tourism Programme

Issue/Concern	Description
Inadequate resources	The ZPWMA is perceived to have inadequate resources to implement the management plan.
Economics vs Conservation	The trend of state wildlife management authorities needing to become financially self supporting leads to a situation where they move away from their primary goal of conservation. The need to generate funds becomes a powerful motivating force when decisions regarding tourism are taken.
Boundary issues	There are several unresolved boundary issues in the Gonarezhou and these may impact on the tourism programme. These include some prime areas adjacent to the park.
Slow progress in Sengwe	Although the Sengwe corridor area has been gazetted, the area still needs to be demined and there appears to be no firm date for this clearance to be completed.
Slow GLTP progress	The GLTP is a vital component of the tourism programme for the Gonarezhou but progress is slow, sporadic and sometimes driven from the top without reference to the individual parks.

Table 49: TOURISM PRODUCT threats, issues and concerns facing the Tourism Programme

Issue/Concern	Description
Poor GLTP linkage	The Sengwe corridor is the official linkage between the Kruger and Gonarezhou National Parks, the link is tenuous at best. There also areas to the north of the "official" corridor which, although they do not have much wildlife, are scenic and perhaps some thought should be given to their inclusion in the corridor.
Poor image of Zimbabwe	Zimbabwe has a poor image with regards to tourism in many parts of the world. This has resulted in a significant downturn in visitors during the past decade and this is also reflected in Gonarezhou. However, many of the visitors to the park are from South Africa who may be less influenced by the internal politics of the country.
Poor marketing	Marketing of Gonarezhou is limited at present and there is no concerted drive to improve the awareness of the park and what it has to offer.
Unrealistic investor expectations	Gonarezhou is difficult area in which to make a success of tourism. The lack of access, poor roads, short season, the heat and other factors mean that an operator needs to be committed in order to create a successful business. There is a perception in some circles that tourism is an easy way to make money and it should be clear that this is not the case in Gonarezhou under the current circumstances.
Poor tourism monitoring	Until recently there has been little monitoring of tourism. Once this tourism plan goes to the implementation stage it will be vital the industry and the market itself is monitored to define with the future direction of the tourism product in Gonarezhou
Little hunting & photographic integration	The Gonarezhou is the source for all the trophies taken in the adjacent hunting areas. There is little integration between these two activities and this may become a problem when tourism levels increase.
Park fees	The park fees have recently been increased and many members of the Zimbabwean public feel that access to the park is now out of reach
Product not diversified	

Table 49: TOURISM PRODUCT threats, issues and concerns facing the Tourism Programme

Issue/Concern	Description
Little revenue from tourism	Low tourism numbers and the low cost of camping in the park means that income to the park from tourism is low.
Little accessible information	Although a great deal of information exists for the park, little of it is in accessible form for tourists
Harsh and hot environment	Gonarezhou is a challenging environment for tourism, especially in the summer months. More than 50% of visitors come to the park in July, August and September. Once the rains begin numbers drop significantly. In addition, the excessive temperature prior to the rains makes the park an uncomfortable destination. Diseases such as malaria and bilharzias are common in the area and it is likely that a percentage of visitors will become infected.
Large parts of the park unutilised	There are large parts of the park which are unutilised. This is due in part to the current state of the road network, but also to the limited game viewing opportunities found in many parts of the park.
Extensive areas with poor game viewing	Related to the above concern is the fact that there are large parts of the park with limited game viewing opportunities.
Tourist carrying capacity	Tourist “carrying capacity” is not clearly defined, either inside or outside the park.
Poor GLTP linkage	The physical linkage to the GLTP is through the Sengwe Corridor. At best this is a tenuous linkage and complicated by the minefield which still needs to be cleared.
Reservation problems	Booking the Swemuini lodges can be a problem and much of this can be attributed to communications.
Issues with leases	Many of the leases issued by the ZPWMA suffer from being unclear and ambiguous and this was also true of the previously issued 14 leases for Gonarezhou. The leases need to be tightened up to protect both the investor and the authority.

4.3 PARK OPERATIONS, ADMINISTRATION AND INFRASTRUCTURE ISSUES AND CONCERNS

Table 50: Summary of threats, issues and concerns Park Operations, Administration and Infrastructure Programme		
Management	<ul style="list-style-type: none"> • Split management • Inadequate consultation between HQ and field • Monitoring Capacity • Vehicles spend time on non-core business • Poor communications on station • Main transit route Chipinda-Mabalauta is outside the park • Poaching • Training and Ration hunting • Chitsa occupation • Fire • Shape of the park 	Infrastructure/ Resources
Staffing/ Morale	<ul style="list-style-type: none"> • Insufficient staff • Challenging conditions • Insufficiently trained staff • Low morale • Loss of expertise 	

Table 51: STAFFING AND MORALE issues and concerns facing the Park Operations, Administration and Infrastructure Programme	
Issue/Concern	Brief Description
Insufficient Staff	There are currently 110 staff assigned to Gonarezhou and these numbers are roughly split between Chipinda Pools and Mabalauta. An internal assessments recommends a further 90 staff showing that the current staffing rate is approximately 50% of the ideal rate for efficient protection and management.
Challenging Conditions	Both Chipinda Pools and Mabalauta are remote stations and the staff and their families live under challenging conditions. Neither station caters for schooling or has a dedicated health facility. Health care at Chipinda pools is provided by staff members spouses. Places to purchase supplies are not found on station.
Insufficiently trained staff	The vast majority of the staff on station are of ranger grade. The training of the staff is variable and could be improved through courses and on-the-job training.
Low morale	Although staff morale is considered to be relatively high there is room for improvement. Poor management of field staff contributes to low morale, as does selective implementation of the disciplinary code. These issues need to be addressed.
Loss of expertise	Many of the more experienced staff are approaching retirement age and will be leaving soon. There has been inadequate training of younger staff to replace them.

**Table 52: MANAGEMENT issues and concerns
facing the Park Operations, Administration and Infrastructure Programme**

Issue/Concern	Brief Description
Split management	For management purposes Gonarezhou is effectively two adjacent parks, each managed as a separate unit. The Area Manager for each station reports directly to Provincial administration in Masvingo. There is no centralised management for the park, in the park.
Vehicles used for non-core business	Related to the challenging conditions concern in the previous table. As facilities are not available on station then vehicles are used to ferry staff to the nearest centres for school, health and shopping activities.
Insufficient patrolling	The patrol schedules are below the optimum level and this is largely due to insufficient staff. For effective protection a full compliment of field staff is needed. It is also imperative to manage available staff effectively.
Boundary demarcation	Parts of the boundary are not clearly marked and, in some areas they are marked incorrectly. This is a different issue to that of boundary disputes which is dealt with under the collaborative management programme.
Training & Ration Hunting	Most national parks in Zimbabwe are issued with a ration and training quota for the feeding and training of staff. This is also true of Gonarezhou but this quota has not been used since 2007 as rations are supplied by a partner organisation.
Inadequate consultation between HQ and field	Large organisations such as the ZPWMA often suffer from poor communications between the headquarters and the field. Decisions are made at the higher levels and these are not properly communicated to management staff on the ground. In other instances ground staff feel that they are inadequately consulted prior to important decisions being taken. Until recently communications were a major problem but the installation of internet facilities at Chipinda Pools in 2008 and at Mabalauta in 2010 has greatly improved the situation.
Wounded animals	Animals wounded by safari hunters sometimes move into the park. Currently hunters make their own follow ups but ideally this should be done by Parks staff. It should be remembered that hunting is not permitted within 400 metres of the park boundary, a regulation that is sometimes overlooked. In addition, the long boundary with Mozambique also makes management of this activity difficult. A hunting protocol needs to be formulated and enforced.
Monitoring capacity	The monitoring capacity of law enforcement effort needs to be improved. There is a need to show that enforcement efforts are being successful and this can also contribute towards improved morale amongst the field staff.
Poor communications on station	There have been instances of poor communications on station, probably due to misunderstandings. This contributes to lowered morale.
Main transit route Chipinda-Mabalauta is outside the park	Due in part to the state of the internal roads in the park the main transit route between Mabalauta and Chipinda Pools is outside the park via Boli. This route is quicker than going through the park but it does mean that park vehicles are not traversing the park as often as they could – an important prerequisite to effective management.

**Table 52: MANAGEMENT issues and concerns
 facing the Park Operations, Administration and Infrastructure Programme**

Issue/Concern	Brief Description
Chitsa occupation	In 2000 the Chitsa people invaded approximately 100km ² of the park to the north of the Chivonja Range, near the Ndali business centre. They claim to be asserting their rights to ancestral land within the park. An examination of the history of the formation of the park, and the removal of people undertaken to achieve this, shows that they do have a strong case. It is vitally important that some resolution of this issue is reached as soon as possible. This is also a concern for the Collaborative Management Programme
Other boundary issues	Apart from the Chitsa issue there are at least two points of concern regarding the boundaries of Gonarezhou National Park, one opposite Chipinda Pools and the other in the south near Malapati. As with the Chitsa issue there will be overlap of this issue with the Collaborative Management Programme.
Poaching	Both subsistence and commercial poaching occur within the park boundaries, as do illegal use of resources such as grazing by cattle and the removal of thatching grass. This is a combined issue for both this programme and the Biodiversity and Natural Resources Management programme.
Fire	Fire is an ongoing issue in the park with significant parts of the park being burnt on an annual basis. As with poaching, this is a combined issue for both this programme and the Biodiversity and Natural Resources Management programme and more details can be found in that section.
Shape of the Park	The elongated shape of the park means that the eastern boundary, which also forms the international boundary between Zimbabwe and Mozambique, is 113 kilometres in length. This presents a management problem as this land is subject to control by a different government.

**Table 53: INFRASTRUCTURE AND EQUIPMENT issues and concerns
 facing the Park Operations, Administration and Infrastructure Programme**

Issue/Concern	Brief Description
Inadequate road network	<p>There are in excess of 1 400 km of roads in the Gonarezhou. However, most of these roads, though passable, are in poor condition. The road network was also established for utilitarian purposes and many roads follow old fence alignments. There is an urgent need to reconcile and improve the road network. This important activity needs to be carried out in conjunction with the Sustainable Tourism Programme.</p> <p>Some roads that were established in the past have degraded to such an extent that they are beyond repair, and there is a need for these roads to be closed down and prepared for rehabilitation. Certain roads do not have a function any more. Other roads may just need to be closed temporarily until such a time that they are upgraded.</p>

Table 53: INFRASTRUCTURE AND EQUIPMENT issues and concerns facing the Park Operations, Administration and Infrastructure Programme	
Issue/Concern	Brief Description
Problematic rainy season access	<p>During the rainy season the park is physically split into two sections as it is not possible to cross the Runde river. The only high level bridge in the area was washed away by the El Nino floods in 2001 and crossing points are now limited to a causeway near Chipinda Pools and several unsecured sand crossing further down the river. At the peak of the wet season Mabalauta may only be accessible by travel via Rutenga.</p> <p>In addition, many parts of the park are difficult to access once the rains set in and the minor internal tracks become impassable.</p>
Staff housing inadequate	Existing staff structures are old and in need of urgent renovations, and there is a need for additional accommodation, to cater both for the current staff establishment, as well as to take into consideration future increases in staff numbers and the need to supply suitable accommodation for seasonal contract labour.
Abandoned Nyavasikana Base	Nyavasikana camp was established as a patrol base for the central part of the park but has not been used much. In recent years it appears to have doubled as a training camp. There site has a number of buildings and a borehole. The borehole used to feed a pan to the south of the camp and much of the infrastructure still remains.
Water infrastructure in poor condition	The Zimbabwe National Water Authority, (ZINWA), has traditionally been in charge of all domestic water supplies in GNP. ZINWA is still operational in Chipinda Pools but in Mabalauta, Malapati and Save-Runde Base camp this duty was formally taken over by ZPWMA in 2004. Due to a combination of an ageing and ill-maintained infrastructure and periodic shortages of key supplies, water provision are at times erratic and often insufficient to meet demand.
Insufficient resources	As with many protected areas the budgets to run the park effectively and efficiently is not available. In addition other resources are also limiting factors.
Old fence lines	All of the veterinary and cattle fences in and around the park are no longer functioning. However, some of the infrastructure in the form of poles (wooden and metal) and, in some cases, wire still remains. This is both unsightly as well as a potential management hazard.
Poor communications	Prior to 2008 communications to the main management stations was problematic as it relied on the ground based telephone lines. However, with the introduction of internet the situation has improved considerably. However, internet is not without its problems (power, downtimes, unpaid ZESA bills etc) and other communication means should be kept open for emergencies. Cell phone signal is available not far from the main stations and perhaps booster stations should be considered for emergencies.
Power at HQ and lodges	Power supplied by ZESA to the management stations and the tourist lodges at Swimuwini is notoriously unreliable.

