

# THE STATE OF PROVINCIAL RESERVES IN SOUTH AFRICA

## CHALLENGES AND RECOMMENDATIONS



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Authors: Tamanna Patel\*, Oliver Cowan\*, Ian Little\*, Yolan Friedmann\*, and  
Andy Blackmore\*\*

**Report prepared by Emily Taylor\***

*\* The Endangered Wildlife Trust*

*\*\*Research Fellow, School of Law, University of Kwazulu-Natal, Pietermaritzburg*

## **CONTACT DETAILS**

Dr Ian Little

Head of Conservation

The Endangered Wildlife Trust

ianl@ewt.org.za

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# EXECUTIVE SUMMARY



Photo credit: Cole du Plessis

*“The state of provincial reserves varies from province to province; hence they cannot all be painted with the same brush. Financial and human resources, coupled with a skilled and committed workforce, are critical ingredients for the success of any Provincial Nature Reserve.” –*

*Survey respondent*

There is growing concern that South African protected areas, which contain high biological diversity, are not fulfilling their conservation objectives. This study aimed to determine the state of provincial nature reserves in South Africa, the challenges affecting management efficacy within these reserves, and opportunities to address these challenges. This was especially important for areas that have high conservation value. We used three main data sources to compile the findings in this report. First, we analysed Management Effectiveness Tracking Tool (METT-SA) reports to determine which provincial reserves in South Africa with high conservation value are not currently being managed effectively. Second, we distributed an online survey to obtain expert opinions on the state of provincial reserves in the country and gain insights into the threats and challenges management faces. Last, we interviewed provincial reserve managers, conservation practitioners well-versed in park management, and relevant non-government representatives to better understand the challenges facing provincial reserve management. We aimed to provide key recommendations to provincial reserve managers and conservation agencies to improve their management effectiveness and ability to fulfil their conservation mandates.

## Management effectiveness

Noting the number and extent of provincial reserves in South Africa, the qualifying criteria, and the role of these areas specified in the National Environmental Management: Protected Areas Act 57 of 2003, it is confidently assumed that these protected areas play a significant role in the conservation of South Africa’s biodiversity and the provision of ecological services. It was further noted that by declaring nature reserves, the government had assumed a legal obligation to ensure that these protected areas were effectively managed to achieve the purpose of the declaration.

To determine which provincial reserves with high conservation value are not being managed effectively, we rated reserves using the biodiversity resource indicator extracted from the METT reports (acknowledging that METT reports are intended to assess changes over time rather than comparing between reserves). In principle, the low-scoring (management score) reserves with a high conservation value should be the highest priority for implementing strategies to improve management effectiveness. We discovered that many nature reserves are not effectively managed due to various driving factors. It was found that the state of management was mirrored by infrastructure dilapidation and poor road maintenance. Despite this, many of these poorly managed reserves retained their potential as eco- and nature-based tourism attractions.

## Expert insight and interviews

Based on expert survey responses, the top three challenges affecting management effectiveness were capacity, poor management skills, and a lack of budget. Similar challenges were noted from the interviews. This report also highlights examples of provincial reserves that require urgent support and attention based on survey and interview responses.

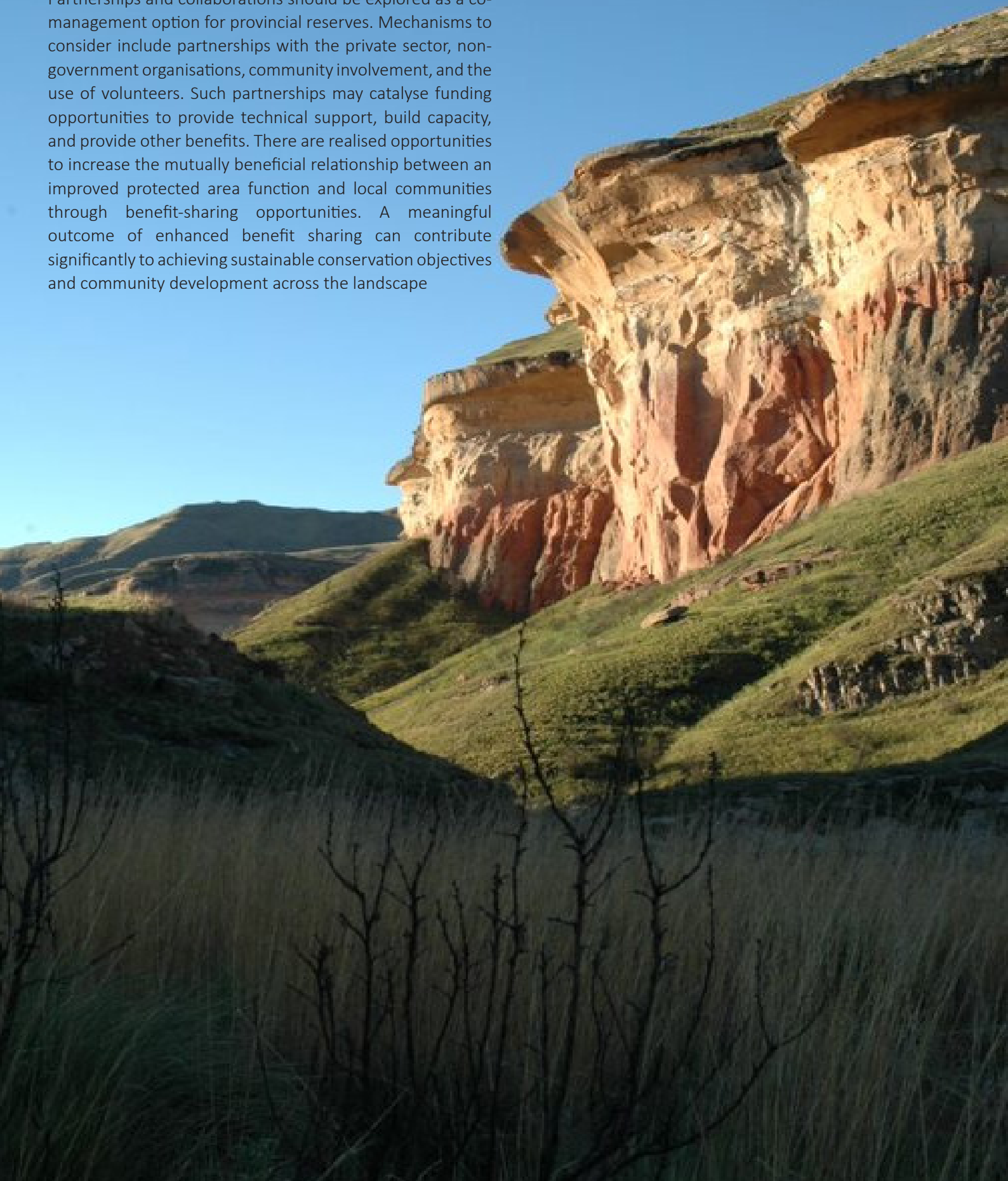
## Key recommendations

Provincial reserves with low METT scores, or as recommended through expert opinion or interview, should be prioritised for initial engagement to explore opportunities for improving their management effectiveness. Critically, this includes recruiting qualified, skilled, and experienced managers and staff members.

Urgent measures are required to refurbish infrastructure and significantly improve management effectiveness to realise the full tourism potential of these areas.

Without these interventions, there is a significant opportunity cost as provincial reserves cannot realise their potential to meet their conservation mandate or generate tourism income.

Partnerships and collaborations should be explored as a co-management option for provincial reserves. Mechanisms to consider include partnerships with the private sector, non-government organisations, community involvement, and the use of volunteers. Such partnerships may catalyse funding opportunities to provide technical support, build capacity, and provide other benefits. There are realised opportunities to increase the mutually beneficial relationship between an improved protected area function and local communities through benefit-sharing opportunities. A meaningful outcome of enhanced benefit sharing can contribute significantly to achieving sustainable conservation objectives and community development across the landscape



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# BACKGROUND AND INTRODUCTION

## SOUTH AFRICA'S RICH BIODIVERSITY AND THE ROLE OF PROTECTED AREAS

South Africa is the most biologically diverse country in Africa, yet it has the lowest percentage of protected areas and effectively managed PAs estate amounts to just 9%. While it occupies only 2% of the world's land surface area, the latest statistics indicate that South Africa is home to some 87,401 species, contributing a significant proportion to the world's plant species (7%), reptile species (4%), bird species (7%) and mammal species (5%), with new species regularly discovered and described. Endemism rates reach 50% for amphibians, 67% for plants, 49% for freshwater fishes, 50% for reptiles, 40% for marine animals, and over 50% for certain invertebrate groups such as butterflies and spiders (SANBI, 2019).

Protected areas are a critical tool for securing this biological diversity. The International Union for Conservation of Nature (IUCN) defines a PA as "a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values." Protected areas are the cornerstone of global biodiversity conservation strategies (Watson et al. 2014) and provide a range of ecosystem services (Soliku & Schraml 2018). There is considerable evidence that well-managed PAs effectively reduce biodiversity loss (Gray et al. 2016; Gill et al. 2017; Shumba et al. 2020). PAs are considered the most fundamental tool for conserving biological diversity and will undoubtedly play an essential role in stemming the current and alarming decline in species and the ongoing degradation of natural habitats.

One of the four main outcomes of the inaugural African Protected Areas Congress (APAC), dubbed the Kigali Call to Action, was that "protected and conserved areas are positioned as natural solutions to biodiversity and the climate crisis, and the broader frame of sustainable development by recognising the role these intact ecosystems play in economic development and human well-being". This direct link between PAs and climate change adaptation is a critical consideration and motivation for effectively managing these wilderness areas.

PAs are national assets that serve as nodes in South Africa's ecological infrastructure network, protecting ecosystems that deliver important services to people, such as food production, clean water, medicine, flood attenuation, erosion prevention, and the aesthetic

value of landscapes. They provide a home for the country's most iconic species and recreational spaces for South Africans and global visitors. PAs can also play an important role in the development of rural economies. Across South Africa, PAs cover more than 9% of the country's mainland and fall into different management categories such as national parks, state forests, private nature reserves, and provincial and municipal reserves. Provincial and municipal reserves are the responsibility of provincial management authorities. According to the 2018 Performance and Expenditure Review on Provincial Reserves, municipal and provincial reserves cover just over three million hectares across 427 individual PAs in South Africa (Cloete et al. 2018). This coverage equates to 8% of South Africa's total conservation estate (Cloete et al 2018).



*Photo credit: Dr Ian Little*

## THE LEGAL FRAMEWORK APPLICABLE TO PROTECTED AREAS IN SOUTH AFRICA

The legal framework for establishing and appropriately managing PAs is primarily routed in South African statute law and international law (viz., global and continental multilateral agreements and conventions). At least from the perspective of the protection of the natural environment (and therein the protection of biodiversity), international law has profoundly influenced the content of South Africa's statute law, and, in some cases, it is intertwined. Therefore, South Africa's environmental statutes should be interpreted within this context (Blackmore, 2018).

## INTERNATIONAL LAW

South Africa is a signatory to several international conventions and Multilateral Environmental Agreements (MEA) concerning establishing and managing PAs. Examples of the key conventions and MEAs that require South Africa to establish and maintain PAs include the following:

- Convention of Biological Biodiversity (CBD)<sup>1</sup>,
- World Heritage Convention<sup>2</sup>
- Ramsar Convention<sup>3</sup>
- The (revised) African Convention on Conservation of Nature and Natural Resources — signed in Maputo in 2003 (the Maputo Convention), and
- SADC Protocol on Wildlife Conservation and Law Enforcement.<sup>4</sup>

Notwithstanding the requirement to bring these conventions and MEAs into its law, South Africa is to answer to the international community on, inter alia, the management and status of its PAs. For example, Protected Areas Management Effectiveness (PAME) evaluation is one mechanism countries use to report to the CBD on how effectively its PAs are managed.

## SOUTH AFRICAN STATUTE LAW

### The Public Trust requirement

In brief, Section 24 of the Bill of Rights in the Constitution provides for what is commonly referred to as the ‘Environmental Right’ which, inter alia, establishes the right of people to ‘have the environment protected through reasonable legislative measures, for the benefit of present and future generations’. Therefore, it stands to reason that, given the meaning of ‘protected’, it is a Constitutional priority that the status and integrity of the environment, including PAs, must continue undiminished over time.

In the context of this study, reasonable legislative measures would promulgate the National Environmental Management: Protected Areas Act 57 of 2003 (NEM:PAA). The third component of this Right underpins the meaning of ‘protected’ in that PAs are to be managed in such a way as to ensure that future generations enjoy the value of the PAs in a manner equivalent to the current generation. This provision brings into South African law the common law public trust principle, inherited by South Africa’s legal system from its Roman Law origins (Blackmore, 2018). This principle is entrenched in the National Environmental Management Act 107 of 1998 (NEMA) as one of the principles of environmental decision-making, namely:

1 National Environmental Management Act 107 of 1998, National Environmental Management: Protected Areas Act 57 of 2003, and National Environmental Management: Biodiversity Act 10 of 2004 are the enabling instruments.

2 Brought into South African statute law by the World Heritage Convention Act 49 of 1999.

3 Both the National Environmental Management: Protected Areas Act 57 of 2003 and the National Environmental Management: Biodiversity Act 10 of 2004 are the enabling instruments.

4 Section 2(4)(o).

‘The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest, and the environment must be protected as the people’s common heritage.’<sup>5</sup>

This principle was subsequently included in the specific environmental management statutes promulgated under NEMA. These include the NEM:PAA and the National Environmental Management: Biodiversity Act 10 of 2004 (NEM:BA). The doctrine is captured in Section 3 within the environmental management statutes with nearly identical wording. The NEM:BA version of the public trust provision is as follows:

**‘State trustee of protected areas.** - In fulfilling the rights contained in Section 24 of the Constitution, the State, through the organs of state implementing legislation applicable to protected areas, must—

act as the trustee of protected areas in the Republic; and

implement this Act in partnership with the people to achieve the progressive realisation of those rights.’