4.4 COLLABORATIVE MANAGEMENT ISSUES AND CONCERNS

Table 54: Summary of threats, issues and concerns Collaborative Management Programme			
Communities	<ul style="list-style-type: none"> • Cultural site info unknown • Limited community participation/ involvement • Inadequate communications with communities • Human/wildlife conflicts • Encroachment • Chitsa Invasion • Few benefits to surrounding communities 	Others	<ul style="list-style-type: none"> • No cohesive land use planning • Catchment deforestation and inappropriate land-use • Poverty of surrounding communities • Few tourism opportunities in surrounding areas • Disputed boundaries • Safari hunting • Poorly define PPCP concept • Mine fields • Unclear roles and responsibilities of partner agencies
TFCA	<ul style="list-style-type: none"> • Poor TFCA awareness • Different conservation policies in Mozambican • Poor representation from field level at TFCA meetings • Sengwe corridor problems • Slow progress of GLTP cooperation • Threatened connectivity 		

Table 55: COMMUNITY issues and concerns facing the Collaborative Management Programme	
Issue/Concern	Brief Description
Cultural site info unknown	Many documents allude to the cultural sites in the park but, apart from some incomplete documentation at Chipinda the sites are not well documented. documentation of indigenous knowledge systems
Limited community participation/ involvement	Community participation into management aspects of the park is very limited and this is strongly linked to the concern about communication channels below. Where possible, communities need to be consulted about issues that concern them.
Inadequate communications with communities	At present there is limited community participation and involvement in the management of the park. The Authority needs to ensure that communication channels are open and that regular visits are made to at least hear the community side of any issues.
Human/wildlife conflicts	Human wildlife conflicts are a problem in areas surrounding the park. During the cropping season elephants are the biggest problem followed by buffalo and hippopotamus. Lions are also perceived to be a problem in some areas and are a threat to livestock.
Encroachment	Encroachment into the park is a concern, particularly in the Sengwe area. Confusion about the boundary in this area has led to parts of the park being cultivated and used for cattle grazing.

Table 55: COMMUNITY issues and concerns facing the Collaborative Management Programme	
Issue/Concern	Brief Description
Chitsa Invasion	The Chitsa invasion of the northern Gonarezhou is described in the Park Operations, Administration and Infrastructure Programme. This is perceived to be more of a political and management issue rather than a community issue.
Few benefits to surrounding communities	Apart from the income to the Rural District Councils from hunting there appear to be few material benefits to local communities from the park.

Table 56: TFCA issues and concerns facing the Collaborative Management Programme	
Issue/Concern	Brief Description
Poor TFCA awareness	Generally, at the local level, there is a poor awareness of what the Great Limpopo Transfrontier Park represents, as this is a process driven from the top down
Different conservation policies in Mozambique	Almost 30% of the boundary of the park is along the Mozambique-Zimbabwe international border. There are no conservation areas in Mozambique that abut the park but the Mozambique government has established “game farms” of approximately 2 000 ha each in this area. According to Mozambican law a game farm needs to be fenced and artificial water will be permitted.
Poor representation from field level at TFCA meetings	The GLTP holds irregular meetings to discuss issues of common concern. As this is a three country agreement the meetings are often held in either Mozambique or South Africa. Generally HQ staff attend these meetings and there is poor representation from the field staff. Hence they have little input into the decisions taken at these meetings.
Sengwe corridor problems	The Sengwe corridor is the “official” linkage between Gonarezhou and the rest of the GLTP in Zimbabwe but the area has a number of problems, the most serious of which is the uncleared minefield. Another problem is that it is a poor game area and considered to be uninteresting scenically (both important from a tourism perspective)
Slow progress of GLTP cooperation	The GLTP agreement was signed in 2002 but progress towards reality has been slow. For example, even eight years later there is no agreement on some basic issues such as the fees to be charged.
Threatened connectivity	Potential corridor linkages are under threat. These include the Malilangwe/Fairrange corridor to the north of the park and the linkages through the Sengwe to South Africa. Malilangwe is now completely fenced (although fences can be removed if considered appropriate). Settlement and agriculture along the Mase river in Sengwe is increasing and, if not checked will close any options for connectivity in this area. At present the Sengwe corridor is blocked by the uncleared minefield.

Table 57: OTHER issues and concerns facing the Collaborative Management Programme

Issue/Concern	Brief Description
No cohesive land use planning	There is no cohesive planning initiative for the south-east lowveld. We have not had sight of the Chiredzi Master Plan, and as it has not been mentioned, one can assume that it was prepared without input from Gonarezhou staff.
Catchment deforestation and inappropriate land-use	As more land is cleared for agriculture, both commercial and subsistence, in the upstream catchment areas this places more stress on the environment. There are also significant planned irrigation schemes which will further degrade the catchment environment. Some of these issues are discussed under the Biodiversity and Natural Resources Management Programme as well.
Poverty of surrounding communities	Increasing populations, low and erratic rainfall and poor land use practices in the surrounding areas have contributed towards a high level of poverty in the communal lands adjacent to Gonarezhou.
Few tourism opportunities in surrounding areas	Communities have listed possible tourism sites in their areas but some of these will be difficult to develop successfully. There are limited areas for tourism in the surrounding areas apart from safari hunting
Disputed boundaries	There are three areas where the park boundaries are unclear or disputed. These include the Ndali area (described under the Chitsa invasion issue) the Chipinda Pools area and the Sengwe area near Malapati.
Safari hunting Quotas <i>Monitoring Overhunting</i>	Most of the park is surrounded by hunting concessions, some of which are quite extensive. In addition the Malapati Safari Area lies across the Mwenezi river at Mabalauta. Much of the hunting takes place in the areas immediately adjacent to the park and the park is the source of the trophies taken in the communal lands. Monitoring of hunting is carried out by the ZPWMA and the CAMPFIRE office and quotas are set after annual quota setting meetings involving all stakeholders.
Poorly defined PPCP concept	Although PPCP is often discussed and seen as they way forward, not only for the Gonarezhou, but for other areas in the Parks and Wildlife Estate, there is no clear definition of what this means. It may be necessary for the Authority to define this for the country as a whole.
Mine fields	Already mentioned briefly under the issues concerning the Sengwe corridor the presence of this minefield remaining from the 1970s liberation war is a serious hindrance to development of the Sengwe corridor as an integral part of the GLTP TFCA.
Unclear roles and responsibilities of partner agencies	Since late 2007 an international conservation NGO has been in a cooperation agreement with the ZPWMA for the rehabilitation of Gonarezhou. In some respects the agreement is unclear about roles and responsibilities

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APPENDIX 1: 1970 VEGETATION DESCRIPTION

Sherry (1970) described and mapped (Map 5) 17 plant communities in Gonarezhou.

Veg Type	Brief Description
<i>Colophospermum mopane</i> woodland	Covers approximately 40% of the Park and occurs in lower lying areas and river valleys. <i>C. mopane</i> is found on almost all soil types, tending to be dominant, or forming a pure stand, on alkaline clays. Habit and density of the species are highly variable. A number of facies occur in the community, differing in species composition and physiognomy. Moderately tall <i>C. mopane</i> forms a pure stand, with a sparse shrub layer including <i>Grewia</i> spp., <i>Ximenia caffra</i> and <i>Euclea</i> spp.
<i>C. mopane</i> scrub	Characterised by multi-stemmed shrubs of <i>C. mopane</i> of up to about 2 m high with expanded root stocks. Growth is influenced by soil characteristics and by fire. This community typically occurs in the valleys of minor rivers on eroded areas of Cretaceous sands in undulating terrain. Occasional emergent <i>C. mopane</i> trees occur, and on adjacent uplands, small <i>Terminalia prunioides</i> occur in patches. The soils of these areas are shallow and gravelly. The dominant grass species is <i>Enneapogon scoparium</i> .
<i>C. mopane</i>: sandveld ecotone complex (with <i>Combretum apiculatum</i>)	This community occurs in broken, rocky country where <i>Combretum apiculatum</i> occurs frequently and in some areas dominates the <i>C. mopane</i> .
Dry deciduous sandveld woodland and scrub	This community occurs on sandstone uplands with deep sandy loamy soils. The community type has arisen from the thinning or elimination of climax trees which include <i>Brachystegia glaucescens</i> , <i>Julbernadia globiflora</i> , <i>Pterocarpus angolensis</i> , <i>Guibourtia conjugata</i> and <i>Milletia stuhlmannii</i> by fire and to some extent by elephant. Important species include <i>Pteleopsis myrtifolia</i> , <i>Combretum collinum</i> , <i>Strychnos madagascariensis</i> , <i>Combretum zeyheri</i> , <i>Ochna pulchra</i> , <i>Diplorhynchus</i> , <i>Cassia abbreviata</i> , <i>Pseudolanchnostylis maprouneifolia</i> , <i>Boscia albitrunca</i> ; and as large trees <i>Xeroderris stuhlmannii</i> and <i>Afzelia quanzensis</i> . Variations within this type occur where <i>Terminalia sericea</i> becomes dominant, and in some areas emergent <i>Burkea africana</i> or <i>Acacia burkeii</i> remain
<i>Julbernadia globiflora</i> woodland	<i>Julbernadia globiflora</i> occurs in pure stands on the Cretaceous sandstone. At approximately 492 m altitude <i>J. globiflora</i> forms discrete patches of woodland in the <i>Combretum</i> shrub savanna. Typical patches of <i>J. globiflora</i> at the headwaters of the Guluene river are circular, with denser growth at the margin.
<i>Androstachys johnsonii</i> thicket	<i>Androstachys johnsonii</i> , a broad-leaved dry-evergreen forest or thicket species, forms dense thickets, up to 10 m high on the Cretaceous sandstone. The thickets occur on level areas of deeper soils, and on skeletal soils of the plateau rim where it has not been eliminated by fire.
<i>Kirkia</i>, <i>Commiphora</i> and <i>Adansonia</i> open woodland	Below the 450 m contour, steep slopes on the hills of the Chionja range support vegetation in which <i>Kirkia acuminata</i> , <i>Commiphora mollis</i> and <i>Adansonia digitata</i> are dominant. Understorey shrubs include <i>Markhamia acuminata</i> , <i>Cassia abbreviata</i> , <i>Sclerocarya caffra</i> , <i>Pterocarpus rotundifolius</i> and <i>Commiphora pyracanthoides</i> . Other common trees in this community include <i>Sterculia africana</i> , <i>Sclerocarya caffra</i> and <i>Combretum apiculatum</i> .
<i>Acacia nigrescens</i> - <i>A. welwitschii</i> tree savanna	<i>Acacia nigrescens</i> is widespread in the Park, being a component of communities on many soil types on all geological formations. <i>A. nigrescens</i> is dominant in parkland on the deeper soils of the granophyre, where these open areas occur as pockets in the <i>Brachystegia glaucescens</i> woodland of the Chionja range. <i>A. nigrescens</i> and <i>A. welwitschii</i> occur in a community maintained as tree savanna by elephants and fire.

Veg Type	Brief Description
<i>Brachystegia glaucescens</i> woodland low altitude ecotype	<p>Previously found on the southern slopes of the Chionja range. This low altitude ecotype is characterised by a leaflet number of about seven pairs instead of the usual 15 - 25 pairs. Density and type of understorey shrubs may be used to distinguish a number of facies in the community. Little understorey is found in the woodland on sandstones, where the scattered shrubs include <i>Monodora junodii</i>, <i>Vangueria infausta</i>, <i>Royena macrocalyx</i>, <i>Canthium weidii</i>, <i>Manilkara mochisia</i> and <i>Maerua kirkii</i>. The height of the woodland varies from 10 - 12 m on deep soils of the Triassic sandstone to stunted 2 - 3 m growth on outcrops of granite near the Save river. Termite mounds bearing Capparidaceae are fairly frequent. Apart from these, the <i>Brachystegia</i> occurs in fairly pure stands, but a shrubby <i>Hugonia</i> spp. is fairly common with a little <i>Diplorhynchus condylocarpon</i> and <i>Ormocarpum trichocarpum</i>. Grass cover is characteristically sparse, with frequent patches of exposed sandy soil. The fire hazard is reduced in <i>Brachystegia glaucescens</i> woodlands by suppression of the grass layer, allowing the establishment of dense thickets in some parts of this woodland. Trapnell (1959, in Farrel 1968) suggests that the <i>Brachystegia</i> and <i>Julbernardia</i> species woodlands in Zambia are fire-tender, but constitute an edaphic sub climax established in spite of fire. Between 1964 and 1968 selective clearing of <i>B. glaucescens</i> was carried out by ring-barking to deprive tsetse flies of their breeding and resting places. Farrell (1959) noted that in the Gonarezhou <i>B. glaucescens</i> formed a distinct upper storey with a closed canopy but this contrasts the present picture north of Runde where a large proportion of standing of <i>B. glaucescens</i> is moribund.</p> <p>Dense thickets occur in the woodland on the granophyre Chionja hills. The thicket is made up of a number of shrub species including <i>Gardenia resiniflora</i> (most frequent), <i>Monodora junodii</i>, <i>Canthium frangula</i>, <i>C. wildii</i>, <i>Capparis kirkii</i> <i>Vitex mombassae</i>, <i>Markhamia accuminata</i>, <i>Xeromphis obovata</i>, <i>Boscia albitrunca</i>, <i>Bauhinia petersiana</i>, <i>Artobotrys brachypetalus</i>, <i>Manilkara mochisia</i> and <i>Maerua</i> spp. Small patches of similar woodland and thicket are found on pebbly soils of basaltic origin near the Mozambique border. Thickets of <i>Milletia usaramoensis</i> and <i>Androstachys johnsonii</i> form the understorey in some areas of the woodland on the Chionja hills.</p>
<i>Guibourtia conjugata</i> woodland	<i>Guibourtia conjugata</i> is almost entirely restricted to the Cretaceous sandstone uplands in the south, where it extends into Zimbabwe from Mozambique. <i>G. conjugata</i> forms a tall woodland, 12 - 15 m high in places near the edge of the sandstone plateau. Understorey species include <i>Albizia anthelmintica</i> (locally forming dense thickets), <i>Spirostachys africana</i> , <i>Combretum padoides</i> , <i>Gardenia spatulifolia</i> , <i>Vitex mombassae</i> , <i>Royena macrocalyx</i> and <i>Monodora junodii</i> . Thickets of <i>Milletia usaramoensis</i> are frequent in, or adjacent to, the woodland. This community may grade into the surrounding <i>Combretum apiculatum</i> - <i>Strychnos innocua</i> , <i>Pteleopsis myrtifolia</i> savanna, in which clumps of <i>G. conjugata</i> occur locally. Wild (1955) reported an area of <i>G. conjugata</i> woodland on semi-alluvial soil at the Save/Runde confluence
<i>Guibourtia conjugata</i> - <i>Baphia obovata</i> thicket	<i>Guibourtia conjugata</i> and <i>Baphia obovata</i> are co-dominant in an area of thicket 3 - 5 m high, near Chiqualaquala on the Cretaceous sandstone. Associated species include <i>Pterocarpus antunesii</i> , <i>Strychnos innocua</i> , <i>Pteleopsis myrtifolia</i> and <i>Monodora junodii</i> . On the northern margin, the ticket is reduced to a low 1 m scrub, in which <i>G. conjugata</i> adopts a suffrutescent habit, similar to that of the related <i>C. mopane</i> on self-ploughing clays.
<i>Combretum fragrans</i> - <i>Terminalia stenostachya</i> open woodland	To the east of Chionja hills and on the headwaters of the Pombadzi river is an area where <i>Combretum fragrans</i> and <i>Terminalia stenostachya</i> are dominant tree and shrub species, with <i>Pseudolachnostylis maprouneifolia</i> being common.

Veg Type	Brief Description
Riverine and alluvial woodland	Where the major rivers run into more level country, alluvial terraces and river banks carry a species rich riparian vegetation. Some of the larger trees attain heights of up to 25 m, and there is a well defined lower canopy of shrubs, a few lianes, with shade-loving herbs and grasses beneath. The principal trees to be found in the fringes are <i>Albizia glaberrima</i> , <i>Pseudocardia zambesiaca</i> , <i>Trichilia emetica</i> , <i>Cordyla africana</i> , <i>Kigelia africana</i> , <i>Combretum imberbe</i> , <i>Diospyros mespiliformis</i> , <i>Ficus sycomorus</i> , <i>Mimusops zeyheri</i> , <i>Lonchorcarpus capassa</i> , <i>Acacia albida</i> , <i>A. sieberana</i> , <i>A. tortilis</i> , <i>A. robusta</i> , <i>A. xanthophloea</i> , <i>Hyphaene ventricosa</i> , <i>Ziziphus mucronata</i> , <i>Chlorophora exelsa</i> , and occasional baobab <i>Adansonia digitata</i> . Understorey species include <i>Acacia schweinfurthii</i> , <i>Lecaniodiscus fraxinifolius</i> , <i>Combretum mossambicense</i> , <i>Croton megalobotrys</i> , <i>Combretum microphyllum</i> , <i>Capparis spp.</i> , <i>Grewia spp.</i> , <i>Allophylus alnifolius</i> , <i>Cleistochlamys kirkii</i> among many others. The dominant grasses are <i>Panicum maximum</i> , <i>Urochloa mossambicensis</i> , <i>Digitaria spp.</i> , and <i>Dactyloctenium spp.</i>
<i>Spirostachys africana</i> - <i>Terminalia prunioides</i> woodland	<i>Spirostachys africana</i> is widespread in the park. It is a component of low-altitude riparian forest, and occurs as a distinct community on colluvial soils, in association with <i>Terminalia prunioides</i> and a number of other species. <i>Albizia anthelmintica</i> is usually associated with these woodlands on the northern rim of the Cretaceous sandstones, while <i>Pterocarpus antunesii</i> , <i>Gardenia resiniflua</i> and <i>Acacia erubescens</i> are present on the sandstone-rhyolite contact in the south.
<i>Milletia stuhlmannii</i> woodland	<i>Milletia stuhlmannii</i> is widespread on the Mozambique coastal plain, where it occurs in single species stands in areas of savanna woodland on the Cretaceous sandstone. Two stands occur on the Mozambique border in Gonarezhou.
Phragmites reed beds and <i>Ficus capreifolia</i> on sand bars and river banks	Occupying the more established sand spits and sand banks by the water's edge are <i>Phragmites</i> reed beds typical of all Zimbabwean lowveld rivers. This particular species, <i>Phragmites mauritianus</i> , occur in almost pure stands and attains a height of 5m. It occasionally occurs in association with a slender shrubby <i>Ficus capreifolia</i> and the climber <i>Taccazea apiculata</i> .
Streams and pans with <i>Spirostachys africana</i>	<i>Spirostachys africana</i> and <i>Colophospermum mopane</i> form limited areas of woodland close to pans and often fringe seasonal streams with sandy soils.

APPENDIX 2: RESEARCH AND MONITORING

GNP Research Summary - MONITORING				
Project	Status	Further Work	Comments	Reference and Affiliates
Monitoring the climate in the GNP <i>-rainfall</i> <i>-daily temperature records(max, min)</i>	<ul style="list-style-type: none"> • Ongoing monitoring in GNP • Manuscript on climate change prepared and submitted for publication 	<ul style="list-style-type: none"> • Ongoing monitoring 	Ongoing	PWMA, FZS Gandiwa E and Zisadza P
River Health Monitoring Programme <i>-Annual assessments on 14 sites on the Save, Runde and Mwenezi</i>	<ul style="list-style-type: none"> • GNP RHP assessments was conducted annually from 2008 to 2010 • Macro-invertebrate assessments, Fish survey • Habitat Assessments 	<ul style="list-style-type: none"> • Data to be analyzed • Report under preparation • Monitoring programme 	Ongoing	-PWMA, FZS -Zisadza P et al
Monitoring of wildlife mortality and age structure in GNP <i>-patrols database and other reports</i>	<ul style="list-style-type: none"> • Ongoing monitoring 	<ul style="list-style-type: none"> • Comprehensive trends analysis required for species of special concern 	Ongoing	PWMA, FZS
Wildlife population and spatial distribution monitoring in GNP <i>- aerial sightings, patrol sightings, database</i>	<ul style="list-style-type: none"> • Ongoing monitoring 	<ul style="list-style-type: none"> • Comprehensive analysis 	Ongoing	PWMA, FZS
Fire monitoring in GNP <i>-web-based-fire mapper</i> <i>-fire guards, block burning, fire records</i> <i>-socio-ecological issues</i>	<ul style="list-style-type: none"> • Ongoing monitoring • Impact on vegetation research publication by Gandiwa E and Kativu S 2009 	<ul style="list-style-type: none"> • Comprehensive analysis done in 2010, report prepared • Fire Management Plan necessary 	Ongoing	PWMA, FZS Gandiwa E and Zisadza P
Law enforcement monitoring in GNP <i>-monthly, quarterly reports</i> <i>-database</i>	<ul style="list-style-type: none"> • Ongoing monitoring 	<ul style="list-style-type: none"> • Comprehensive analysis of data captured in database since 2008 	Ongoing	PWMA, FZS Zisadza P, et al

GNP Research Summary - MONITORING				
Project	Status	Further Work	Comments	Reference and Affiliates
BTB surveillance	Ongoing research and monitoring project, A publication in a peer-reviewed journal was produced in 2010 by de Garine Wichatisky et al, GNP, Sengwe Corridor, and surrounding areas in GLTP	Ongoing research and monitoring. There is need to have more regular sampling and surveillance to have early detection than employing reactive approaches	Ongoing	WVU/DVS/PWMA Foggin C, de Garine Wichatisky M, Caron A, Pfukenyi D e.t.c
Anthrax surveillance	GNP, conservancies, buffer populations In Sept 2009-Anthrax suspect cases were reported in GNP, there was an outbreak in adjacent Malilangwe	Ongoing research and monitoring. There is need to have more regular sampling and surveillance to have early detection than employing reactive approaches	Ongoing	WVU/DVS/PWMA/University of Zimbabwe-Dept of Vet Foggin C,et al Chikerema D et al (PhD research)
Vegetation monitoring	Alien invasive species Vegetation panoramas			
Gully reclamation				
Human-Wildlife Conflict				
Safari Hunting				
Photographic Tourism				