Whereas the NEM:BA wording of the public trust obligation is as follows:

**‘State’s trusteeship of biological diversity.** - In fulfilling the rights contained in Section 24 of the Constitution, the state, through its organs that implement legislation applicable to biodiversity, must—

manage, conserve and sustain South Africa’s biodiversity and its components and genetic resources; and

implement this Act to achieve the progressive realisation of those rights.’

In the case of PAs, these two trustee (fiducial) obligations must be read and applied simultaneously (see Section 6 of NEM:PAA). Thus, in the context of this study, the organ of state responsible for managing a state PA has a legal obligation to ensure that the integrity of that PA, and the biodiversity therein, is safeguarded through, at least, the application of NEM:PAA. The state is, therefore, to administer the PA (the trust entity) solely in the interest of the trust’s beneficiaries (i.e., current and future generations). Therefore, this organ of state’s legal responsibility is to safeguard the PA’s integrity from anthropogenically derived harm. Thus, in those circumstances where a decision or indecision results in a loss in value or integrity, the state must, to the best of its abilities, remediate the harm or ensure the beneficiaries (i.e. current and future generations) are compensated for that loss in value or integrity of the PA (Blackmore, 2022).

The public trust doctrine is a fundamental ‘legal receptacle for the government’s long-term duty to manage and perpetuate the public enjoyment of [the country’s protected areas]’ (Manus, 2000). It also serves as a fundamental legal mechanism for the public to hold the government accountable for decisions or indecisions that

5 National Environmental Management Act 107 of 1998, National Environmental Management: Protected Areas Act 57 of 2003, and National Environmental Management: Biodiversity Act 10 of 2004 are the enabling instruments.



cause or may harm the integrity of the PAs (Blackmore, 2020; Niaz, 1996; Sax, 1970; Tarlock, 1972).

### **National Environmental Management: Protected Areas Act 57 of 2003 (NEM:PAA)**

In addition to the government's fiducial obligations, NEM:PAA contains several provisions that require the PA to be managed appropriately and fulfil the purpose for which there were established.

At the outset, the preamble to NEM:PAA describes the ultimate purpose of PAs: to "provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes."

In addition to the purpose in the preamble, Section 17 of the Act defines an additional 11 specific purposes for which a PA may be established. By setting in place



these purposes, it is common cause that the purpose of the PA establishment must be maintained over time. Furthermore, the Act does not differentiate, in this section or elsewhere, between what is binding on the government and what is not. Thus, the onus lies with the government, and in particular the organ of state responsible for a PA, to ensure that this area is managed to achieve and maintain its purpose for establishment. The same applies to the owner of, or management authority for, a private or communally owned property declared as a PA.

This requirement (i.e., the PA is to be managed for the purpose it was established) is reinforced by several provisions in the Act. For instance, the PA must be managed in accordance with its management plan, and this plan must be 'consistent with the objectives of this Act and for the purpose it (the PA) was declared.'<sup>6</sup> The organ of state managing a PA must, therefore, manage it to achieve the purpose for which it was established. Furthermore, the management authority for a PA must submit the management plan to (as the case may be) the Minister or the Member of the Executive Council (MEC) for the environment for approval. Thus, the political head that declares the PA is to ensure that the management plan conforms with the provisions of NEM:PAA and, in so

doing, confirms the management actions to be taken in accordance with the plan. The onus to ensure that the state PA has sufficient funds, and to ensure the organ of state undertaking the management of the protected area implements the management plan, lies with this political head. The corollary is that the responsible Minister or MEC is duty-bound to ensure that the PA is sufficiently resourced to enable the managing organ of state to manage the PA effectively so that the purpose of that PA is either achieved or maintained.

### **The nature of South Africa's protected area estate**

At the end of 2020, the PA estate covered 9.2% of the mainland surface area in South Africa. Nature reserves (provincial and private reserves) made up 44.5% of the total PA estate, accounting for 4.1% of mainland South Africa. Nature Reserves made up the majority of PAs in all provinces except for Mpumalanga and the Northern Cape. The PA estate has grown substantially in all provinces and in all biomes across South Africa since the 1970s (Statistics South Africa, 2021).

### **The effectiveness of protected areas in South Africa**

Not all PAs are fulfilling their conservation objectives (Craigie et al. 2010), and recent research has identified a range of drivers of biodiversity loss inside PAs (Barnes et al. 2016). Addressing these drivers and ensuring that PAs are managed effectively is critical to in situ biodiversity conservation (Stolton et al. 2019). Although NEM:PAA entrenches the state as the guardian of PAs in South Africa, effective management of PAs has faced significant challenges, not least of which is the absence of sufficient resources to properly manage the country's PA network. This challenge is compounded by the fact that conservation funding imperatives have to compete against a range of pressing national priorities, including housing, healthcare, education, security, and welfare needs, and – most recently – addressing the impacts of the COVID19 pandemic and a number of natural disasters. The adoption of funding models that centralise financial flows in government, and the gradual but significant decrease in government budget allocation to conservation efforts, have combined to put pressure on PAs to generate the necessary funds for their management and protection (Wright et al., 2018). Mechanisms to generate these funds include commercial activities and systems of cross-subsidisation between PAs, such as the mechanism implemented by South African National Parks (SANParks). There is a fundamental risk that this income generation imperative will shift focus from environmental protection to commercial activities and place at risk the integrity of the PA. In addition to the shortage of allocated funding, a range of other threats, which cause ongoing degradation of natural systems, is placing further pressure on the effectiveness of PAs to fulfil their mandate. These include

<sup>6</sup> Section 41

the loss and degradation of natural habitat due to inappropriate or poorly located land uses; invasive alien animal and plant species; over-harvesting of species; illegal wildlife trade and other illegal resource use; over-abstraction of water and pollution of aquatic ecosystems; disruption of natural drivers of ecosystem functioning (such as fire cycles); climate change; and institutional corruption (IUCN, 2020).

There is growing concern amongst conservation stakeholders about the state of PAs in South Africa, particularly those managed by provincial and municipal authorities. A lack of resourcing in terms of staffing and budgets (i.e., inappropriate financing models); outdated and incorrectly implemented management plans; and failing infrastructure have made it impossible for some PAs to fulfil their conservation mandate or generate much-needed funds. In addition, the existing PA network excludes a significant proportion of South Africa’s endemic and/or threatened species. Strategic conservation planning is essential to inform the placement of new PAs and expansion of existing PAs and to ensure that threatened and endemic species and their habitats are secured in line with the post-2020 Global Biodiversity Framework targets (SANBI, 2019).

Between 2014 and 2019, the United Nations Development Programme (UNDP) implemented a Global Environment Facility (GEF) funded project titled Improving Management Effectiveness of the Protected Area Network.

This project identified barriers to the effectiveness of South Africa’s PAs, including that:

- Globally important terrestrial and marine habitats are underrepresented in the PA estate. As a result, key critical biodiversity areas remain under-protected.
- The current PA expansion strategy is not cost-effective, could potentially place the financial stability of the entire PA network at risk, and is further restrained by conflicting land uses.

- There is limited capacity to implement cost-effective PA expansion and management.

Priority, under-protected, Critically Endangered, and Endangered endemic taxa should be included in Protected Area expansion planning. In support of this, a recent paper emanating from the 2018 National Biodiversity Assessment (SANBI, 2019) illustrated how poorly represented reptile species are within the PA estate (Tolley et al., 2019).

## PROVINCIAL PROTECTED AREA MANAGEMENT APPROACHES IN SOUTH AFRICA

The key role-players responsible for managing PAs are defined in NEM:PAA. The Act defines “management” and “management authority” relating to the protected areas as follows:

- Management includes control, protection, conservation, maintenance, and rehabilitation of the Protected Area with due regard to the use and extraction of biological resources, community-based practices, and benefit-sharing activities.
- Management Authority (MA) means the organ of state/institution with the authority to manage the Protected Area.

Provincial and municipal nature reserves are managed by two distinct institutional models implemented by the nine provinces in South Africa. Gauteng, Free State, Northern Cape, and Limpopo have instituted an internal model. These provinces have designated a directorate within the department responsible for environmental affairs as the management authority.

The remaining provinces have opted for an external model in which a Schedule 3C state-owned entity, as per the Public Financial Management Act (PFMA), acts as the management authority.

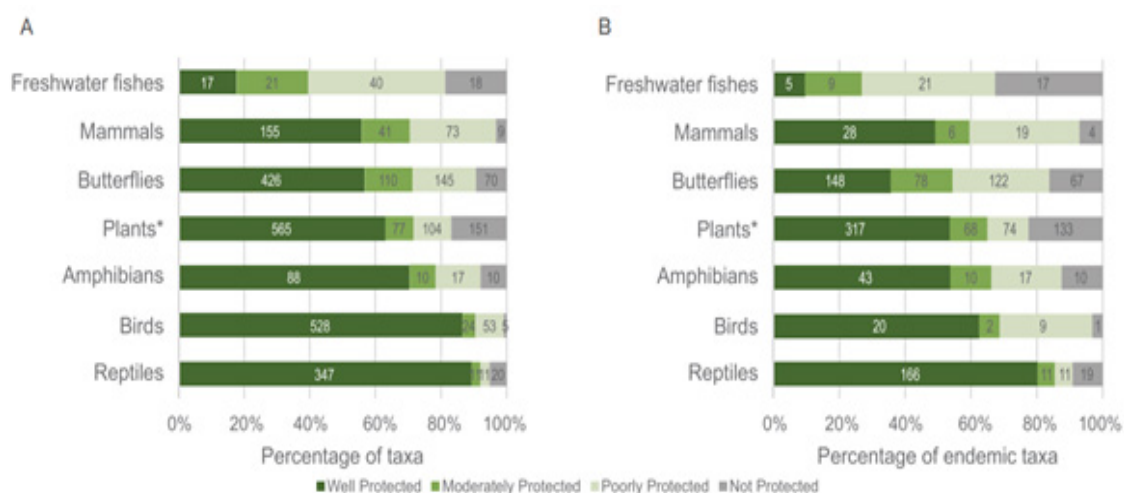


Figure 1: The protection level for terrestrial fauna (SANBI, 2019).

## THE PURPOSE OF THIS REPORT

The Endangered Wildlife Trust (EWT) was provided with seed funding from the Wildlife and Environment Society of South Africa (WESSA) in mid-2020, which was then bolstered with EWT's own funds to undertake a scoping project to bring together existing information on the dynamics of Provincial Reserves (PRs), to explore:

- The underlying challenges and successes affecting the management of PRs and understanding of which key factors impact the effectiveness of PRs.
- Potential solutions to the identified challenges so that such efforts can be funded and piloted.
- The role of PRs in conserving threatened and endemic species.
- Understand how useful METT-SA reports are for elucidating a national picture of trends and patterns.

This report aims to gather detailed evidence on the suspected deteriorating state of PRs that could inform decision-makers of the need for them to intervene and secure and safeguard these areas. Ultimately, we aim to identify a subset of challenges and opportunities within priority reserves to pilot selected concrete interventions. These interventions should make impactful and measurable improvements to PR effectiveness in conserving biodiversity and unlocking eco-tourism and community beneficiation opportunities.

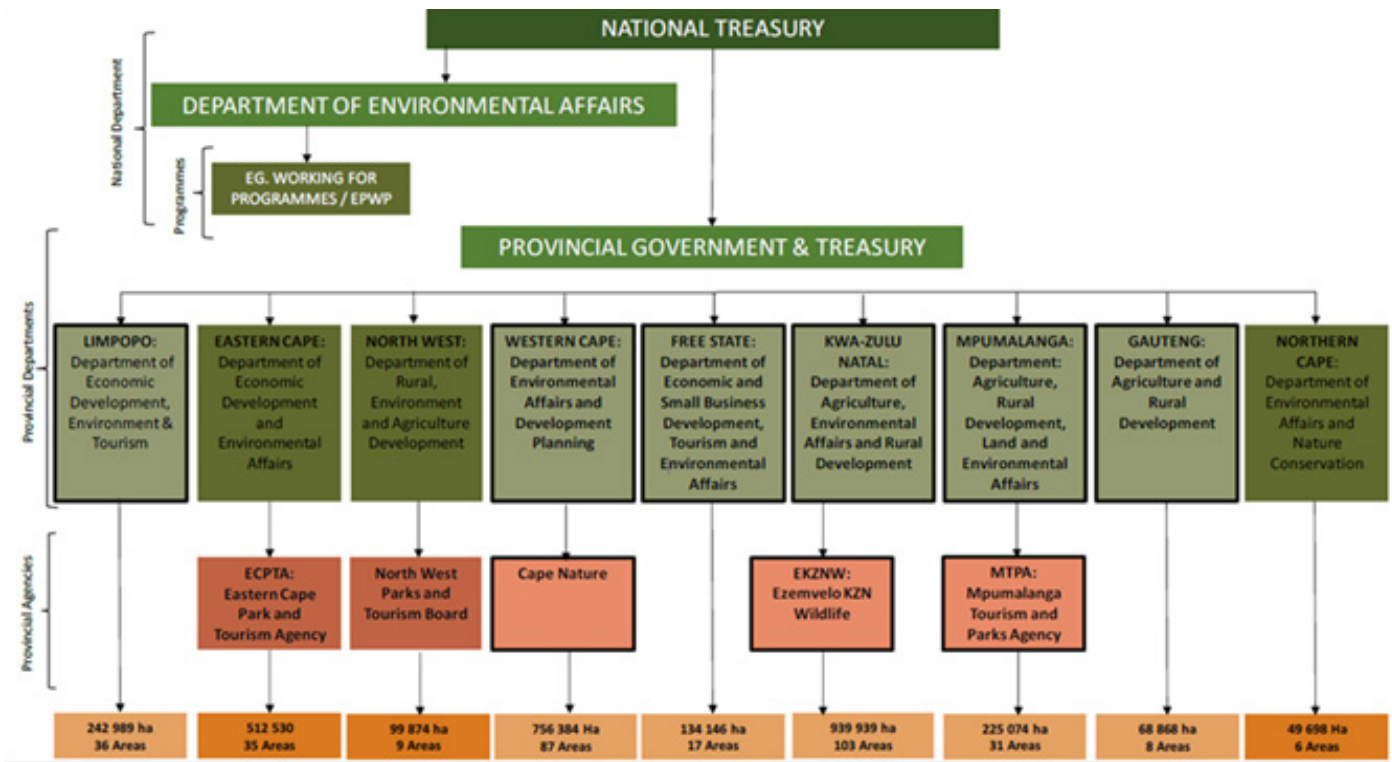
Three data sets were used to compile this report; 1) METT-SA reports, 2) data from an online survey, and 3) data from interviews conducted with experts in local reserve management.