GNP Research Summary - COMPLETED

Project	Status	Further Work	Comments	Reference and Affiliates
Aerial Survey of Elephants and other Large herbivores in GNP, Zinave NP (Mozambique) and surrounds	<ul style="list-style-type: none"> An aerial survey was conducted in 2009 and the survey report was produced and distributed in 2010, GNP/GLTFCA 	<ul style="list-style-type: none"> Planning for 2011 aerial survey 	Completed	-WMA/FZS/USFWS/Ministry of Turismo, Republic de Mocambique -Dunham, Gandiwa E et al
Impact of African elephants on Acacia tortilis woodland structure in northern GNP <i>-manuscript developed and submitted for publication</i>	<ul style="list-style-type: none"> Completed research project in northern GNP Manuscript under review 	<ul style="list-style-type: none"> Vegetation monitoring 	Completed	PWMA, Mushandike College -Magwati T, Gandiwa E et al
An assessment of illegal human activities impact on the natural ecosystems of GNP	<ul style="list-style-type: none"> Completed research project in northern GNP with focus on illegal human activities using data collected from patrols 	<ul style="list-style-type: none"> Comprehensive assessment of law-enforcement activities in GNP 	Completed Ongoing	-PWMA, Mushandike College -Mudangwe S, Zisadza P et al
The influence of elephants and fire on structure and composition of <i>Androstrachys johnsonii</i> woodland in GNP	<ul style="list-style-type: none"> Completed research project in GNP GNP 	<ul style="list-style-type: none"> Vegetation monitoring 	Completed	-Bindura University, PWMA -Chikorowondo G, Zisadza P, Gandiwa E
An assessment of woody vegetation status around perennial water points in GNP	<ul style="list-style-type: none"> Completed research project in GNP GNP 	<ul style="list-style-type: none"> Vegetation monitoring 	Completed	-Bindura University, PWMA -Tupulu N, Zisadza P, Gandiwa E

GNP Research Summary - ONGOING				
Project	Status	Further Work	Comments	Reference and Affiliates
Compile and analyze existing information and identify gaps <ul style="list-style-type: none">• GIS layers• Existing information on wildlife & livestock	<ul style="list-style-type: none">• Information on livestock densities compiled• Data on wildlife densities collected in 2007 by NPWMA/CIRAD	<ul style="list-style-type: none">• Ongoing• Data to be analyzed	Collaborative research project	-ZPWMA/CIRAD/CNRS --de Garine Wichtatisky et al
Document constraints & opportunities as perceived by small livestock producers and ZPWMA. <ul style="list-style-type: none">• Grazing & water resources• Competition with wildlife & agriculture	<ul style="list-style-type: none">• Regional study (SA, Mozambique, Zimbabwe on risk factors linked to Zoonosis transmission at the Wildlife/Livestock/Human interface• Analyse data of “free lists” and write report	<ul style="list-style-type: none">• Ongoing• Preliminary results and Report prepared	Collaborative research project	ZPWMA/CIRAD/CNRS/Regional Partners -de Garine Wichtatisky et al
Undertake survey of livestock and wildlife disease <ul style="list-style-type: none">• Collecting samples• Laboratory analysis• Analyzing prevalence of diseases.• Analyzing role of wildlife and livestock in spread of diseases at the wildlife-livestock interface	<ul style="list-style-type: none">• On-going study in 3 sites with contrasted wildlife/livestock interface• On-going laboratory analysis of samples• ongoing research project	<ul style="list-style-type: none">• Ongoing• Research publication produced• Research project completed for the northern section of GNP	Collaborative research	- CIRAD -de Garine Wichtatisky et al -Matsvayi W, Zisadza P et al ZPWMA, Midlands University, FZS
Undertake survey of livestock and wildlife movements around GNP <ul style="list-style-type: none">• Survey of wild and domestic distribution• Collaring cattle and buffaloes• Analyze movements of cattle and buffaloes	<ul style="list-style-type: none">• On-going: downloading of data from GPS collar	<ul style="list-style-type: none">• Ongoing• Preliminary results and Report prepared	Collaborative research project	ZPWMA/CIRAD/CNRS/Regional Partners

GNP Research Summary - ONGOING				
Project	Status	Further Work	Comments	Reference and Affiliates
Space use dynamics and movements of buffalos and cattle across the international borders of GLTFCA: implications for disease spread.	<ul style="list-style-type: none"> On-going: downloading of data from GPS collar 	<ul style="list-style-type: none"> Data to be analyzed 	Collaborative research project	CIRAD/DVS/CNRS/Regional Partners/ZPWMA - de Garine-Wichatitsky et al
Elephant distribution and dispersal in Gonarezhou National Park and the Greater Limpopo Trans Frontier Conservation Area -Satellite tracking -Utilisation of range and space	<ul style="list-style-type: none"> Regional study (SA, Mozambique, Zimbabwe) Preliminary report on elephant movements was prepared 	<ul style="list-style-type: none"> Ongoing Preliminary results and Report prepared 	Ongoing Collaborative research	ZPWMA / FZS/Regional Partners/Elephant Trust -Zisadza P et al
Characterisation of gullies in the GNP. A landscape approach to mitigate the increasing threats of soil erosion to infrastructure	<ul style="list-style-type: none"> Identification and assessments for reclamation needs in southern GNP, shelved data collection in northern GNP 	<ul style="list-style-type: none"> Reclamation ongoing in southern GNP Resumption of data collection in northern GNP 	Ongoing	-PWMA -Zisadza P et al
An assessment of illegal human activities impact on the natural ecosystems of GNP	<ul style="list-style-type: none"> Completed research project in northern GNP with focus on illegal human activities using data collected from patrols 	<ul style="list-style-type: none"> Comprehensive assessment of law-enforcement activities in GNP 	Ongoing	-PWMA, Mushandike College -Mudangwe S, Zisadza P et al
Human effects on multispecies wildlife communities in South-east lowveld of Zimbabwe	<ul style="list-style-type: none"> Manuscript prepared on assessment of large herbivore populations in GNP and surrounding areas 	Ongoing PhD research	Ongoing	Wageningen University /PWMA/ University of Zimbabwe (Competing Claims) - Gandiwa E et al
Spatial distribution of grazing area in wildlife-livestock interface area-looking at overlaps	<ul style="list-style-type: none"> Manuscript on 'collared' cattle movements in Mabalauta/Malipati area prepared and submitted for publication-IJRS 	Ongoing DPhil research	Ongoing	-University of Zimbabwe -DGES /CIRAD/PWMA (RP-PCP) -Zengetya F, Murwira A et al

GNP Research Summary - ONGOING				
Project	Status	Further Work	Comments	Reference and Affiliates
Forests and People interactions in the South East Lowveld, Zimbabwe	• Project completed on spatial distribution of <i>Imbrasia bellina</i> completed in southern GNP and surrounding areas in South East Lowveld (DGES-UZ), MSc Thesis- Zengeya F	Discontinued PhD research	Shelved (PhD)	-Forestry Commission/PWMA Wageningen University (Competing Claims), University of Zimbabwe-DGES -Mufandaedza E, Zengeya F, , Murwira A et al
Redressing asymmetry in resource allocation through co-operation among diverse livestock and wildlife systems in South East Lowveld, Zimbabwe	• Project completed on spatial distribution of human-wildlife conflict and application of GIS and RS technologies in southern GNP, and surrounding areas in South East Lowveld (DGES-UZ), MSc Thesis-Kuvawoga P	Ongoing PhD Research -final phase Manuscripts in press	Ongoing (PhD)	-Grasslands Research Station/ Wageningen University/PWMA (Competing Claims), University of Zimbabwe-DGES -Poshiwa X, Kuvawoga P, , Murwira A et al
Vulnerability and resilience of competing land-based livelihoods	Project on completed on spatial and temporal dynamics of landcover changes in the southeast lowveld in southern GNP and surrounding areas in South East Lowveld (DGES-UZ) MSc Thesis-Zisadza P Presented at the Savanna Science Networking Meeting- 2010	Ongoing PhD Research -final phase Manuscripts in press	Ongoing (PhD)	-Grasslands Research Station/ Wageningen University (Competing Claims), University of Zimbabwe-DGES -Murungweni C, Zisadza P, Murwira A et al
Remote Sensing patterns of primary productivity in the GLTP in relation to land use and land tenure	Ongoing research project, preliminary results presented at AHEAD GLTP meeting	Ongoing sampling and data analysis	Ongoing MPhil	University of Zimbabwe- DGES/PWMA Pachavo G, Murwira A et al

GNP Research Summary - ONGOING				
Project	Status	Further Work	Comments	Reference and Affiliates
Waterhole monitoring in and around southern GNP(Mabalauta) and surrounding communal areas to establish interaction of wild and domestic ungulates at water points	First manuscript prepared and submitted for publication. Ongoing research project	Ongoing project	Ongoing MPhil	University of Zimbabwe/PWMA/CIRAD (RP-PCP) Zvidzai M, Murwira A et al
Lowveld Carnivore Project: Assessment of Abundance, Distribution and Conservation Status of African Wild dogs in GNP	Ongoing research and monitoring project with special focus on Wild dog and Lion in GNP and SELV environs in the GLTP. Progress interim reports prepared	Ongoing collaborative research project	Ongoing	PWMA, AWCF, FZS Groom R, Monks N et al
Research on the interaction between domestic and wild ungulates (several projects related to disease Ecology and parasitology)	Ongoing research, Manuscripts prepared and submitted for publication (need more detail on status one these related projects) in GNP, South East Lowveld	Ongoing collaborative research projects There is need to have more collaborative research in disease ecology and information dissemination to local authorities	Ongoing	CIRAD/DVS/WVU/CNRS/PWMA e.tc de Garine Witchatisky M, Foggin C, Caron A, Gomo C, Dzvomani L et al
Natural resources management and sustainable utilization in communal areas of the SELV, <i>Drought, Livelihood and Food Security</i>	Ongoing collaborative project under the EU funded PARSEL Project, UNDP funded project on drought and climate change	More information is required on adaptive management of drought and climate change	Ongoing	CIRAD/Malilangwe/WWF/ SCV Le Bel S, Muti G et al Unganai L et al
Assessment of the status and distribution of <i>N. furzerri</i> in GNP and neighbouring areas	Preliminary assessment was done in 2010, some of the work could not proceed due to delay in getting the required permits	Gather more data and information on killifish, facilitate for permits to be in place	Ongoing	University of Stanford-USA/PWMA Valenzano R, et al

GNP Research Summary - ONGOING				
Project	Status	Further Work	Comments	Reference and Affiliates
Vegetation Survey of GNP	Work in progress expected to complete by end of year 2010- Consultancy to produce an updated vegetation map of GNP	Establishment of monitoring plots and sites for threatened vegetation communities	Ongoing	PWMA/FZS Muller T, Cunliffe R, Mapaura A, Shimbani J, Zisadza P et al
Alien Invasive Species in GNP	AIS Research and monitoring programme was initiated in 2009 and data collection, AIS are not yet a big problem in GNP however data collection, assessments and monitoring are ongoing to 'nip the problems in the bud'.		A research project for AIS focusing on plants was conducted in 2010.	Zisadza P et al Sithole D et al
Re-introduction of Rhinos in GNP and establishment of IPZ	Still a proposal, there are some technical and administrative challenges	Re-assessment of the presumed habitat due to impact of fire in the Pombadzi wilderness area. Review of the feasibility study done 5 years ago	proposal	PWMA/FZS/LRT