## Where are the Provincial Nature Reserves?

### Locating all relevant reserves

The South African Protected Areas Database (SAPAD) is maintained by the Department of Forestry, Fisheries, and the Environment (DFFE) and is updated every three months. It is freely available for download. However, the GIS layer available to the public does not yet contain an attribute field denoting 'Ownership'. This is important in distinguishing between private and public (e.g., provincial/municipal) PAs. Through a request to DFFE, this information was kindly made available and added to the SAPAD shapefile. The complete list comprised 1,633 PAs.

We filtered this shapefile to exclude PAs with ownership, 'Community Conserved Areas', 'Joint or Co-ownership', 'Private', and 'Under Investigation' (n = 982) and only included 'Public' PAs (n = 651). We filtered further to exclude 'Forest Wilderness Area', 'Marine Protected Area', 'Mountain Catchment Area', 'National Park', 'Protected Environment', and 'World Heritage Site' site types (n = 106), leaving a final shapefile containing 'Forest Nature Reserve' and 'Nature Reserve' site types (n = 545).



Source: DNA Economics  
 Note: Solid borders indicate sample provinces and MAs included in the study.

Figure 2: The basic institutional arrangement in each province, the number of PAs under its jurisdiction, and the aggregate size of the PAs. About 54% of Provincial Nature Reserves are situated within KwaZulu-Natal and the Western Cape and are run by state-owned entities, namely Ezemvelo KZN Wildlife and CapeNature (Cloete et al. 2018).

# MANAGEMENT EFFECTIVENESS TRACKING TOOL

The Management Effectiveness Tracking Tool (METT), developed by the World Wide Fund (WWF) in collaboration with the World Bank, was designed to track and monitor progress towards worldwide PA management effectiveness. The primary aim of the tracking tool is to supply consistent data about the trends in PA management over time. METT has been adapted for South Africa (METT-SA) to consistently assess the state of PAs. This tool indicates how effectively a conservation area is being managed as an indicator of minimum standards but not of performance or outcomes (Cloete et al., 2018). Many indicators measure items the PA manager has no control over, such as legal status, design, or budget security. METT scores are not intended to compare one area to another but to provide trends over time for a specific PA. METT scores can be very useful if used objectively to determine where there are deficiencies in management effectiveness in a PA.

## Box 1. Explaining METT-SA Assessments

The Management Effectiveness Tracking Tool (METT) has been championed by organisations such as the International Union for Conservation of Nature (IUCN), the World Wildlife Fund (WWF), and the Global Environmental Facility (GEF). It is a tool designed to supply consistent data on the progress of PR management over time. A version reflecting South African circumstances was adopted in South Africa in 2008 and has been used extensively since. METT-SA, in theory, is a quick and easy self-evaluation tool applied by PA managers and consists of 33 indicators with 10 supplementary questions. The results of the assessment can be used to identify priority areas and informs the next steps that the manager should be on taking towards addressing these priorities.

In practice, there are concerns from within the conservation sector that the system may be flawed and not truly representative of the reality on the ground. Nevertheless, the latest assessments were independently audited and undoubtedly contain valuable information on reserve management and the challenges and threats they face.

The METT scores are divided into three categories. The first is a score of less than 33% which is deemed to be inadequate management. The second category is a score between 33 and 67%, which indicates basic management with significant deficiencies, and finally, the third category is a score of 67% and above, indicating sound

management. Cowan et al. (2010) advised that a score of 67% and above should be set as a standard guideline to determine the number of PAs occurring in the third category, i.e. being soundly or appropriately managed.

For this assessment, METT-SA reports were obtained from the DFFE to assess management effectiveness. Priority PRs were then determined, and these were overlaid with the national animal sensitivity layer (data adopted from the national web-based environmental screening tool) to determine the number of species of conservation concern in each of these PRs. The goal was to determine priority PRs, and where management improvements might have the most impact, especially concerning conserving biodiversity. While this report does not provide trends over time for each conservation area, it compares a specific biodiversity indicator across PRs in South Africa to advise the DFFE on areas that have both a high conservation value and are not being effectively managed. This exercise provides information on the state of PRs, guides better resource allocation and addresses critical shortfalls in PRs that are currently poorly managed and, as a result, are not conserving biodiversity as they should be.

In 2010, the then Department of Environmental Affairs (DEA) produced a report titled Management Effectiveness of South Africa's Protected Areas. This comprehensive report summarised the findings of METT-SA results across the country's PA network. While we now know that the initial METT process implemented in 2008 had several flaws and challenges, which have been improved upon since, these data still form an important baseline to inform future assessments.

## METT-SA REPORTS USED TO COMPILE THIS REPORT

To understand how useful the METT-SA reports are for elucidating a national picture of trends and patterns, we first had to extract and capture the data into a format that could be analysed. Data were extracted from the 172 reports from the DFFE, which comprise 31.6% of publicly-owned nature reserves in South Africa. The average METT-SA score across the 172 PRs assessed was 53.8%. We then sorted the PRs in terms of their relative performance according to their respective biodiversity management resource indicator. In addition, the number of animals of conservation concern was determined for all the low (Table1) and high-scoring PRs (Table2). This was done using the national Animal Sensitivity Layer,

overlying with each PR of concern.

**Table 1: Low-scoring<sup>7</sup> Provincial Reserves in South Africa in terms of biodiversity management indicators. Data based on METT-SA reports obtained from DFFE.**

Provincial Reserve	Province	Size (ha)	Year of report	Biodiversity resource management (%)	# Animals of conservation concern <sup>8</sup>
Soada Forest Nature Reserve	KZN	496.2	2020	6.9	21
Nababeep Nature Reserve	NC	10,850.3	2020	11.1	Not in SAPAD
Bothasvlei Nature Reserve	LP	1,463.9	2021	11.4	3
Pigeon Valley Nature Reserve	KZN	13.9	2021	16.7	5
Rolfontein Nature Reserve	NC	6,322.1	2021	16.7	12
Thabina Nature Reserve	LP	1,613.3	2021	16.7	7
Doornkloof Nature Reserve	NC	9,751.8	2020	19.4	Not in SAPAD
Oorlogskloof Nature Reserve	NC	6,169.8	2021	19.4	6
Springside Nature Reserve	KZN	21.3	2019	20.0	10
Silverglen Nature Reserve	KZN	391.2	2019	22.2	9
Happy Rest Nature Reserve	LP	2,247.4	2021	22.6	18
Table Bay Nature Reserve	WC	880.0	2020	27.8	17
Burman Bush Nature Reserve	KZN	42.2	2020	30.3	Not in SAPAD

Thirty-eight per cent of low-scoring PRs were located in KwaZulu-Natal (KZN). The average biodiversity management score of the low-scoring PRs was 18.6%, and the average overall score of the low-scoring PRs across all indicators was 27.3%. It is important to note that this does not necessarily mean that reserves in KZN have worse management than other provinces but that they submitted the most reports and may have a more stringent reporting approach. Unfortunately, the reporting is not always consistent between reserves and provinces, but it does provide insights into identifying priority focal areas.

**Table 2: High-scoring<sup>9</sup> Provincial Reserves in South Africa in terms of biodiversity management indicators. Data based on METT-SA reports obtained from DFFE. Fifty-seven PRs achieved a score of >67%. This table includes the top 22 high-scoring PRs.**

Provincial Reserve	Province	Size (ha)	Year of report	Biodiversity resource management (%)	# Animals of conservation concern <sup>10</sup>
Royal Natal	KZN	6,145.8	2020	75.9	Not in SAPAD
Dyer Island Nature Reserve Complex		31.2	2020	76.7	No AS layer available
Erfenis Dam Nature Reserve	FS	4,034.6	2020	77.8	3
Keurbooms River Provincial Nature Reserve	WC	889.9	2021	77.8	20
Marloth Nature Reserve Complex	WC	11,549.8	2021	77.8	10
Rustfontein Dam Nature Reserve	FS	1,835.3	2020	77.8	Not in SAPAD
Suikerbosrand Nature Reserve	GP	11,333.1	2020	77.8	21
Baviaanskloof Nature Reserve	EC	4,101.3	2022	80.6	8
Caledon Nature Reserve	FS	3,772.9	2020	80.6	9
Gariep Nature Reserve	FS	27,980.8	2020	80.6	8
Koppies Dam Nature Reserve	FS	4,719.7	2020	80.6	5

<sup>7</sup>Low-scoring PRs were selected based on their biodiversity management indicators of <33% (as per Cowan et al. 2010).

<sup>8</sup>To calculate the number of animals of conservation concern for each PR, we used the Animal Sensitivity Layer and intersected it with each PR.

<sup>9</sup>Top PRs were selected based on their biodiversity management indicators of >67% (as per Cowan et al. 2010).

<sup>10</sup>To get the number of animals of conservation concern for each PR, we used the Animal Sensitivity Layer and intersected it with each PR.

Provincial Reserve	Province	Size (ha)	Year of report	Biodiversity resource management (%)	# Animals of conservation concern <sup>10</sup>
Nylsvley Nature Reserve	LP	3,089.8	2021	80.6	Not in SAPAD
Songimvelo Nature Reserve	MP	55,316.4	2021	80.6	28
Sterkfontein Dam Nature Reserve	FS	13,337.1	2020	80.6	Not in SAPAD
Alice Glöckner Nature Reserve	GP	155.4	2020	80.7	6
Leeuwfontein Collaborative Nature Reserve	GP	2,260.9	2021	81.8	7
Dassen Island Nature Reserve		268.7	2020	82.8	No AS layer available
iSimangaliso Wetland Park	KZN	321,652.5	2021	83.3	Not in SAPAD
Sandveld Nature Reserve	FS	31,111.2	2020	83.3	5
Seekoeivlei Nature Reserve	FS	4,302.9	2020	83.3	19
Anysberg World Heritage Site	WC	73,812.9	2021	86.1	9
Gamkaberg World Heritage Site and Nature Reserve Complex	WC	1,0430.0	2020	86.1	Not in SAPAD

Eight out of 22 (19%) high-scoring PRs are located in the Free State (FS). The average biodiversity management score of the high-scoring PRs was 74.9%, and the average overall score of the high-scoring PRs (NC) across all indicators was 69.5%. The Northern Cape (NC) and North West (NW) provinces had no PRs that scored above 67%. The same considerations mentioned above for the low-scoring reserves are relevant.

## METT DISCUSSION

All PRs should aim to achieve METT-SA scores in the sound management category (i.e., above 67%). More importantly, if PRs are not reaching this threshold, they should aim to improve their previous score. To recap, METT-SA assessments aim to supply consistent data on the trend of PA management over time and are not intended to compare across or between PAs (Cowan et al. 2010), even though this is a useful indication of the relative current state.

It is particularly concerning that several PRs in the low-scoring zone have a high number of animals of conservation concern (Table 1). For example, Soada Forest Nature Reserve in KZN includes or should include 21 animals of conservation concern, yet it has the lowest score for its biodiversity resource management indicator (6.9%). Its overall METT score is only 10%, so this PR has room for significant improvement.

In this case, Soada Forest Nature Reserve would be an ideal target reserve (Figure 7) for priority-setting to improve management for the conservation of animals of concern. Interestingly, Soada Forest Nature Reserve is not mentioned in the survey responses below, detailing PRs that require urgent support or attention, possibly because it is not home to any of the large or charismatic species of conservation concern.

On the other hand, one of the high-scoring PRs, Songimvelo Nature Reserve in Mpumalanga (MP), has 28 animals of conservation concern and has a biodiversity resource management indicator of 80.6% (Table 2). Its overall METT score regarding management is 74%, which suggests seemingly sound management. However, this PR was listed in the survey three times as a reserve needing urgent support and attention. As per the survey responses, the concerns around this PR are that the Shiyalongubo section of the reserve is abandoned, it has been extensively poached, the buildings have been pillaged, and cattle have invaded it. There is a problem of ageing fencing, and no rhinos are left on the reserve due to poaching and poor protection. There is potential for tourism, but the roads are in disrepair. Even though this PR has a high biodiversity resource management indicator and sound overall METT score, it needs to improve on other aspects of management for better conservation of species, such as the Legal Context indicator (44%), Financial Management indicator (54%), Operational Equipment and Infrastructure indicator (53%), and the Tourism indicator (67%). Improving on the management of these indicators could address the concerns listed above for this PR. This example illustrates the importance of a deeper interrogation of the METT data to extract those areas needing urgent intervention.



Based on the biodiversity management indicator, the 13 lower-scoring PRs need to be monitored going forward, as they support many animals of conservation concern. Based on this biodiversity indicator, the trends should be determined and updated with every METT assessment. These lower-scoring PRs should aim to improve their conservation management, especially for species of conservation concern, thereby improving their respective METT scores.

Based on the survey responses below, it is important to increase the transparency of the METT-SA process. Random external METT assessments can potentially be linked to performance bonuses. However, this may become a contentious process and will require strong governance.

Either way, the METT-SA scores are of limited use if the reports are not completed objectively and in a standardised manner.



# DATA FROM KEY ROLEPLAYERS: AN ONLINE SURVEY

We used an online survey to identify key challenges and potential solutions for improving the management of PRs and to identify some important case studies. Ethics approval was formally obtained from the EWT's Ethics Committee to proceed with the survey (ethics clearance number EWTEC2022\_013). We then tested the survey with a subset of relevant stakeholders to ensure the questions were relevant and suitable.

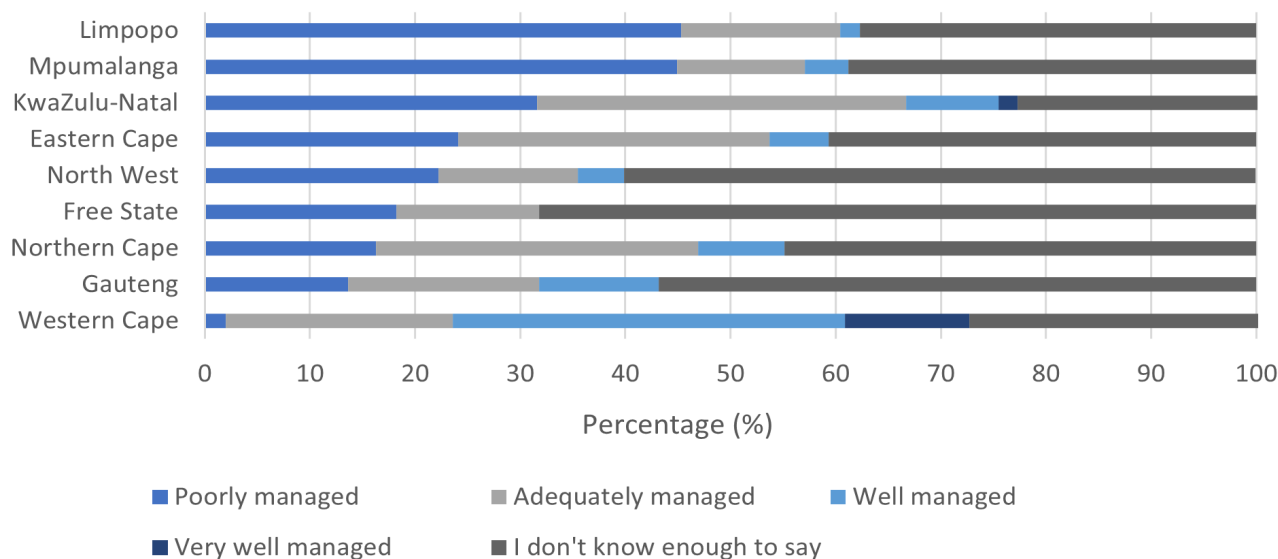
We used a snowball sampling technique to distribute an electronic survey to people with experience in reserve management and/or who may have insights into challenges currently experienced in PR management and maintenance. To initiate the survey, we sent the online link to a 'seed' group of 20 people, who were given one week to respond, including a request for recommendations for contact details of other experts who could contribute meaningfully to the survey. That way, we could track the individuals surveyed and get a good sense of coverage achieved. This allowed for several waves of the survey over six weeks. When we reached a plateau of expert recommendations, we were confident that we had reached most key stakeholders. Experts were then segmented by sector and province before responses were collated and summarised in this report.

Although the survey responses were not anonymous, participating data collected from respondents is protected in compliance with the Protection of Personal Information Act 4 of 2013 (POPIA).

## SURVEY RESULTS

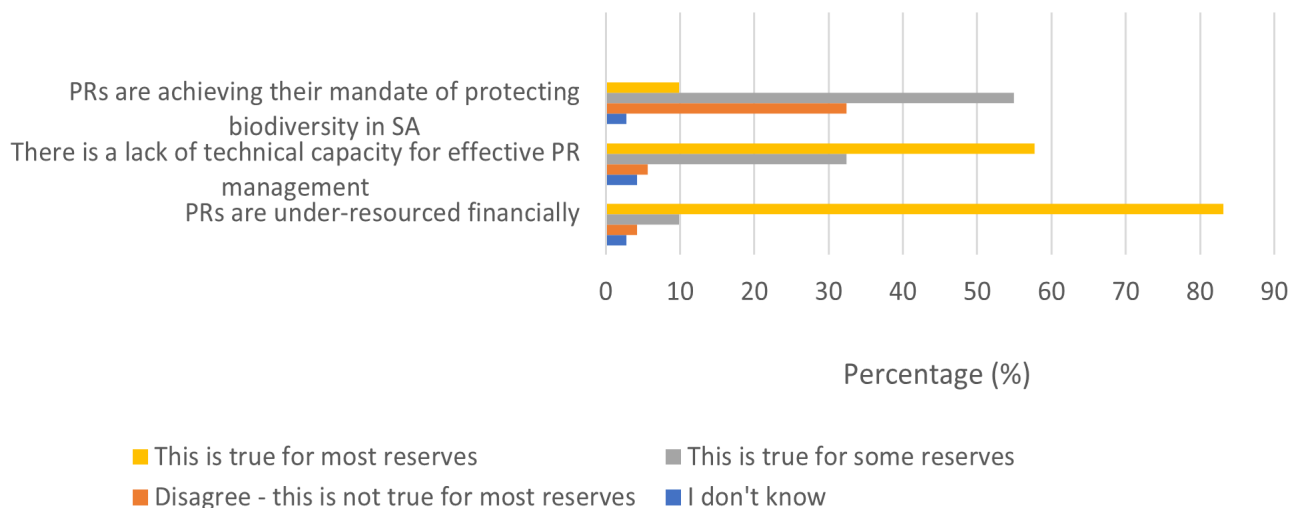
A total of 212 emails were sent out to experts in the field with the link to complete the online survey. This exercise was undertaken between 29 August and 13 October 2022. We received 71 survey responses (34% response rate). Of the responses, 54% of respondents had more than 20 years of experience in the conservation sector; 28% had 11–20 years of experience, 13% had 5–10 years of experience, and 5% had less than five years of experience. Forty-six respondents (65%) had expert knowledge of PA management, including 48% who had experience at a provincial level, 24% at a national level, and 28% at an international level. Figure 3 shows the breakdown of the overall management effectiveness of PRs per province based on expert opinions. These opinions suggest that Limpopo (LP) and MP are the most poorly managed provinces, followed by KZN and the Eastern Cape (EC). Conversely, the WC was considered the best-managed province, rating the highest in the 'well managed' and 'very well managed' responses.

Even though most PRs are considered to be under-resourced financially and lacking in adequate capacity, some are still seen to be achieving their mandate of protecting biodiversity in South Africa (Figure 4).



**Figure 3: Expert opinions on the overall management effectiveness of Provincial Reserves in each province in South Africa (n=71 survey responses).**





**Figure 4: Expert opinions on important issues facing Provincial Reserve management in South Africa (n=71 survey responses).**

## CHALLENGES FACING PR MANAGEMENT

Provincial reserves face several challenges impacting their management success and, ultimately, their efforts to conserve biodiversity. Fifty different challenges were identified from the survey responses. Figure 5 shows the top 25 challenges that were mentioned more than once. It is not surprising that financial constraints emerged as the most frequently reported challenge facing PR management in South Africa.

Survey responses included a lack of funding, budget cuts, and budget allocations, with 80–90% of budgets allocated to salaries in some provinces. This is demonstrated in Figure 5, where 83% of respondents confirmed that most PRs are financially under-resourced.

Lack of capacity and skilled/experienced staff are also reported as significant challenges in PRs, and staff who are not dedicated, motivated, or passionate about what they do. There is also a loss of institutional knowledge and inadequate planning and resources to replace this lost knowledge. Many reserves sit with vacant positions that are not being filled. Based on expert opinions, positions are often politically appointed rather than by individuals having expertise in the field. In addition, young incoming managers have often not benefitted from working under and gleaning institutional knowledge from experienced managers. Political interference hinders reserve staff from fulfilling their conservation mandate.

Lack of resources, be it vehicles, equipment, infrastructure, supplies, or general operational resources, also stands in the way of successfully managing PRs. This all comes down to a lack of financial support, which has cascading effects. A major challenge in PRs is the poor maintenance of existing infrastructure, equipment, and vehicles, largely due to insufficient maintenance budgets.

Apart from the lack of funding, the funds that come in are poorly managed, and there are deep-seated issues related to managing finances. There are also challenges

in the procurement process, which is cumbersome and involves complicated and debilitating processes.

PRs face many external pressures from poaching/illegal harvesting, snaring, arson, and removal of fauna and flora. These boundary-related issues and increased anthropogenic pressures on the periphery of these areas impact the protection of biodiversity. Other over-arching landscape-level challenges, such as alien invasive species and land use changes in the buffer zones, impact the ecosystem's viability as a whole. The increase in alien invasives (especially woody plants) is rapidly driving a decline in habitat quality on many PRs. Another challenge to PRs, which could potentially be a significant source of income, is the lack of tourism due in large to inadequate promotion of tourism and tourism products.



Tourism facilities are often poorly managed and run down or, in some PRs, in complete disrepair. A poor understanding of visitors' needs lowers visitation rates to certain areas.

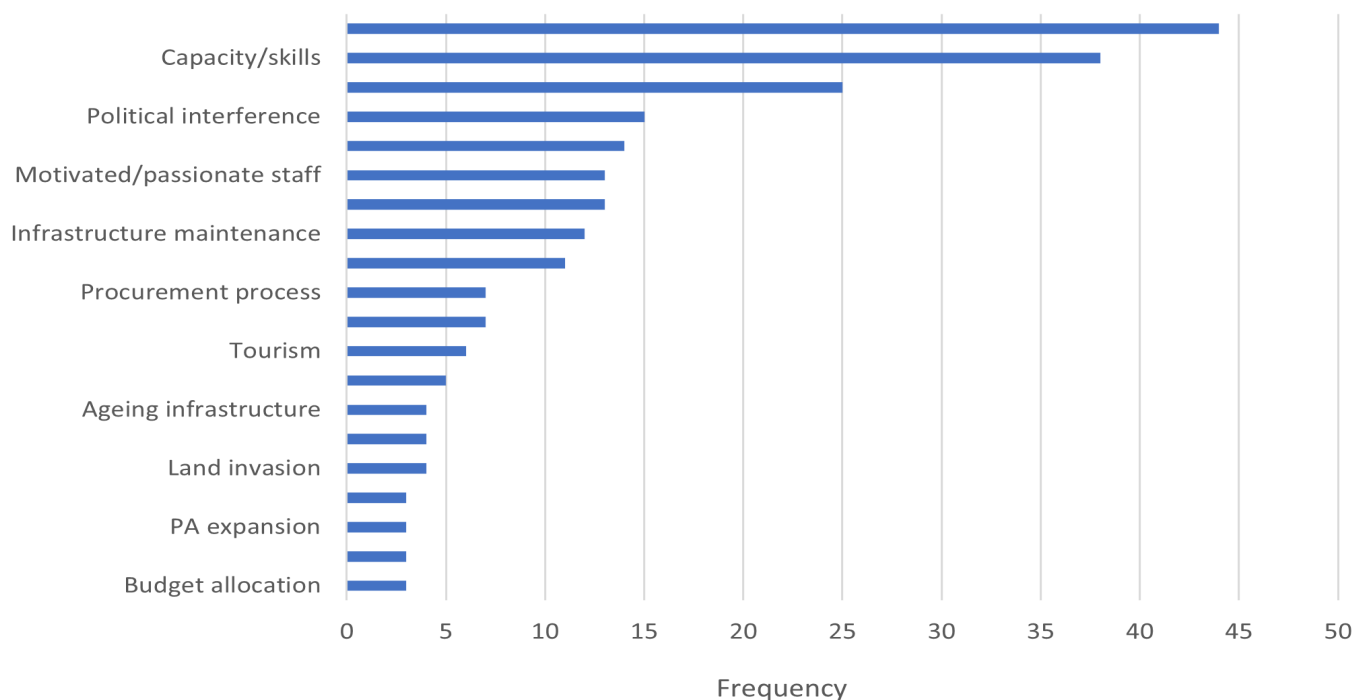
Many reserves are not well-fenced, and as a result, predators, such as hyaenas, Wild Dogs and lions, can move out to surrounding communities where they inevitably kill livestock, leading to human-wildlife conflict in the buffer areas.

Many PRs also have strained relations with neighbouring communities due to unresolved land claims and, in some instances, there is active land invasion and unlawful land occupation. Compounding these challenges, there is often a lack of meaningful engagement with adjacent communities towards amicable solutions for co-existence and meaningful benefit sharing at a landscape scale.

The expert surveys revealed an overall shortfall in terms of adequate management plans, suitable monitoring and evaluation systems, effective and up-to-date conservation models, and functional compliance patrols.

There is also reportedly poor implementation of performance management systems to ensure staff productivity and associated lack of accountability and credibility. As a result, we see poor overall land management in many PR landscapes.

As an additional observation, it is a significant concern that Protected Area expansion is hampered by a lack of support from provincial and national governments. It is important to consolidate the existing strategy of Protected Area expansion and identify and engage with key role-players that can contribute, both financially and technically, to the acquisition of such areas.