APPENDIX 3: ADJACENT AREAS

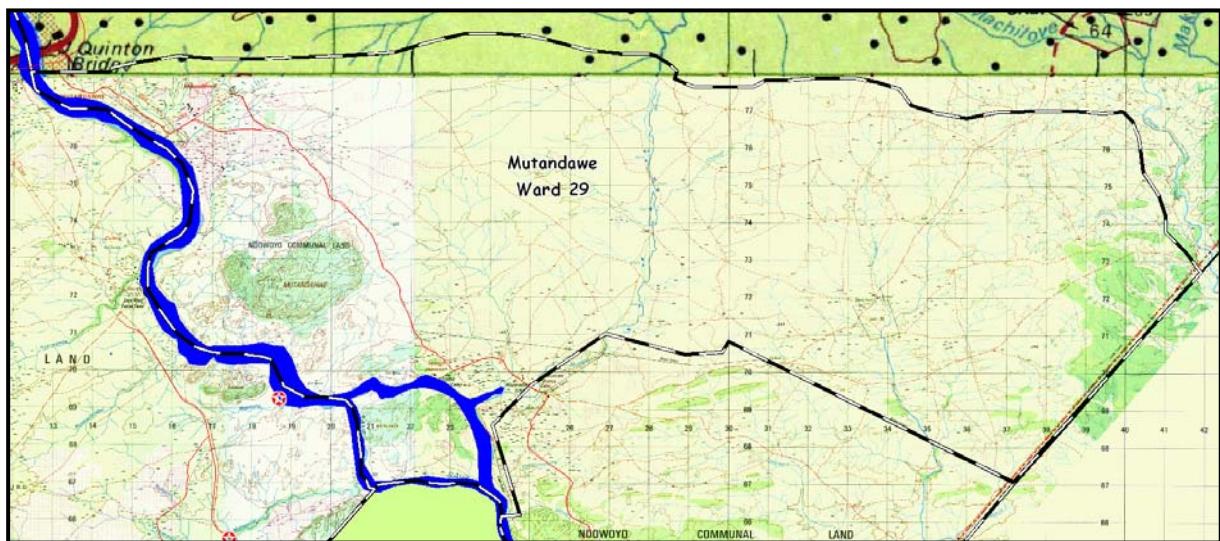
1 NDOYOWO COMMUNAL LAND

Ndoyowo Communal land falls under the jurisdiction of the Chiredzi Rural District Council. The two wards adjacent to the Gonarezhou National Park are Mutandahwe (Ward 29) and Mahenye (Ward 30). These are two separate hunting blocks and they are issued separate quotas although both areas are used by Zambezi Hunters.

1.1 Mutandahwe (Ward 29)

Mutandahwe Ward was not visited on this trip. It will be important to see the area on the ground and to open communications with the Chipinge Rural District Council. Attractions in the area include the Save River and the Mutandahwe Hills. The Bandai island in the Save river forms a part of this area.

Mutandahwe Ward 29 - 224 km²



1.2 Mahenye Ward (Ward 30)

Mahenye Ward has a tourism operation (Chilo Gorge Lodge) which was a successful operation until the economic and political crisis started in 2000. The lodge also had a linked tourism operation based on Mahenye island in the Save river. Three tourism possibilities have been put forward to the Chipinge RDC and these are Chivirira Falls, Chisegi and Nyamsengere. They are shown on the map below.

Mahenye Ward 30 - 260 km²



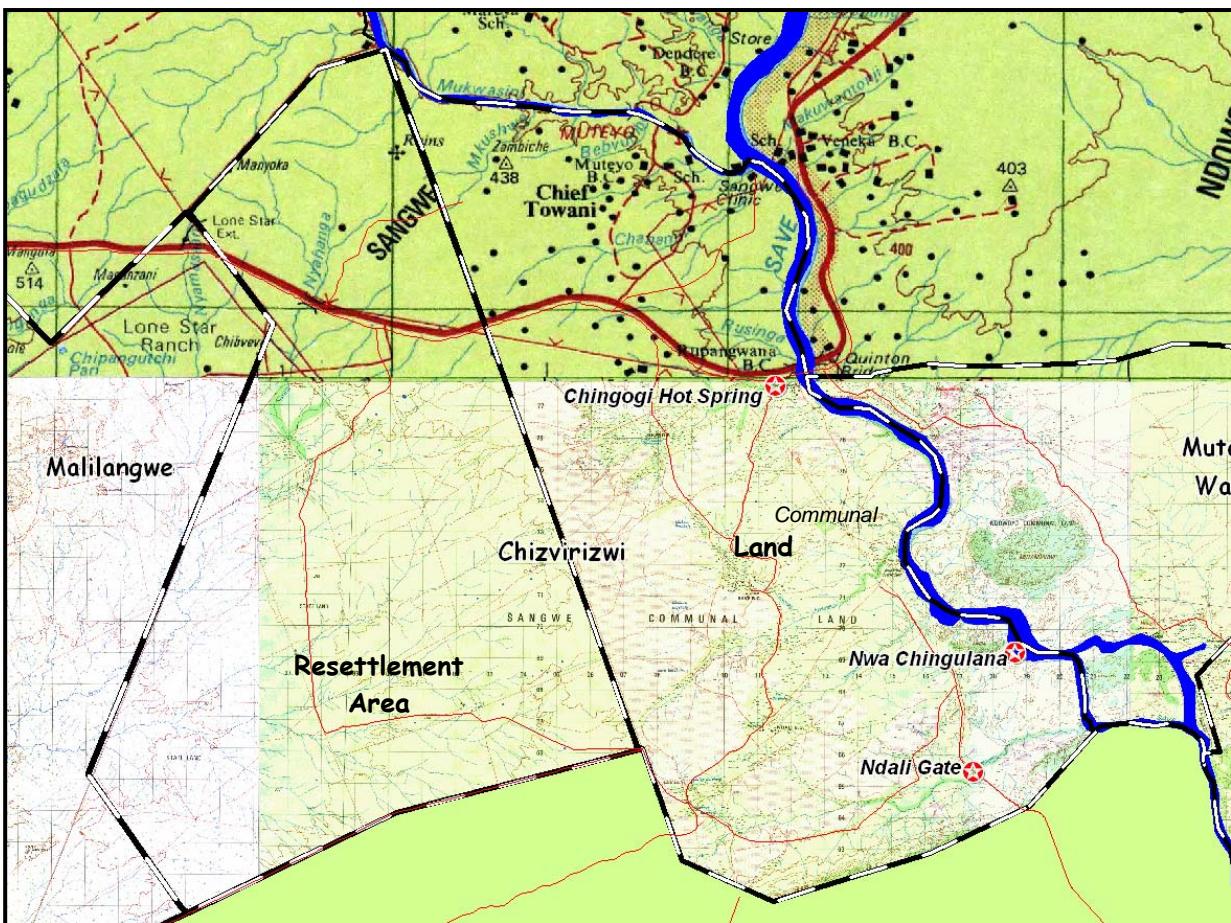
Prospecting activities are being carried out along the Save river.

2 SANGWE COMMUNAL LAND/CHIZVIRIZVI RESETTLEMENT

Two areas, both known as Chizvirizvi, abut the northern part of the park in this area. These are the Chizvirizvi Communal Land and the Chizvirizvi Resettlement Area. The resettlement area does not fall under the CAMPFIRE programme. In the Communal Land there are three attractions listed with the Chiredzi RDC:

- Nwa Chingulana
- Ndali gate
- Chingogi Hot Spring

Chizvirizvi Communal Land - 262 km²
Chizvirizvi Resettlement Area - 238 km²

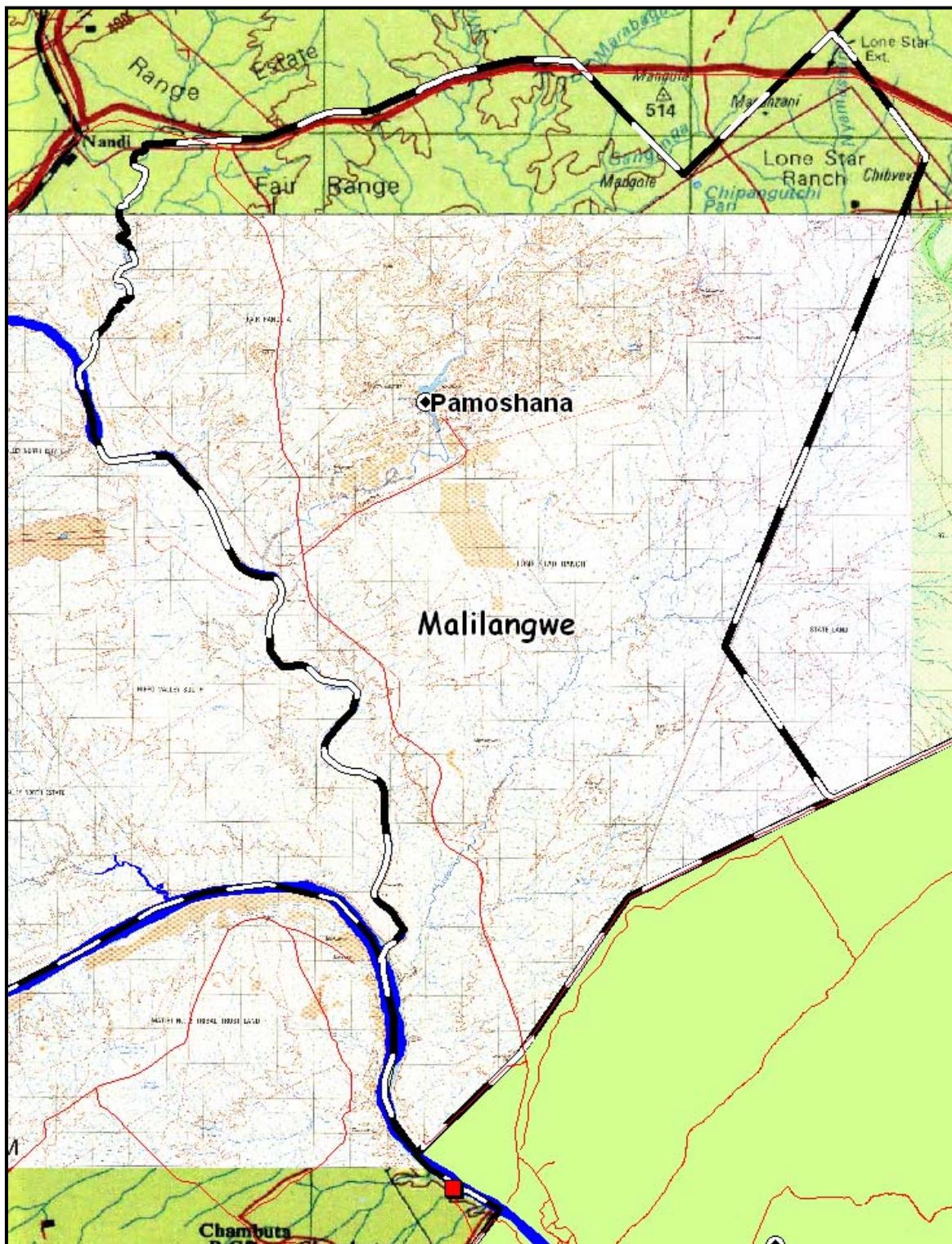


A meeting was held with the Chitsa people at Ndali BC and they had a number of issues regarding contested land in the park. Essentially, most of the Chitsa people previously resided in the park, many around the Save Runde junction and they were twice moved during the formation of the park. At the meeting they claimed land in the park as far as the xx fenceline. However, the physical "invasion" of the park is only as far as the fence line at the base of the Chihunja Hills.

3 MALILANGWE

Malilangwe was previously a cattle ranch – Lone Star Ranch – but has been turned into a wildlife reserve which has been the recipient of considerable funding. Several up-market accommodation facilities have been established and most visitors remain in the reserve during their stay. However, day trips are undertaken to the Chilojo Cliffs and the pans at the Save-Runde junction.

The size of the reserve has been expanded through a land swap with the Chizvirizvi Resettlement area and renting of part of the Hippo Valley Conservancy. Recent developments include the fencing of the Chiredzi and Runde rivers outside the estate.



4 MATIBI 2 COMMUNAL LAND

Essentially two hunting areas – Chikwedziwa and Naivasha which are run by different hunting companies.