**Figure 5: The most frequently mentioned challenges that PRs face with regards to management effectiveness in South Africa (n=71 survey responses).**

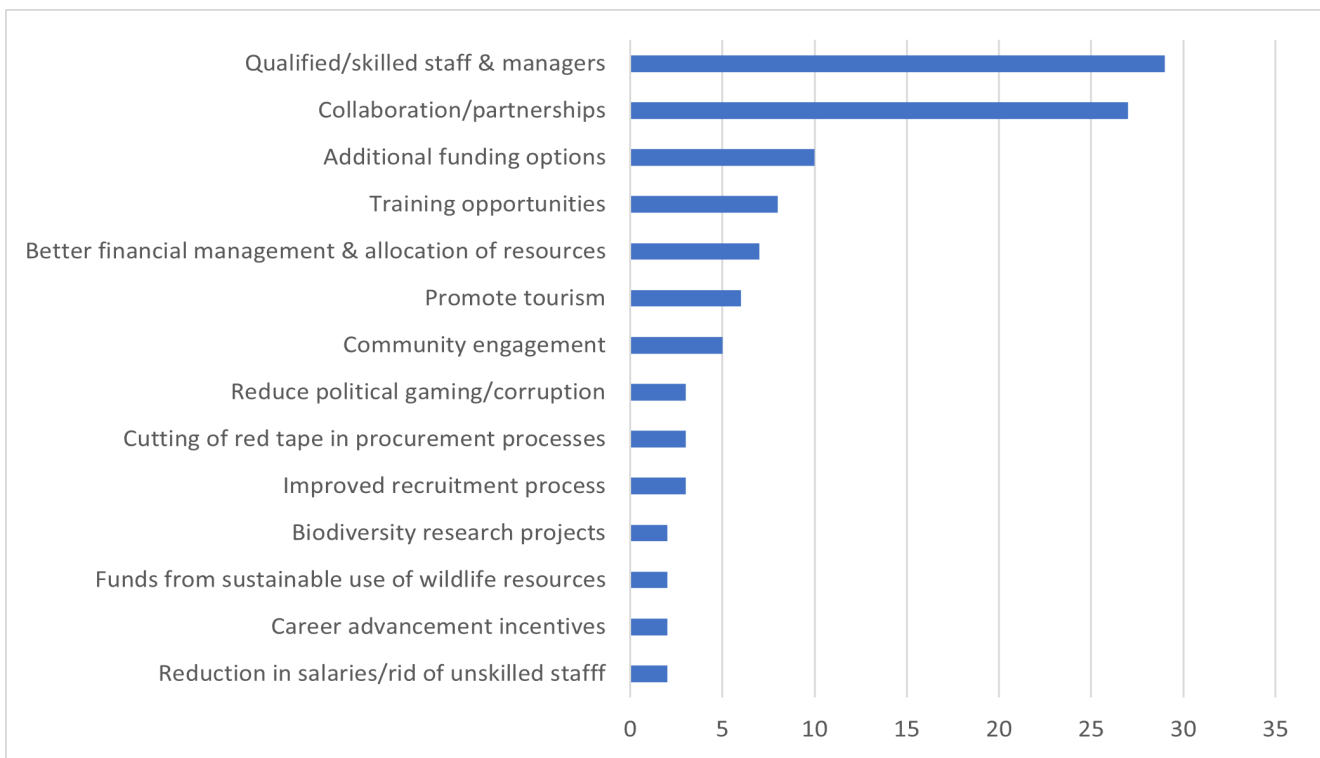
## OPPORTUNITIES TO ADDRESS THESE CHALLENGES

The two most common opportunities to address challenges facing PR management, as identified by experts, include recruiting qualified and skilled staff and managers, and increasing strategic collaboration and partnerships (Figure 6). PRs need to employ skilled and experienced managers and qualified and professional staff. It is important to strengthen governance and leadership. Similarly, appointing effective, objective, and committed board members must be a priority.

Additionally, recruitment processes should allow for the sourcing of passionate and dedicated career conservationists, including considerations linked to the fourth industrial revolution (4IR), as new technology can enhance the management efficiency and effectiveness of reserves. There is a desperate need and clear opportunity for targeted training and/or mentoring of existing staff

and managers, which can be fulfilled internally and from external support. Due to the lack of capacity in many reserves, it may also be useful to encourage researchers (especially students) to conduct practicals in PRs to obtain experience while assisting with duties. This can also be done through the implementation of internships.

Concerning partnerships and collaboration, there are many opportunities in the private sector to support initiatives to improve reserves’ marketing, operations, and general sustainability. However, provinces seldom explore or enable such opportunities. There is considerable opportunity for more collaboration with surrounding communities, NGOs, volunteer organisations, and stakeholders. Public-private partnerships are an important and often overlooked potential in managing protected areas effectively. In 2018, the Limpopo Economic Development, Environment and Tourism (LEDET) drafted a policy



**Figure 6: The most frequently mentioned opportunities to address some of the challenges mentioned in the survey responses (n=71 survey responses).**

to assign management authorities on state-protected areas. This policy was never enacted or gazetted but is a potentially excellent conceptual approach to unlocking sustainable solutions for PR management.

#### **CASE STUDY: EZEMVELO KZN WILDLIFE PARTNERSHIPS & COLLABORATION**

An example of the importance of partnerships/collaboration is highlighted with Ezemvelo KZN Wildlife (EKZNW): they have partnered with various NGOs on many projects, e.g., Wildlife ACT for monitoring work and WildTrust, particularly the WildOceans component, for Marine Protected Area management. One of EKZNW's major game surveys in Hluhluwe-iMfolozi Park is undertaken through an agreement with Earthwatch, which uses a paying volunteer model that covers the entire survey cost. On the human resources side, EKZNW has funded an intern programme.

This is just one example of the numerous partnerships that an organisation can develop to support more effective conservation management. If other PRs follow a similar strategy and get other organisations, volunteers, and surrounding communities involved, they can achieve much more in the face of existing budget constraints. Apart from financial support, they can receive expert knowledge, conduct more research, and better manage the reserve networks. In line with this, improved financial management and resource allocations to scientific staff and increased budget allocations to Protected Area management are extremely important for overcoming some budget challenges hampering successful management and conservation.

There is considerable scope for developing innovative financing options to fund conservation efforts. These have been discussed at length but have not yet yielded results at any significant scale. The promotion of local, and the return of international tourism, can also provide much-needed income for reserve maintenance. This is, however, completely reliant on tourism infrastructure being suitably maintained and staff being trained on hospitality and service delivery or competitive tourism products and services.

Sound financial governance is critical to ensuring that these funds are directed back into reserve infrastructure. Hospitality and tourism development requires specialised infrastructure, skills development, and personnel to attract paying guests. In addition, marketing each reserve's tourism products and services and ensuring that the right staff and infrastructure are in place is critical.

Many PRs have below-standard infrastructure, accommodation, and under-resourced catering facilities. These challenges play a significant role in limiting the number of tourists visiting an area. These issues can only be addressed through greater infrastructure investment or strategic partnerships with dedicated tourism operators. Without this, the reality of constrained budgets will continue to significantly reduce the ability to generate revenue (Cloete et al. 2018).

It was also mentioned in the survey responses that, in some instances, PR management could be taken over by private sector partners, where this is deemed mutually beneficial. This could reduce provinces' management burdens significantly and allow for the reallocation of funding to maintenance and support across the remaining PA network.

Linked to this, experts recommended that PRs should have, in addition to the normal board, a separate voluntary board for each reserve, made up of skilled and successful business managers, to achieve better overall reserve management, particularly better management of funds.

Apart from those listed in Figure 6, several other opportunities for improving the effective management

of PRs were also mentioned in the survey. These opportunities can only bear fruit if reserve management and/or provincial officials are willing to implement them. Senior provincial officials must encourage and enable reserve managers to consider and onboard opportunities for external support where possible.

#### **CASE STUDY: HLUHLUWE-IMFOLOZI PARK, KWAZULU-NATAL**

Hluhluwe-iMfolozi Park (HiP), the most frequently mentioned reserve in the survey responses, needs urgent support and attention. There are several threats and challenges that HiP management faces:

- Infrastructure maintenance: lack of basic maintenance of buildings and viewing sites obstructed by bush encroachment. Fences need to be erected and maintained. They are dilapidated, resulting in animals regularly escaping (which requires additional personnel and resources to address). The degraded fences have seen an explosion in human-wildlife conflict issues.
- Lack of support: Regarding funding/human resources/equipment, HiP is under-resourced and struggles to achieve their mandate.
- Poaching: there is rampant rhino poaching – 275 rhinos were poached in the first half of 2022, leading to failing biodiversity conservation.
- Competition (buffalo population in competition with White Rhino) and over-population issues on the reserve (the elephant population has reached its carrying capacity). Urgent intervention is required to halt the damage due to elephant overpopulation.
- Threat of mining: HiP is threatened by existing coal mines and the issuing of further exploration rights up to the park boundaries, which will compromise wilderness areas in the park. Questionable Water Usage licenses have been prioritised for mines at the expense of the local communities.
- Community relations/engagement needs to be prioritised – strategic and socially sensitive engagement with the community is critical to ensure an ongoing working relationship and the realisation of mutual benefits arising from the PR. New massed housing schemes located on the HiP boundaries pose an additional threat and increase socio-political tension.
- Pollution into the iMfolozi River is also a threat and a challenge for HiP management.
- Alien invasive plants: Although considerable alien plant control work has been done in the park, recent invaders such as Parthenium have become a significant problem.



*Photo credit: Cole du Plessis*

## Provincial Reserves that require urgent support and attention (based on the survey)

Ten PRs were listed most frequently in terms of needing urgent support and attention (Table 3).

**Table 3: High-scoring Provincial Reserves in South Africa in terms of biodiversity management indicators. Data based on METT-SA reports obtained from DFFE. Fifty-seven PRs achieved a score of >67%. This table includes the top 22 high-scoring PRs.**

Reserve	Province	Responses	Reason
Hluhluwe-Imfolozi Park	KZN	13	Poor infrastructure, lack of financial support, poaching, wildlife overpopulation is a concern mining in the parks buffer area, community relations, pollution.
Letaba Ranch	LP	7	Poor fencing, no maintenance or patrols, animals escape, mismanagement, no partnerships.
Ndumo Game Reserve	KZN	7	Poaching, failing infrastructure, lack of motivation, poor community relationships, land invasions, illegal access & encroachment, cattle grazing, large areas transformed & planted to crops.
Lekgalameetse Nature Reserve	LP	5	Serious capacity limitations and in urgent need of financial support.
Most PRs in Limpopo	LP	5	Serious capacity limitations and in urgent need of financial support.
Most PRs in KwaZulu-Natal	KZN	4	Poaching, need of financial support lack of capacity, poor management, poor maintenance, corruption.
Atherstone Nature Reserve	LP	4	Poor partnerships.
Anysberg Nature Reserve	WC	3	Lack of budget, poor resource allocation, poor fencing.
Most PRs in the Eastern Cape	EC	3	General management is poor, infrastructure maintenance, law enforcement, neighbour and community relations.
Most PRs in the Northern Cape	NC	3	General management is poor, infrastructure maintenance, law enforcement, neighbour and community relations, lack of financial support, lack of capacity.
Mkuze Game Reserve	KZN	3	Stakeholder engagement, lack of funding and capacity, lack of necessary equipment, community issues, heavy poaching of Rhino & bush meat.
Songimvelo Game Reserve	MP	3	Shiyalongubo section abandoned, poached empty, build-ings pillaged, invaded by cattle, no rhinos left, roads in disrepair, ageing fencing, alien invasives is a problem.
Ithala Game Reserve	KZN	3	Poaching is a problem, community relations, mining, noise/ dust/light pollution.
Riverlands Nature Reserve	WC	3	Alien invasives is a problem, land invasions, water abstraction.



# TARGETED INTERVIEWS WITH KEY STAKEHOLDERS

We conducted ten targeted interviews to gain additional detailed information that may have been missed through the survey process. These included interviews with select PR managers, conservation practitioners well-versed in park management, and NGO representatives. These were open discussions guided by a set of core questions tailored to the interviewee's area of expertise. Our goal was to interview a representative from each province to get a diverse and robust representation from experts in PR management across South Africa. Unfortunately, no response to the invitation for an interview was received from the Gauteng Department of Agriculture and Rural Development (GDARD) or the Eastern Cape Parks and Tourism Agency (ECPTA). However, we received three survey responses from representatives of the GDARD and one survey response from the ECPTA, along with their respective METT reports. Information about the interviewees will be protected in terms of the POPIA.

## OVERALL MANAGEMENT EFFECTIVENESS AT A PROVINCIAL SCALE

A shared, generic view regarding the overall management effectiveness of PRs across South Africa, was that they are generally not being effectively managed. PRs seem to be highly vulnerable, and the challenges appear greatest in Mpumalanga, Limpopo and KwaZulu-Natal. The North-West Province is facing similar challenges but possibly less serious in extent. The Western Cape and the Free State seem to have less pressing issues in terms of overall PR management effectiveness. The Free State maintains a relatively high management standard because of the dedication of the reserve managers and the staff that report to them. The physical management of the reserves, maintenance of essential infrastructure, and game and veld management appear well-managed but still face several challenges.

With biodiversity loss continuing in South Africa, along with funding shortages that PRs face, private protected areas are now adding significantly to biodiversity conservation across the Protected Area network. Private protected areas contribute positively to conservation by maintaining natural habitats and providing resources to support conservation activities.

## CHALLENGES

Several challenges were revealed from the interviews. Several PRs, especially in Limpopo, are not formally declared Nature Reserves, e.g., Makuya Nature Reserve. Therefore, regulations specific to nature reserves cannot be applied to these areas. In some cases, certain areas

or sections (erven) of a reserve are formally declared and therefore protected, while others are not formally protected, making enforcement and regulatory control a serious challenge. PR declaration details must be verified and validated. In many instances, the declaration of the whole property is incomplete due to administrative errors or oversight when endorsing the title deeds of the various portions. In some instances, additional portions were added later and then not formally proclaimed or declared as part of the protected area. Linked to this, the municipal zoning will not have been adjusted to accommodate the change in status of these additional portions and therefore remain inappropriately zoned, such as agriculture. This has implications for legislative processes, management options, costs, and potential incentives.