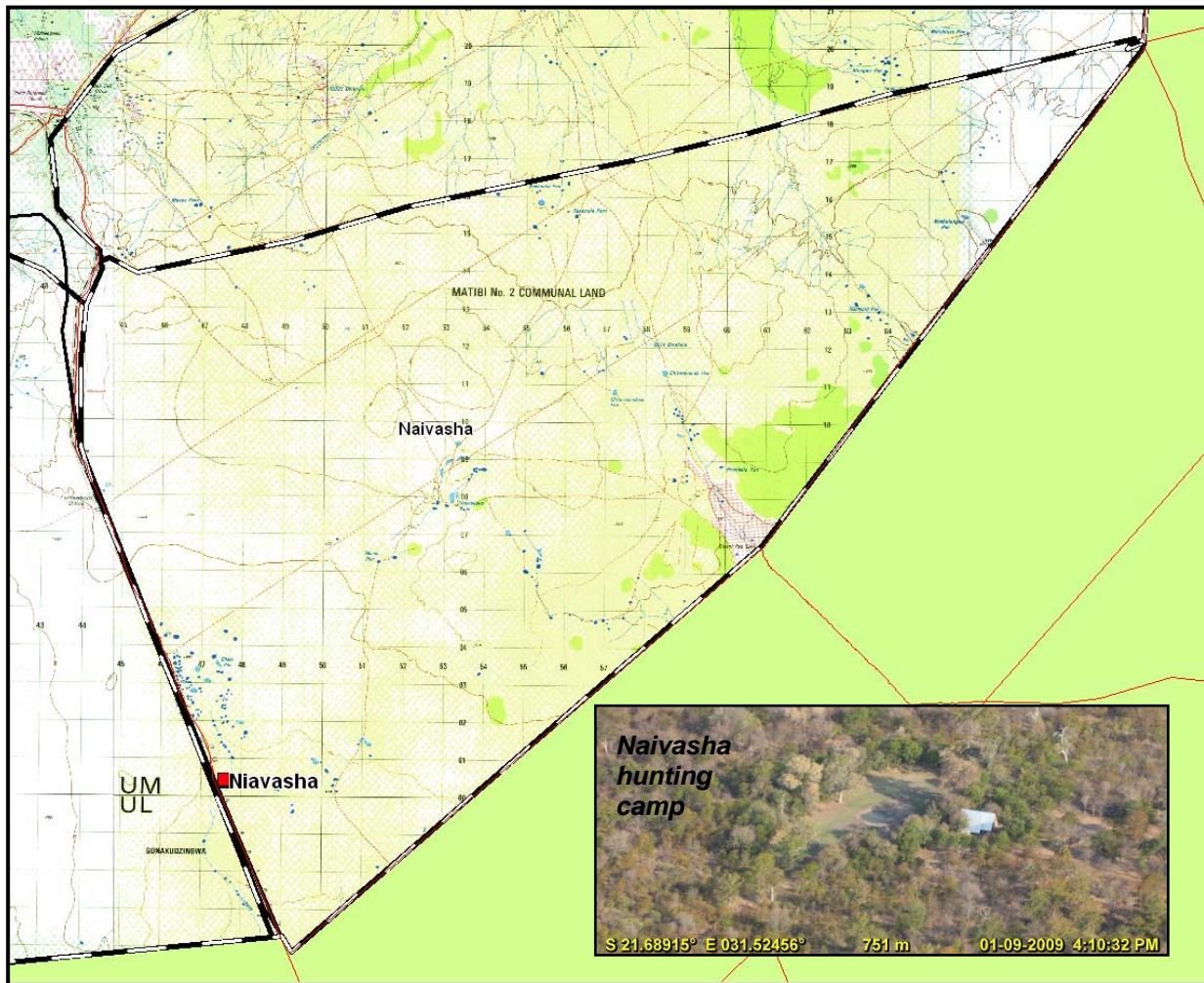
Listed Attractions under the CAMPFIRE programme are

- Chipinda Pools
- Naivasha/Muhlanguleni

4.1 Naivasha Hunting Block

Naivasha is part of Ward 22 which also includes the Gonarezhou National Park. The area is not extensively settled and is one of the prime hunting areas adjacent to the park. A hunting camp is located near the railway line, on the western boundary of the hunting block.

Naivasha Hunting Block - 250 km²

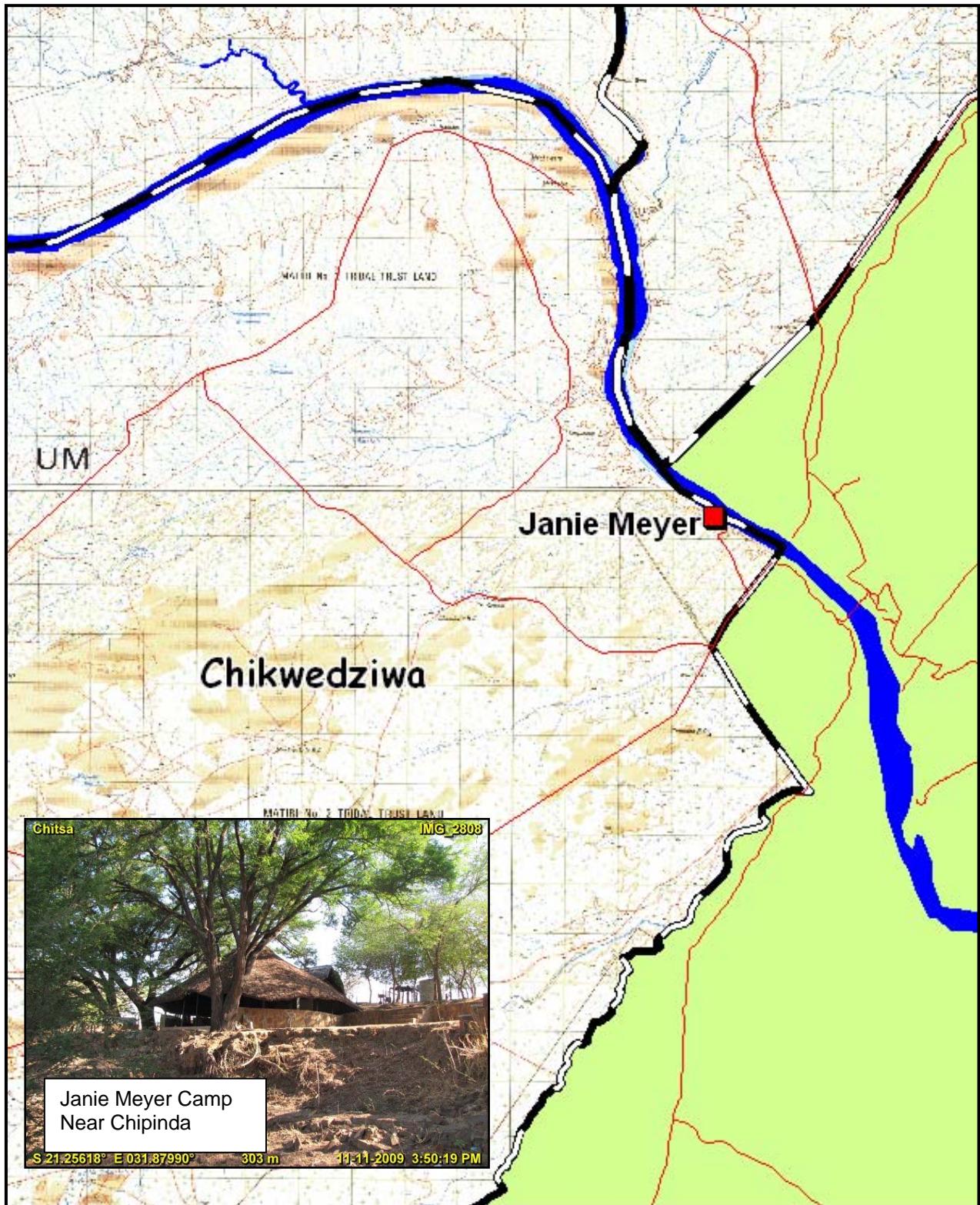


4.2 Chikwedziwa Hunting Block

The Chikwedziwa hunting block is large but most hunting for elephant takes place along the park boundary.

A hunting camp is situated on the Runde river close to Chipinda Pools.

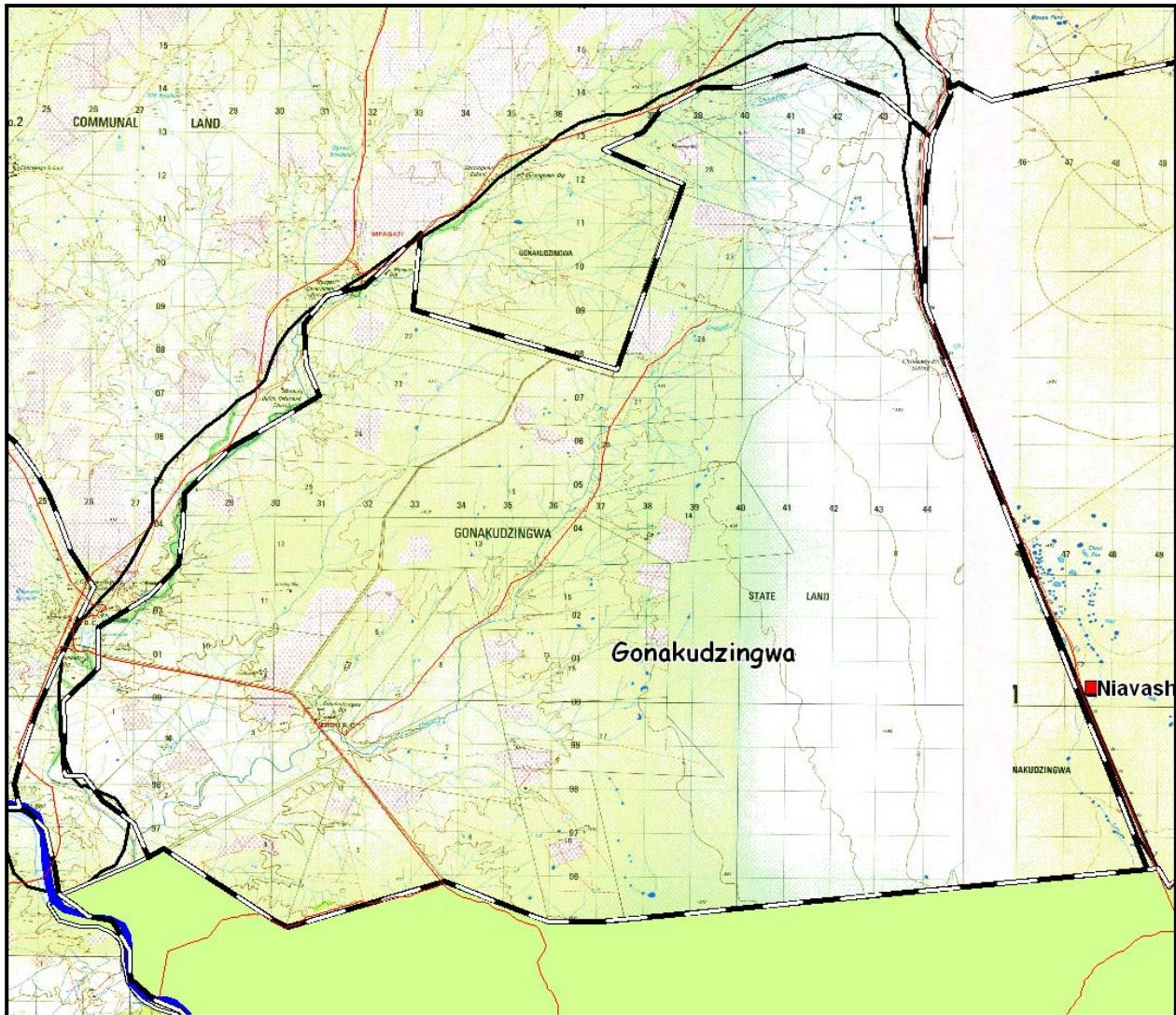
Chikwedziwa Hunting Block 1 059 km²



5 GONAKUDZINGWA

The Gonakudzingwa Purchase Area was established in the 1950s as a series of small-scale farms between five and seven square kilometres in size. There are 29 of these units, five of which have an adjoining boundary with the park. Each owner is permitted to apply for a quota from the ZPWMA which is granted after inspection by a competent person.