Generally, there is a lack of understanding of the role of PRs by management and staff, and, in some cases, conservation and biodiversity are not treated as priority outcomes. Ecological management is not high on the agenda in annual management plans, whereas we find that priority issues, such as alien invasive control and management, fire management, and biodiversity



assessments, are not adequately addressed.

## Financial constraints

Across all provinces, there are inadequate budget allocations for effective PR management. In many provinces, most government funding goes to salaries, bonuses, and human resources (Cloete et al. 2018), with very little allocated for maintenance and operational expenditure. For example, in 2016, the compensation of employees for the conservation departments in the Free State, Gauteng and Limpopo amounted to 64%, 66% and 65% of the expenditure, respectively, with the remaining budget being allocated to goods and services and capital

expenditure (Cloete et al. 2018). Similarly, for KwaZulu-Natal, Mpumalanga, and the Western Cape, 56%, 62% and 55%, respectively, were allocated to personnel costs (Cloete et al. 2018). Over recent years, there have been no inflation-linked budget increases to maintain reserves, and in many instances, budgets have been significantly cut leading to the dilapidated state of many PR roads and infrastructure.

The general perceptions are that PRs are supposed to make money, which is often a misunderstanding as some critical protected areas will never have the capacity to generate income but remain important for critical biodiversity conservation. For example, Lily Cycad Reserve in Limpopo is 100 ha and extremely important for biodiversity conservation, yet it will never have the capacity to generate self-sustaining income. Many PRs also face inadequate investment in generating income through tourism. Another important issue affecting many provinces is that all the money generated by reserves through tourism or game auctions goes into a



centralised budget in the National Treasury, and reserves cannot utilise the funds they generate. PRs must then apply to the treasury for funding against other pressing needs. Managers lack suitable operating budgets for maintaining infrastructure, retaining key personnel and operating costs. This is a significant challenge for many, if not all, reserves across all the provinces. Many important tasks and projects cannot be undertaken without adequate funding, such as managing invasive species and maintaining firebreaks. Options must be explored for PRs to benefit from the income they generate through whatever means possible, so they can be incentivised to generate income and reinvest it into their operating budgets. National Treasury needs to be engaged on this as reserves need to benefit from their income generated.

### **Staff capacity and socio-ecological perspectives**

There are high vacancy rates in PRs across the provinces. Many are understaffed and, therefore, cannot implement new projects or effectively manage existing projects. The retirement of experienced individuals leads to a loss of substantial institutional knowledge. In KZN, there have been significant personnel changes, with a progressive loss of key staff over the last 20 years, many experienced

and skilled. There is no succession planning for the loss of these skilled staff, and vacant positions are not filled with experienced people, leading to the challenges of a staff comprising largely unqualified and inexperienced people. In addition, staff with low morale, and those without passion for what they do, are not effective and there are increasing instances where inexperienced managers manage inexperienced officers. A lack of skilled leadership in the management teams, and at a board and executive level impacts management effectiveness.

In Limpopo, there have been management changes driven by the fact that infrastructure has not been maintained and staff can no longer live on the reserves, leading to a high staff turnover.

Linked to this, most provinces have a vacancy rate of 50% in the scientific field. This further negatively affects management as there is a lack of scientific advice to support management decisions. For various reasons, field ranger posts remain vacant for long periods, whereas human resources or finance posts are filled quickly. Similar trends occur across the provinces leading to an imbalance in the capacity distribution to fulfil the required conservation work and effectively achieve their conservation mandates.

Considerable resources and effort have been invested in developing socio-ecological or Community-based Conservation (CBC) and Community-based Natural Resource Management programmes in South Africa since the 1990s. Although models differed, the over-arching aim was to improve the living conditions and relationships with people living near PAs and to ensure they derive benefits through conservation. Many communities situated near PRs are characterised by high unemployment levels, with limited job opportunities, particularly for youth. Over-crowding due to South Africa's past political dispensation, increasing urbanisation, and competing land-use and natural resource pressures frequently undermine agricultural potential. PRs are often key local employment providers, and there is frequently substantial competition for any socio-economic or job opportunities that may arise. Ongoing efforts need to be made to prevent benefits from accruing to a limited number of people rather than being fairly distributed. CBC projects typically include environmental education, sustainable access to certain natural resources, youth and women's projects, and income-generating or livelihood projects.

A research project by Nsukwini (2015) showed that a community adjacent to the Hluhluwe-iMfolozi Park had access to natural resources such as wood, thatching grass, meat and other products, and, occasionally, water, sand, and building materials. Both full-time and seasonal job provision were seen as a key benefit of the PR, although these were fairly limited. Respondents in the Nsukwini study also listed environmental education as a benefit, but there had been limited socio-economic opportunities for local communities through ecotourism, apart from the sales of curios. Human-wildlife conflict was reduced

through the erection of an electric fence. However, a conservation official noted that frequent damage to fencing had led to ongoing challenges in addressing these incidents. Despite these positive processes, in 2022, communities lodged a formal complaint with the Public Protector and engaged in protest action leading to gates being closed following numerous incidents of human-wildlife conflict. This illustrates the sensitivity of these situations and the need for ongoing engagement to facilitate long-term mutually beneficial outcomes.

Many, if not most, PRs lack sufficient resources to implement effective CBC projects, the long-term commitment to see them through and/or lack personnel with the specialized skill sets required to implement effective programmes. PR field officers and other personnel frequently raise these challenges. This challenge is highlighted when protected areas are subject to land claims. Over 150 land claims were lodged on PA land in South Africa (Progress on Land Claims in Protected Areas: briefing by Chief Land Claims Commissioner | PMG). Although some have been able to generate monetary benefits through business agreements with private sector operators, for example, the Makuleke CPA in the Kruger National Park and the CPAs who successfully claimed land on the Mala Mala Reserve, many struggle to generate sufficient revenue to provide meaningful benefits to CPA members, either in the form of dividends or job creation. Most of the CPAs have memberships exceeding 300 people, leading to challenges in providing meaningful benefits at a household level.

### Poaching/Harvesting

Although poorly understood, the trend and frequency of poaching or illegal harvesting have changed over the last few decades with shifting regional drivers. Poaching includes botanical resource harvesting, snaring, poisoning, and shooting of animals. The drivers behind these activities range from subsistence food and medicinal needs to local and international trade. In some instances, it is linked to illicit gambling, such as illegal hunting with dogs. This latter activity has been particularly widespread in KwaZulu-Natal and the Eastern Cape, but also in Mpumalanga and, to a lesser extent, Free State, Limpopo and Gauteng. Illegal hunting with dogs is frequently carried out on private land but also affects PRs and communally-managed lands and can be associated with extensive property damage. In some instances, illegal hunting with dogs is linked to syndicates and, sometimes, other serious crimes such as money laundering.

Since the 1990s, numerous projects have been implemented to reduce pressures on wild plant species arising through harvesting for the medicinal plant trade. These have met with varying success, but the Pepper-bark tree (*Warburgia salutaris*) was recently downlisted from Endangered to Vulnerable in South Africa. The Kruger National Park permits limited harvesting of medicinal

plants, thatching grass, and mopani worms within the PA, while Hluluwe-iMfolozi and other NRs in both KwaZulu-Natal and Mpumalanga do not allow access to medicinal plants, due to challenges meeting the high demand for these products on a sustainable basis. Here it is noted that Hluluwe-iMfolozi does, however, permit the harvesting of wood, reeds (when available), and other resources.

The IUCN has once again reiterated the need for integrated strategies to address the trafficking of wildlife products. These include ensuring that communities living in affected areas are incorporated into the process. It is important to implement alongside additional CBC activities to improve relations and ensure that people who live near PRs derive benefits through conservation and that challenges or losses they may be experiencing through conservation are also addressed.

### Fencing

Fencing is an issue in all Protected Areas. Fences require ongoing maintenance and are easily damaged or stolen. PRs with large predators and elephants need suitable fencing to keep wildlife in and people and livestock out. Inadequate fencing can also result in theft issues, as is seen at Borakalalo National Park in the North-West, which has issues with petty theft of expensive equipment and visitors' possessions in camps situated on or close to the borders of its reserve. PR fences in several provinces are in very poor condition, and a significant amount of money is required to restore and maintain them.



### Alien invasive species

The impact of alien invasive plants on biodiversity and ecosystem functioning varies between provinces and within provinces. In Mpumalanga, alien invasives (such as wattle and pompom weed) need urgent management and ongoing clearing. In Limpopo, these effects are site-specific and targeted interventions are required in priority PRs. Working for Water (WfW) and the Expanded Public Works Programme (EPWP) assists with alien invasive control, but this needs to be strategically targeted given the extent of invaded areas within and outside of PRs



across the country. It is a significant problem across KwaZulu-Natal, from high-altitude grasslands to coastal areas in Zululand. It is rated in the top three threats to biodiversity in most of the provinces. Invasive species are not considered a serious issue in the North-West compared to other provinces. As a semi-arid province, the North-West is less vulnerable to invasion by alien plants, and the issue can be relatively easily controlled compared to other provinces. Climate change and shifting of the fire seasons cause changes in invasive species regrowth rates and make follow-up efforts critical for effectively maintaining cleared sites. This adaptive management approach requires fire protection association approval and additional finances, often incurring additional administrative load.

## Tourism

Infrastructure, often linked to tourism (such as buildings, fences and roads), in many PRs are in poor condition due to a lack of resources for maintaining infrastructure and roads. Many of them have the potential to generate income through tourism but require capital investment to upgrade facilities before this is even possible. Even if reserves receive funding to upgrade tourist infrastructure, the problem lies with maintaining this infrastructure over time, as the current financial model within provincial systems does not allow income generated through tourism to be channelled back to reserve maintenance. Therefore, there is no incentive for effective management, marketing or improving tourist infrastructure. Many small PRs across the provinces are unsuitable for tourism but support important biodiversity. There is potential for surrounding landowners to support and be involved in the conservation activities and management within these areas. In many provinces, both the poor state of buildings and the poor condition of road infrastructure require millions of rands to restore to their previous condition. Therefore, reserves need to develop private partnerships to regain their eco-tourism potential, which will increase funding and help maintain infrastructure such as roads. For example, Hluhluwe-iMfolozi Park has always made money for EKZNW, but the current poor infrastructure inhibits the reserve's ability to generate sustainable income.



In the Western Cape, facilities in many reserves have been upgraded and are considered to be performing well in terms of tourism (income generation to cover costs and maintenance) and overall management effectiveness.



## Additional challenges

Additional challenges that came up through the interviews included:

- PRs have not demonstrated a return on investment and are therefore seen as a cost to the government and private sector investors instead of a benefit.
- There is a high frequency of reported irregular expenditure in auditor-general reports (Auditor-General Report, 2020-21) regarding provincial budgets, which points to inadequate training, supply chain issues and poor accounting and management.
- There is an imbalance in the allocation of salaries between support structures, operational needs and essential field staff.

## OPPORTUNITIES TO ADDRESS THESE CHALLENGES

### Partnerships/Collaboration

The most repeated recommendation to address some of these challenges was the need for more partnerships and collaboration to increase management effectiveness. These could include private, public, or NGO partnerships. Partners to improve conservation are particularly important, such as support with Protected Area expansion programmes and technical support. Collaboration is extremely important, particularly with potential funders and civil society environmental organisations. If implemented effectively, partnerships could play an important role in developing effective CBC programmes with surrounding communities, particularly given the resource constraints most PRs face. While many organisations provide support on a relatively short-term basis, PR personnel are based in the area over the long term and often have to deal with the consequences of well-intentioned but poorly considered or executed short-term interventions. Having said this, collaborations can effectively leverage resources and diverse skill sets.

Partnerships that encourage and leverage learning from each other are important in terms of the cross-pollination of lessons learned and best practice principles. Agencies can partner up and share lessons between themselves, including exchange programmes, student tours, and staff exchanges. As this can be challenging to fund, alternate options include attending webinars and symposiums.

Obtaining external funding can come about through co-management structures to capacitate government staff to fulfil their PR objectives while meeting new objectives around financial beneficiation and job creation. Volunteers can also provide an option to assist with projects and increase capacity.

#### **Case study: Building relationships for expansion in Mpumalanga**

Mpumalanga Tourism and Parks Agency (MTPA) is being supported by the Aspinall Foundation (NGO) on the Loskop Dam Nature Reserve expansion to introduce the Big 5. The Aspinall Foundation is providing support regarding fencing for the entire reserve, land purchase options around the reserve for targeted Protected Area expansion, assisting with stewardship work to expand the reserve footprint, and appointing a project manager. This manager will sell the concept to local communities, tribal authorities, government agencies and the Department of Rural Development and Land Reform (given that significant areas are under land claim). The MTPA has also entered into an agreement with Care for Wild, which rehabilitates rhino orphans from the Kruger National Park. This has allowed the MTPA to use the Barberton Nature Reserve in Mpumalanga to home these orphaned rhinos. The MTPA is also supported by Kruger to Canyons in the Blyde River Canyon with targeted protected area expansion.

#### **Personnel**

Recruiting skilled, experienced, and committed personnel is important, as well as providing ongoing staff training. New personnel needs to learn from experienced staff through formalised succession planning and mentorship, and vast institutional knowledge must be preserved when experienced staff members are lost (e.g., retirement). Capacity can also be increased using volunteers and interns. The Groen Sebenza (SANBI) internship programme is an effective initiative for this type of action, although housing on some reserves is challenging. NGOs and private conservation entities have an opportunity to provide essential staff training linked to priority management and conservation skills.