Gonakudzinkwa - 282 km²



6 SENGWE COMMUNAL LAND

The Sengwe Communal Land has three hunting blocks.

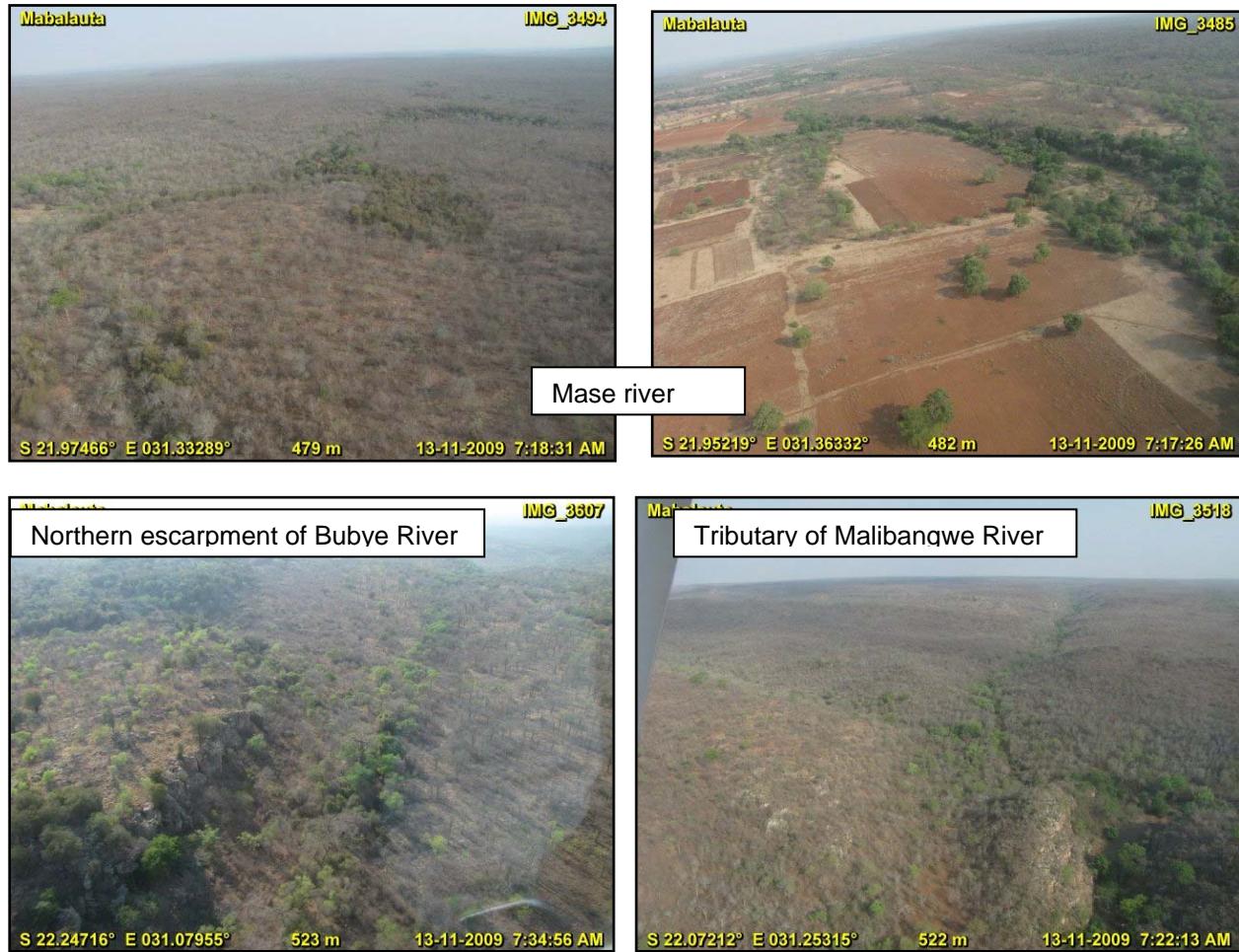
- Sengwe 1
- Sengwe 2
- Malapati Communal Area

The Malapati Communal Area is usually sold in conjunction with the Malapati Safari Area.

The listed “attractions” with the Chiredzi RDC for the Sengwe Communal Land are

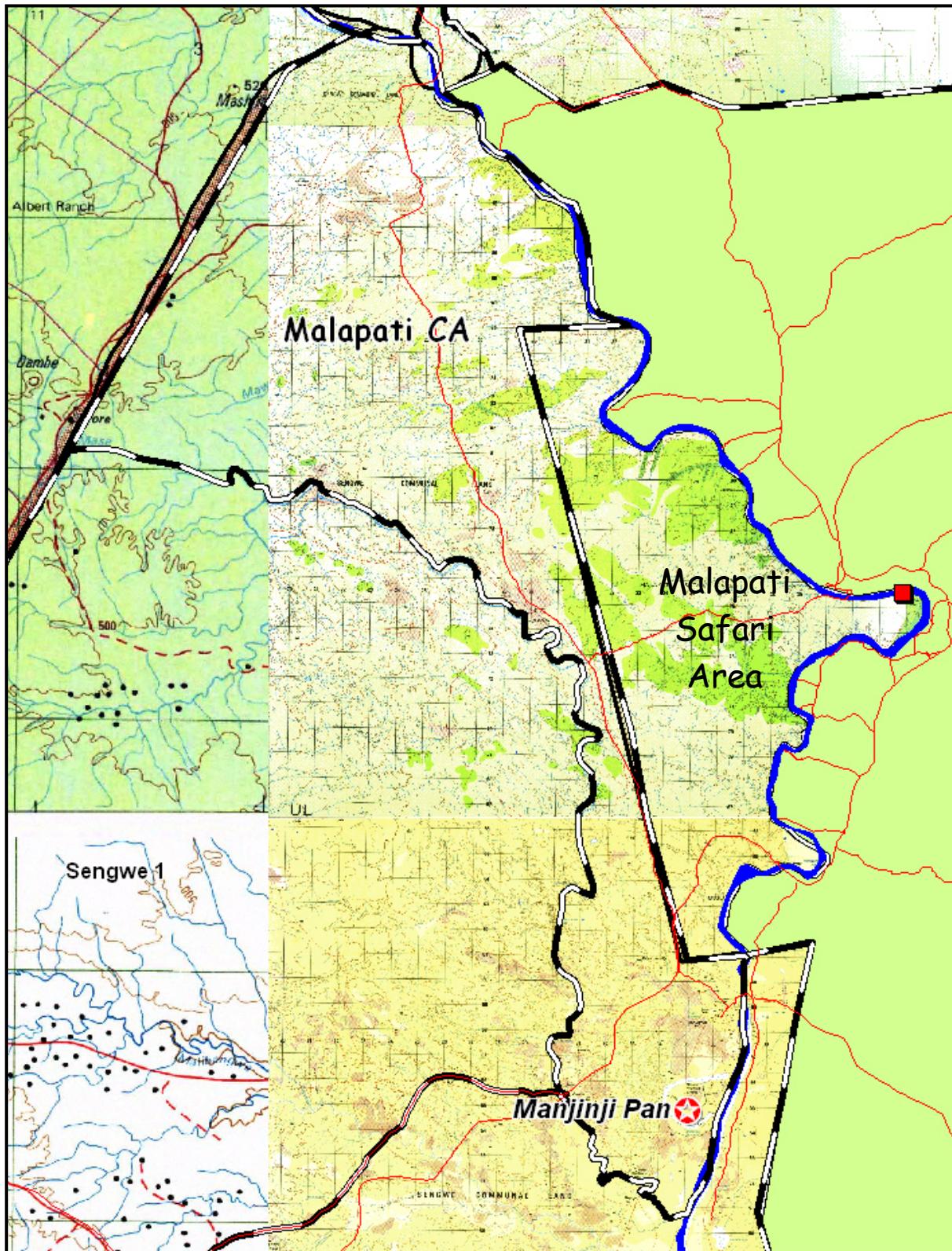
- Sengwe Corridor
- Pesvi Gorge
- Sakala
- Nyakasina Dam
- Mashawi Hot Spring

Although the Sengwe Corridor is the official linkage between Gonarezhou and the Kruger National Park the Sengwe Communal Land has other unused land which would equally serve to provide an interesting linkage between the two and a flight was taken over the area during this trip. The photos below show some aspects of the area..



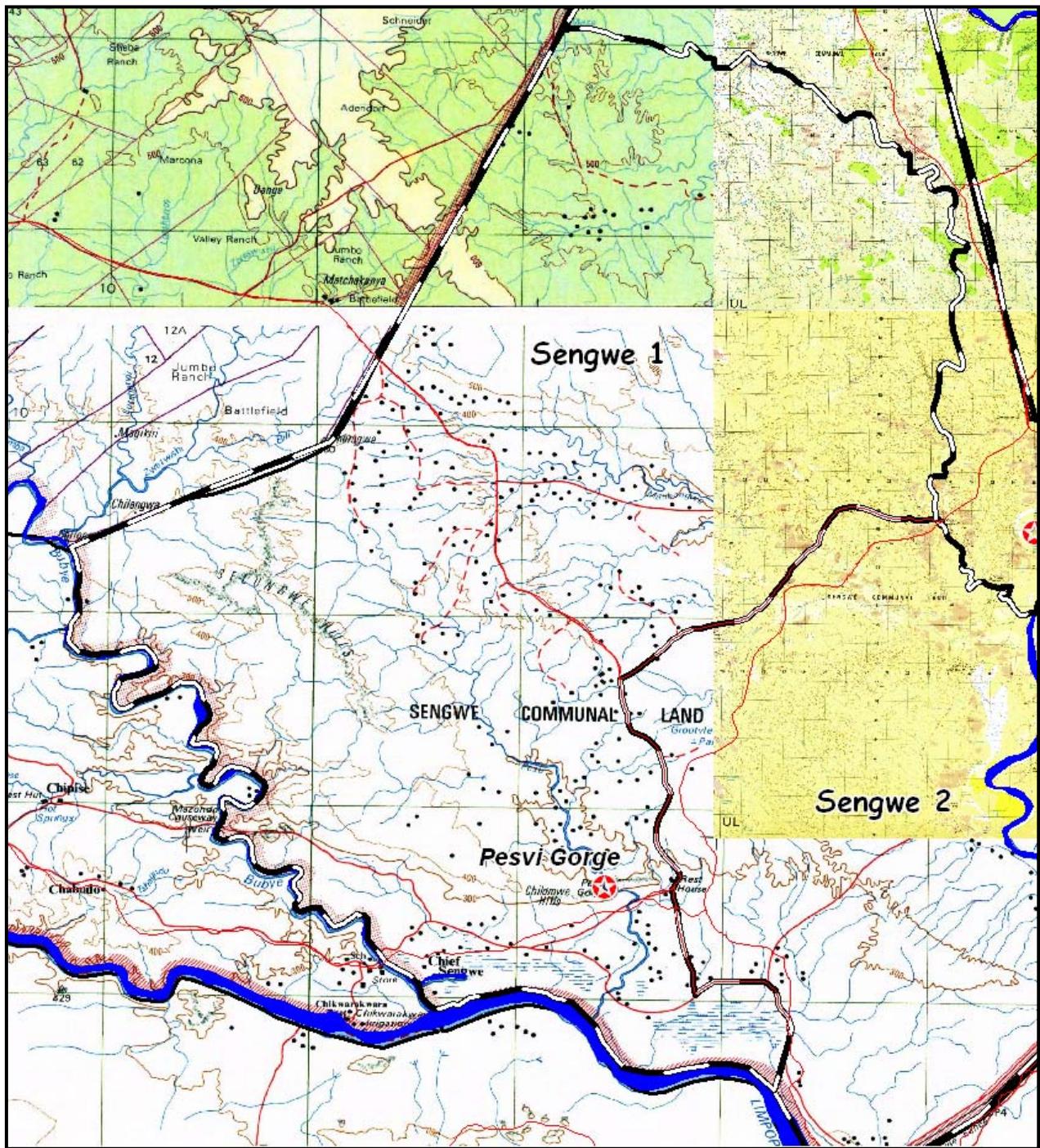
6.1 Malapati Communal Area and Malapati Safari Area