#### **Support required**

PRs need to receive support across various focal areas to increase management effectiveness. Suggested support mechanisms include:

- Biodiversity management support – especially for localised endemics and habitat specialists.
- Citizen science support with population surveys and monitoring.
- Tertiary institutions for assistance with conservation science and research and opportunities to fund this research.
- Support from NGOs or civil society for funding for long-term monitoring and targeted conservation interventions.
- Support and funding dealing with municipalities, development applications, and environmental assessment (EIA) processes.
- Post-proclamation support (where relevant). This is only relevant for newly proclaimed or expanded protected areas. This is the ongoing support required to ensure the ecological functioning of newly proclaimed protected areas.
- Support with proper legal advice and standard operating procedures to address and negotiate the implications and impacts of land invasions.
- Securing economic opportunities linked to payment for ecosystem services.
- Use of new and innovative technology (PRs need upskilling to identify suitable technologies, capacity to manage them and funding to procure the capital equipment required).



### Case study: Private sector and civil society to get involved in managing some of the PAs

There is opportunity for the private sector and civil society to get involved in managing PRs. KwaZulu-Natal has about 110 Protected Areas, some very small, and an active conservancy movement. Getting these private conservancies involved provides support in terms of both funding and management.

- Example 1: There is a small nature reserve in the northern Drakensberg region called Pocolan. There is an ongoing drive to have the neighbouring landowners' property declared as a Nature Reserve and, consequently, to manage both Pocolan and the neighbouring property as a single Nature Reserve. The Ezemvelo KZN Wildlife Board has approved a concept document. Currently, mechanisms are being considered with respect to the management of these properties, most likely utilising the provisions of NEM:PAA to set up a co-management agreement in which the private landowner will be responsible for managing the reserve in terms of a management plan and will be assigned as the management authority for the PA. The landowner will remain accountable to EKZNW for managing the reserve but will take primary responsibility.
- Example 2: Barberton Nature Reserve in Mpumalanga, where the Care for Wild facility is based. This is the primary orphanage for rhino calves left behind when adult rhinos are poached in the Kruger National Park. Care for Wild is also exploring the possibility of effecting an agreement with MTPA to co-manage the reserve.

Both of those reserves are currently poorly resourced. In the case of KwaZulu-Natal, the management of Pocolan will save EKZNW about R300,000–400,000 a year. In the case of Barberton, there are currently only four staff on a reserve of 28,000 hectares, such that Care for Wild is effectively running the reserve already. These are only two examples of how partnerships can start addressing some of the challenges facing under-resourced PAs nationwide

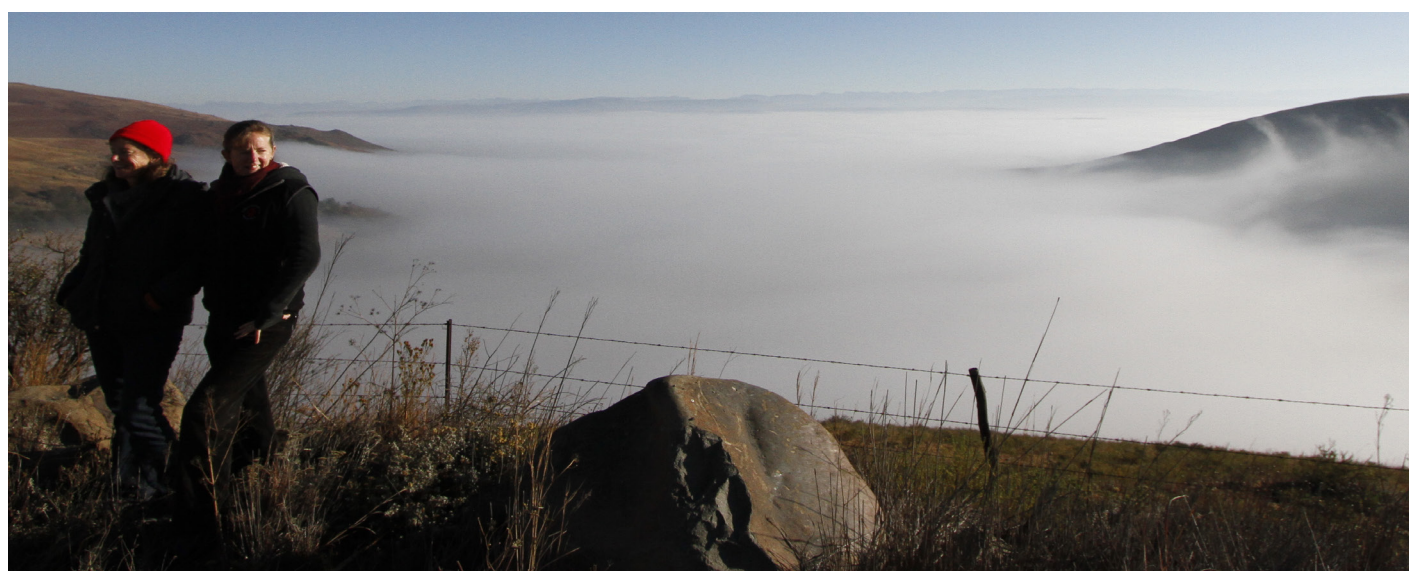
## INTERVIEWEES LIST OF PROVINCIAL RESERVES THAT REQUIRE URGENT SUPPORT OR ATTENTION

**Table 4: Provincial Reserves that require urgent support or attention (based on responses from the interviews), together with their METT (Biodiversity Management Indicator) score.**

Provincial Reserve	Province	METT score (%)	Challenges
<b>Borakalalo National Park</b>	NW	61.1	<ul style="list-style-type: none"> <li>• Has a lot of potential, but it has been ravaged by poaching</li> </ul>
<b>Madikwe Game Reserve</b>	NW	58.3	<ul style="list-style-type: none"> <li>• Excessive number of lodges may impinge on the ecology and growing elephant populations</li> </ul>
<b>Pilanesberg Game Reserve</b>	NW	48.5	<ul style="list-style-type: none"> <li>• Budget goes to staff and officials – no budget for operational activities.</li> <li>• Infrastructure problems – poor road conditions affect tourism</li> </ul>
<b>Lillie Cycad Reserve</b>	LP		<ul style="list-style-type: none"> <li>• Poaching of cycads</li> </ul>
<b>Atherstone Nature Reserve</b>	LP	63.9	<ul style="list-style-type: none"> <li>• Huge populations of white and black rhinos and elephants, but it is not well managed</li> </ul>
<b>Nylsvley Nature Reserve</b>	LP	80.6	<ul style="list-style-type: none"> <li>• Ramsar site – a wetland system of international importance; needs attention but is currently under-resourced and poorly managed</li> </ul>
<b>Hans Merensky Nature Reserve</b>	LP	63.6	<ul style="list-style-type: none"> <li>• Sable population is not doing well</li> <li>• Reserves with Roan Antelope are not managed well</li> </ul>
<b>Succulent Karoo area</b>	NC		<ul style="list-style-type: none"> <li>• Top 10 biodiversity hotspot areas – poaching of succulent plants is a major threat here</li> </ul>
<b>Gamsberg area</b>	NC	86.1	<ul style="list-style-type: none"> <li>• There are, on average, three cases of succulent plant poaching per week in this area</li> </ul>
<b>Orange River Mouth</b>	NC		<ul style="list-style-type: none"> <li>• none</li> </ul>
<b>General across NC</b>	NC		<ul style="list-style-type: none"> <li>• No clear ecological management plans to follow</li> <li>• Logistical challenges and budget limitations</li> <li>• Small reserves – larger landscape plans are lacking</li> </ul>

Provincial Reserve	Province	METT score (%)	Challenges
<b>Lowland reserves (Riverlands, Walker Bay)</b>	WC		<ul style="list-style-type: none"> <li>• More vulnerable to invasive species because they are on drifting sands and there is extensive human settlement encroachment</li> <li>• Financing required for boundary demarcation</li> <li>• Appropriate compliance monitoring and security (theft and vandalism)</li> <li>• They do not sit on strategic water sources and are less likely to be funded</li> </ul>
<b>Hottentots Holland Nature Reserve</b>	WC	66.7	<ul style="list-style-type: none"> <li>• More vulnerable due to human settlements in and around the area</li> <li>• Being mountainous terrain it's hard to demarcate boundary</li> </ul>
<b>Limietberg Nature Reserve</b>	WC		<ul style="list-style-type: none"> <li>• Limited human resources</li> <li>• Insufficient financing</li> <li>• Rampant poaching</li> </ul>
<b>Tussen die Riviere Nature Reserve</b>	FS		<ul style="list-style-type: none"> <li>• Budget constraints</li> <li>• Labour force has gone through an extensive attrition</li> </ul>
<b>Willem Pretorius Reserve</b>	FS		<ul style="list-style-type: none"> <li>• An island in the middle of a highly intensive agricultural area</li> </ul>
<b>Sandveld Nature Reserve</b>	FS	83.3	<ul style="list-style-type: none"> <li>• Need to formally declare the parts of the reserve that are not declared and improve the management of the important biodiversity.</li> </ul>
<b>Ntsikeni Vlei Nature Reserve (Ramsar site)</b>	KZN		<ul style="list-style-type: none"> <li>• Over 1,000 head of livestock in the reserve</li> <li>• Only one field ranger in 9,000 ha (cannot manage the livestock challenge)</li> <li>• 3–4 wildebeest poached per week</li> <li>• Need effective field ranger force and budget for fencing</li> <li>• Desperate need for political support to remove livestock</li> </ul>
<b>uKhahlamba Drakensberg Park World Heritage Site</b>	KZN		<ul style="list-style-type: none"> <li>• Eastern boundary pressure from livestock – long-term impacts for water production</li> <li>• Need to get cable fencing (3–4 km) and need the international boundary with Lesotho to be demarcated</li> <li>• Alpine zone – communal grazing, not managed at all and it's a threatened habitat</li> <li>• Alien invasive plants management is an ongoing challenge</li> </ul>
<b>Hluhluwe-iMfolozi Park</b>	KZN	58.3	<ul style="list-style-type: none"> <li>• Old fencing and fence theft is leading to animals escaping</li> <li>• Rhino poaching is a major threat</li> <li>• Alien invasive plants are an ongoing threat</li> <li>• Disease transmission from livestock to wildlife (TB; foot and mouth) – affects the whole food chain and cannot sell game, which affects the whole wildlife economy</li> </ul>
<b>Ndumo Game Reserve</b>	KZN	50.0	<ul style="list-style-type: none"> <li>• Cultivation is encroaching on the reserve</li> <li>• Hippo and crocodile populations are declining (which is the reason for proclamation)</li> <li>• Riverine habitat has been over-harvested</li> </ul>
<b>Tembe Elephant Park</b>	KZN	47.2	<ul style="list-style-type: none"> <li>• Overpopulation of elephants and resultant habitat damage</li> </ul>
<b>Blinkwater Nature Reserve</b>	KZN	43.3	<ul style="list-style-type: none"> <li>• No staff for over 15 years; reserve under threat from illegal grazing and poaching</li> </ul>
<b>Queen Elizabeth Park</b>	KZN	36.1	<ul style="list-style-type: none"> <li>• Increasing edge effects</li> <li>• Alien invasive species</li> </ul>

Provincial Reserve	Province	METT score (%)	Challenges
<b>Impendle Nature Reserve</b>	KZN	54.6	<ul style="list-style-type: none"> <li>• Has the biggest population of Blue Swallows yet is under threat. Intervention could assist</li> <li>• Invasive species, grazing, uncontrolled fires, fencing, social upheaval</li> <li>• Needs boundaries, support from communities, public/private partnerships</li> </ul>
<b>Forest Protected Areas</b>	KZN		<ul style="list-style-type: none"> <li>• Unsustainable use of resources</li> <li>• Deforestation</li> </ul>
<b>General in KZN (inside PRs)</b>	KZN		<ul style="list-style-type: none"> <li>• Grasslands are used for communal grazing</li> <li>• Invasive species (plants and animals) are a massive threat</li> <li>• Smaller reserves (too many) – abandoned; no staff left</li> <li>• Fencing across the board. More than half a billion rands needed to fix fencing (budget and staff to secure and maintain them)</li> <li>• If not for this fencing, they will become communal rangelands. 87% of PAs already have livestock in them</li> <li>• Rhino poaching. Lack of law enforcement staff; the number of PAs with rhinos has decreased</li> </ul>



*Photo credit: Dr Ian Little*

## THE IMPORTANCE OF PERSPECTIVE WHEN PRIORITISING PROVINCIAL RESERVES FOR TARGETED INTERVENTION

Ultimately, many lenses can be used to prioritise which PRs require the most urgent attention. We can use an expert-interpreted lens, as presented in Table 4. Alternatively, we can use the Biodiversity Management scores from the METT reports to prioritise those PRs that are either reportedly the best or worst managed and overlay the number of species of conservation concern to determine which of these are the most important for biodiversity conservation. Ultimately, with NEM:PAA's intention to protect biodiversity, we should prioritise the number of species of conservation concern as the lens of choice with which to first filter the PRs. This biodiversity-centric approach is presented in Table 5 below. Here we present all of the PRs with five or more species of conservation concern and their respective METT scores (where available). Interestingly, the expert-interpreted list of priority reserves did not overlap at all with those extracted based on their biodiversity importance. This illustrates that the interpretation of priority is often based on the PRs that house the most charismatic species, are popular tourism venues, are under management, or have another link to the expert in question. Linked to this, the biodiversity management indicator scores from the respective METT reports do not reflect the concern portrayed by the experts and alarmingly, three of them report scores above 80% when the state of conservation effectiveness is clearly compromised. This emphasises the importance of careful and

critical interpretation of the data in order to inform prioritisation plans for strategically improving the effectiveness of our Protected Areas.

Ultimately, it is imperative that we take a combined approach as, while we can easily motivate for the protection of those PRs with the most biodiversity value, the PRs with charismatic species and eco-tourism potential hold strategic importance in terms of their protection and income-generating potential.