Malapati Communal Area 350 km²
Malapati Safari Area 150 km²



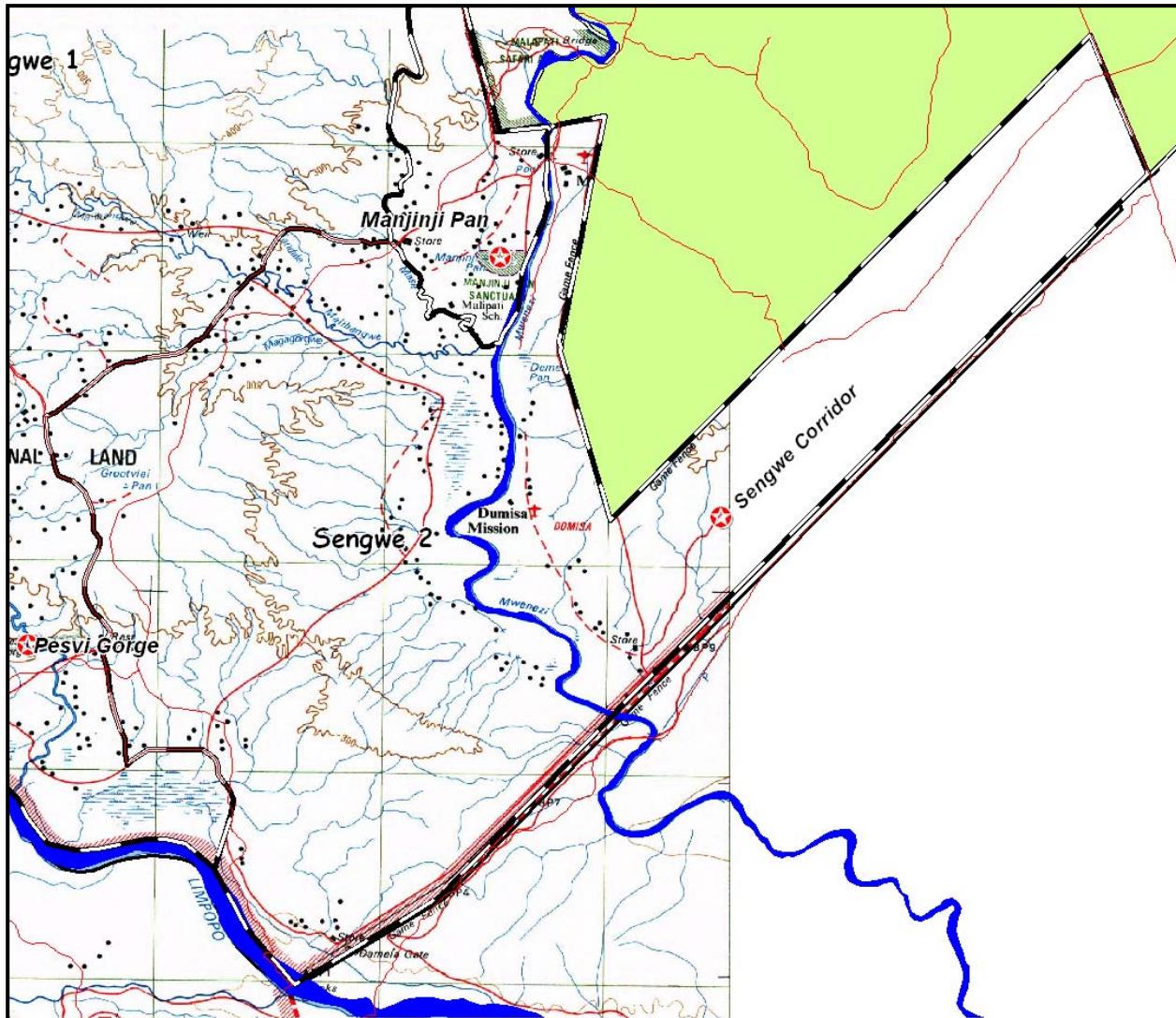
6.2 Sengwe 1 Hunting Block

Sengwe 1 - 1 245 km²



6.3 Sengwe 2 Hunting Block

Sengwe 2 - 826 km²



APPENDIX 4: PAC REPORTS

Area	Ward	Ward #	Village	Year	Species	Damage	Action
Matibi II	Chibwedziva	8	Machiloli	2003	Crocodile	Killed person	Escaped
Resettlement	Angus	24		2003	Elephant	Killed person	Escaped
Resettlement	Mungwezi	17	Mungwezi	2003	Elephant	Destroyed crops	Killed
Resettlement	Mkwasine	24	Plot 94 gomboi	2003	Elephant	Killed person	Escaped
Resettlement	Mkwasine	24	Plot 194 gomboi	2003	Lion	Killed 3 cattle	Escaped
Sangwe	Chitsa	5	Chitete	2003	Elephant	Injured person	Escaped
Sangwe	Chizvilizvi	22	V10	2003	Elephant	Raided crops	Killed
Matibi II	Chibwedziva	8	Machiloli	2004	Crocodile	Killed person	Escaped
Matibi II	Chibwedziva	8	Machiloli	2004	Crocodile	Killed person	Escaped
Matibi II	Dzinela	6	Lisese	2004	Crocodile	Killed goats	Escaped
Matibi II	Dzinela	6	Lisese	2004	Hippo	Injured person	Escaped
Matibi II	Dzinela	6	Lisese	2004	Hippo	Injured person	Escaped
Resettlement	Fairrange	32	Fairrange	2004	Elephant	Destroyed crops	Escaped
Resettlement	Sebanani	20	Sebanani	2004	Elephant	Destroyed crops	Escaped
Resettlement	Angus	24	Angus Farm	2004	Elephant	Destroyed hut & crops	Killed by Parks
Resettlement	Faversham	17	Mungwezi	2004	Elephant	Destroyed crops	Escaped
Resettlement	Buffalo Range	18	Buffalo Range	2004	Hippo	Destroyed crops	Escaped
Resettlement	Chegwite	24	Chegwite	2004	Elephant	Damaged hut killed baby inside	Killed by Parks
Resettlement	Mkwasine	24	Mkwasine	2004	Elephant	Destroyed crops	Killed by Parks
Resettlement	Bangala	17	Mungwezi	2004	Elephant	Destroyed crops	Escaped
Resettlement	Mkwasine	24	Mkwasine	2004	Elephant	Destroyed crops	Escaped
Resettlement	Buffalo Range	29	Buffalo Range	2004	Elephant	Deatroyed crops	Escaped
Sangwe	Chitsa	5	Chitsanzeni	2004	Hyena	Killed 1 cow & 2 goats	Escaped
Sangwe	Chitsa	5	Phikelele Scheme	2004	Elephant	Destroyed crops	Killed by Parks
Sangwe	Chitsa	5	Phikelele Scheme	2004	Elephant	Destroyed crops threatened school children	Killed by Parks
Sangwe	Chitsa	5	Phikelele Scheme	2004	Lion	Killed cattle	Escaped
Sangwe	Chizvilizvi	22	Villages 5 & 10	2004	Elephant	Desyroyed crops	Escaped
Sangwe	Chizvilizvi	22	Chizvilizvi	2004	Elephant	Destroyed crops	Scared away
Sengwe	Xini	15	Muhlekwani	2004	Crocodile	Killed 1 goat	Escaped
Sengwe	Sengwe	14	MPANDLE	2004	Elephant	Destroyed crops	Escaped
Matibi II	Chichingwe	7	Chichingwe	2005	Hippo	Destroyed wheat	Escaped
Matibi II	Chibwedziva	8	Chihosi	2005	Leopard	Killed 2goats	Escaped
Matibi II		8	Machiloli	2005	Crocodile	Killed person	Escaped

Area	Ward	Ward #	Village	Year	Species	Damage	Action
Matibi II	Chibwedziva	8	Chipachini	2005	Lion	Killed 2 cattle	Escaped
Matibi II	Dzinzelia	6	Lisese	2005	Elephant	Destroyed crops	Escaped
Resettlement	Buffalo Range	29	25 hectares	2005	Hippo	Destroyed crops	Escaped
Resettlement	fevesham	17	Village 1,2,3	2005	Hippo	Destroyed crops	Escaped
Resettlement	Mukazi	24	mukazi	2005	Elephant	Destroyed crops	Escaped
Resettlement	Chegwite	24	Chegwite	2005	Elephant	Destroyed crops	Escaped
Resettlement	Mkwasine	24	Gomboi	2005	Elephant	Destroyed crops	Escaped
Resettlement	Bangala	17	Villages 1,2,3,4	2005	Lion	Killed	Escaped
Resettlement	Pension area triangle	28	Villages 1,2,3,4	2005	Hippo	Destroyed crops	Escaped
Resettlement	Mkwasine	24	Mkwasine	2005	Lion	Killed 3 cattle	Escaped
Resettlement	sabanani	20	Manjirenji area	2005	Hippo	Destroyed crops	Escaped
Sangwe	Chizvilizvi	22	Village 1	2005	Buffalo	Attacked a person	Escaped
Sangwe	Chitsa	5	Machinzu	2005	Buffao	Threatened human life	Escaped
Sangwe	Chitsa	5	Sibizapasi	2005	Leopard	Killed 3 goats	Escaped
Sangwe	Chitsa	5	Village3	2005	Elephant	Damaged crops	Escaped
Sangwe	Chitsa	5	Tinhongeni	2005	Hyena	calf	Escaped
Sangwe	Chitsa	5	Chitete	2005	Lion	Killed cow	Escaped
Sangwe	Chitsa	5	Chitsanzeni	2005	Hyena	Killed goat	Escaped
Sangwe	Chitsa	5	Village 2	2005	Elephant	Damaged crops	Escaped
Sangwe	Chizvilizvi	22	Village 2	2005	Elephant	Threatened human life	Escaped
Sangwe	Chizvilizvi	22	Village 10	2005	Lion	Killed 1 cow	Escaped
		8	dopi	2005	Lion	Killed 3 cattle	Escaped
		8	Chehondo	2005	Lion	Killed 7 cattle	Escaped
		8	Muchingwizi	2005	Hyena	Killed cattle	Escaped
			Chehondo	2005	Lion		
Matibi II	Chichingwe	7	Joice Mujuru	2006	Hippo	Destroyed	Killed by Parks
Resettlement	Buffalo	29	3 ha	2006	Leopard	Killed goats	Escaped
Sangwe	Gudo	1	Chibhememe	2006	Python	Not killed	Own territory
Sangwe	Xini	15	Hlarweni	2006	Crocodile	Killed 5 goats	Escaped
Matibi II	Chichingwe	7	Joice Mujuru	2007	Hippo	Destroyed crops	Killed by Parks
Matibi II	Chichingwe	7	Juice Mujuru	2007	Hippo	Destroyed crops	Killed by Parks
Resettlement	Buffalo Range	29	Plot no 225	2007	Eland	Destroyed cotton	Escaped