**Table 5: A shortlist of priority candidate reserves for improved management towards protecting biodiversity, the province in which they occur, their size, the number of trigger species, and the total number of animals of conservation concern as per the Environmental Screening Tool (EST). The METT Biodiversity Management indicator is also listed for PRs for which we had METT reports.**

Protected Area Name	Province	Area (ha)	#trigger species	# animals of conservation concern	METT indicator (%) (Biodiversity Management)
Karkloof Nature Reserve	KZN	3340.9	5	30	60.6
Barberton Nature Reserve	MP	27357.5	4	26	71.4
Fort Nottingham Nature Reserve	KZN	1224.0	3	26	44.4
Lekgalameetse Nature Reserve	LP	1649.9	4	21	38.9
Umlalazi Nature Reserve	KZN	1451.3	3	21	-
Pongola Nature Reserve	KZN	9014.1	4	19	-
Amatikulu Nature Reserve	KZN	1572.1	3	19	47.2
Midmar Nature Reserve	KZN	2961.6	6	18	50.0
Sterkspruit Nature Reserve	MP	10878.2	1	18	60.6
Albert Falls Nature Reserve	KZN	2925.7	3	17	-
Pongola Bush Nature Reserve	KZN	881.8	4	17	50.0
Riviersonderend Nature Reserve	WC	28580.0	1	16	-
Vryheid Hill Nature Reserve	KZN	900.0	5	13	-
Umvoti Vlei Nature Reserve	KZN	268.7	4	13	-
Moor Park Nature Reserve	KZN	260.8	3	12	-
Ruitersbos Nature Reserve	WC	Not available	1	12	-
Paarl Mountain Nature Reserve	WC	2008.0	1	11	-
Himeville Nature Reserve	KZN	105.1	3	11	36.1
Queensriver Reserve	MP	3719.2	1	11	-
Marievale Nature Reserve	GP	541.5	3	8	75.0
Voëlvlei Provincial Nature Reserve	WC	866.3	1	8	-
Kgaswane Mountain Reserve	NW	4386.2	1	8	63.9
Akkerendam Nature Reserve	NC	1560.1	1	7	-
Knersvlakte Nature Reserve	WC	85220.3	2	7	66.7
Rolfontein Provincial Nature Reserve	NC	6322.1	1	7	16.7
Doornkloof Provincial Nature Reserve	NC	9751.8	1	6	19.4
Rust-De-Winter Nature Reserve	LP	6011.5	3	6	58.3
Kasteelberg Nature Reserve	WC	Not available	1	6	-
Klein Dassenberg Nature Reserve	WC	Not available	1	5	-

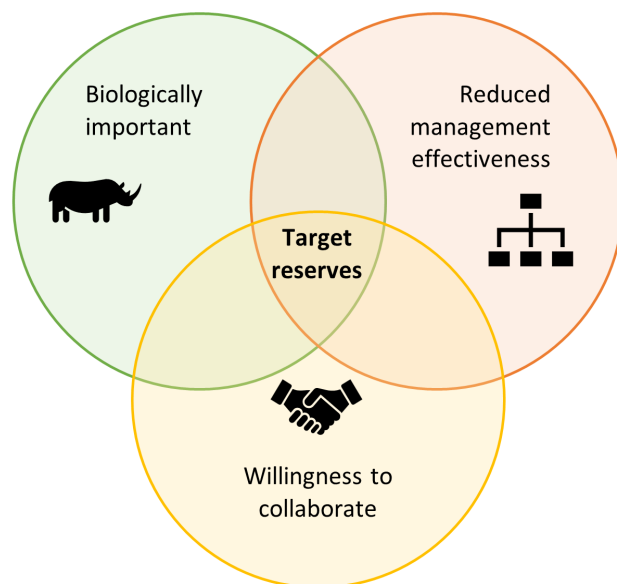
# KEY FINDINGS AND NEXT STEPS

## PRIORITY-SETTING

Provincial Reserves, depending on their resources and capacity limitations, will be able to implement some recommended interventions more effectively than others. These interventions vary in the resources required for their implementation. Some of the least resource-intensive interventions include strategic collaboration with NGOs and the private sector, enabling research (through citizen science and tertiary institutions), developing strategic biodiversity management plans, targeted training and associated capacity improvement of staff contingent, improved financial management and targeted community engagement towards reduced conflict around unsustainable resource use and improve partnership opportunities. Some of the challenges reported included the lack of financial resources, which impedes adequate infrastructure maintenance and the promotion and implementation of eco-tourism initiatives. Accessing and unlocking the resources required for improved management effectiveness requires a targeted approach for each reserve in question, but strategic partnerships are key to achieving this in most instances.



Often, these management interventions can be easily implemented with minimal, or even no, additional financial resources or human capacity. In many instances, minor adjustments to existing management plans, focusing on the requirements for sensitive and often overlooked species (e.g., amphibians), can make a significant difference in effective protection. However, this requires a strategic review of the protected areas supporting the smaller, often overlooked, species of conservation concern and a subsequent review of their respective management plans to ensure that they are adequately considered. In some instances, targeted management training may be required.



**Figure 7: Venn Diagram illustrating three primary factors that can be used to identify candidate reserves where concrete interventions to improve reserve effectiveness could be targeted.**

Within Table 5 above are 14 priority PRs that are biologically important but have biodiversity management effectiveness of less than 67%, and eight that have scored 50% or less (not all have available METT scores, but there are likely to be others from this list that fall within this priority category). The willingness of PRs to collaborate will need to be assessed in the next step in the process before any concrete plans are established for implementation.

## SUMMARY AND CONCLUSIONS

All the information in this report was obtained from existing data, surveys and interviews with experts in reserve management, as well as the METT reports obtained (2020/21) from the DFFE.

The importance of retaining and maintaining natural landscapes is understood at the global and national scale. It is outlined in various national policy documents, including the South African constitution and the Kunming-Montreal Global biodiversity framework, December 2022 (see appendix A). Preserving these landscapes is critical to protecting biodiversity and the ecosystem services essential for human well-being.

There is a strong need for PRs to be managed by entities with a conservation or ecological mandate, with

appropriate expertise in this area, and with the support of financial and infrastructure experts and not the other way around. The upskilling and development of human capital in almost all PRs has been identified as a key priority through training, mentorship, and ongoing development. Appropriate and realistic performance management plans with sound scientific principles underpinning robust conservation targets need to be developed to ensure good governance of the operational aspects of protected area management and the ecological objectives to ensure that effective conservation targets are achieved with suitable metrics. In general, most PRs in South Africa are suffering from inadequate tourism facilities and poor maintenance of all infrastructure and are hence losing the ability to attract sufficient tourism income to render the operations profitable or even economically viable.

A potential solution for under-resourced PRs is establishing strategic partnerships and outsourcing critical services. With the support of partners (NGOs, private sector and/or research institutions), many PRs can potentially achieve their conservation mandates more effectively. Provinces could also outsource the management of small PRs, where there are insufficient resources to support them and co-management agreements are a suitable solution for their ongoing management.

To address one of the significant challenges facing the future of our parks, we need to embrace meaningful community beneficiation and develop co-management agreements with community partners. PRs cannot continue to function in isolation of their neighbours, and it is imperative that relevant local communities are incorporated into the long-term plans for the sustainable management and maintenance of these important areas.

### PR management recommendations:

- Collaboration/partnerships – including private/public partnership options and co-management agreements. This will enable the provinces to address their capacity constraints and allow co-opted management partners to bring expertise and capital to improve the management effectiveness and tourism potential of these important conservation areas. This approach could entail contractual agreements such as long-term leases to tourism operators or co-management agreements with neighbouring private or communal farming or tourism enterprises. This could also include establishing partnerships with local communities to leverage and support co-beneficiation and co-management where suitable. The draft policy for the assignment of management authorities on state-protected areas, developed by LEDET in 2018, is a potentially important approach to unlocking sustainable PR management solutions within all provinces. It is recommended that this focus on co-management agreements (see "Case study: Private sector and civil society to get involved

in managing some of the PAs" above), as provided for under NEM:PAA and in line with the provinces retaining their mandate of management oversight of the PRs.

- Improved staff skills and management capacity – this can be achieved through multiple strategies, including improved recruitment processes, targeted management training (leveraging existing internal and external expertise), structured mentoring, and effective succession planning. In addition, identifying and retaining critical skills are essential, and retention strategies must be explored to retain all critical skills. Finally, the critical skills gaps must be mapped for all PRs. Plans must be implemented to address critical skills gaps through either recruitment or partnerships.
- Infrastructure improvement – in most instances where infrastructure is compromised, it is a result of serial neglect or budget shortages, the former often being the result of the latter. Financial constraints result from multiple driving factors including reduced fiscal allocations (a reality in most provinces), eco-tourism collapse (due to external drivers such as the COVID 19 pandemic or internal factors such as poor maintenance of facilities) and on-site financial mismanagement. These root causes must be addressed, after which interventions such as developing strategic partnerships and staff skills development can build resilience and leverage management stability.



- Sustainable financing – there are multiple potential options for PRs to generate income, including various eco-tourism options. However, not all PRs have the potential or capacity to attract sufficient eco-tourism income to support their operational budget. In most PRs, most notably these instances, there are opportunities to explore alternate income streams such as those from e-carbon markets, offset opportunities and biodiversity credits. However, these all require a concerted effort by management to realise returns. See below for more detail on this recommendation.



## Sustainable financing options:

- Eco-tourism – the opportunities available to each PR depend on the infrastructure in place, proximity to end-users, size, and ecological, aesthetic, cultural, or biodiversity-linked attractions. These can be centred on a variety of activities, from camping (from wild camping to glamping), hiking, cycling, running, horse-riding, climbing, paddling, fishing, birding, and others. These tailored packages can be marketed to the relevant end-users on a regional basis.



- Voluntary carbon markets (VCM) - carbon emission reduction (CER) programmes can be implemented across various landscapes in South Africa. Nature-based solutions (NbS) have been initiated by the EWT within the agriculture, forestry, and other land use (AFOLU) sectors with private landowners in the highland grasslands of the eastern Free State. To realise financial returns, verified carbon units (VCU) are generated through improved soil carbon sequestration by implementing appropriate greenhouse gas (GHG) mitigation methodologies, deriving carbon revenue for the landowner and management authority. Voluntary carbon markets offer long-term financial returns for effective ecosystem management. These have specific relevance for buffer areas on private and

communally owned land neighbouring the PRs, but not feasible within the PRs themselves as they form part of the national baseline.

- Biodiversity offsets – with the imminent finalisation of the national Biodiversity Offset Guidelines (October 2022), the opportunity for establishing biodiversity offsets is now more realistic and better governed than before. Various principles govern the selection of offset sites, but the most relevant of these is the like-for-like habitat protection as an offset for the same habitat type being unavoidably transformed. There are some exceptions to this rule as per the offset guideline. Potential and prospective offset sites can also be “banked” for future development impacts. It is important to note that existing PRs are not eligible as offset receiving areas, but where possible, such declarations should be made for areas adjacent to existing protected areas to increase the size and management effectiveness of those PRs. Where candidate offset sites abut, or are close to, existing protected areas, discussions with the conservation authorities would be essential regarding future implementation and management arrangements and agreements to include the biodiversity offset site into the relevant protected area (ideally, the Biodiversity Offset Management Plan can easily be translated into a protected area management plan, or incorporated into an existing protected area management plan, if an existing protected area will be expanded as part of a biodiversity offset). This could then leverage long-term financial management support for the broader protected area.
- Biodiversity credits – biodiversity credits can be calculated and sold on the voluntary market for projects aiming to increase or maintain biodiversity. It relies on accurately estimating biodiversity change on a submitted site and translating positive change into awardable biodiversity credits. There is no geographical restriction on the use of this approach. The biodiversity of a project area is determined using a pre-determined, project-specific basket of biodiversity metrics that together reflect the conservation objectives for the ecoregion and habitats included in the application. There are several detailed globally recognised approaches to quantify the biodiversity change for a project (Ducros & Steele, 2022; Wallacea Trust, 2022), the details of which are beyond the scope of this report, but the key conclusion is that PRs could potentially access financial rewards for protecting biodiversity. This approach to sustainable financing has not been robustly tested in South Africa and needs to be validated but it does have some potential.



Linked to the need for financial sustainability to support PRs, provinces and other relevant stakeholders need to build a case for the importance of increased fiscal allocation for PR support – the gradual but consistent reduction in fiscal allocations for our provincial conservation agencies is a core driving factor in the degradation and collapse of most of the struggling PRs in South Africa. The conservation sector must cooperate to form a united front to lobby for a reverse in this worrying trend should South Africa's PR network have any chance of continuing to support its mandate of biodiversity and ecosystem service protection.

Given the number, distribution and extent of PRs, they form the core of South Africa's protected area network. Consequently, they have the potential to play a real and valuable role in the conservation of priority habitats and species and, more importantly, in the retention of our natural and cultural heritage and constitutional rights to a healthy environment. However, many are reportedly not efficiently run, and their infrastructure is degraded. These reserves also have the potential to serve as eco-tourism attractions, which will help generate funds, often in a foreign currency, and can bolster a battered economy and support their ongoing management.

Where some biodiversity-rich PRs cannot support eco-tourism or tangible income-generating activities, they will require clever and strategic sustainable financing solutions to secure their intrinsic and ecosystem-linked benefits. Those PRs that are successful in generating sustainable income should play an important role in collaborating with local communities to develop robust, meaningful beneficiation schemes that equally support reserves to improve the management of crucial ecosystem

services and other natural resources within the PR itself and in surrounding buffer areas.

There is a significant opportunity cost if PRs do not realise their potential. This is particularly relevant given that most provincial nature reserves are located in remote areas and are a key driver of rural economies.

From this perspective alone, a well-managed and financed PR network is critical to the lives of South Africa's poorest and most under-resourced communities.

One of the greatest threats to biodiversity is habitat loss and degradation (Bellard et al. 2022). Across southern Africa, every stakeholder in every landscape faces the same challenge. Regardless of the type of landscape intervention, whether it's climate change adaptation and restoration work, sustainable agriculture, protected area expansion or biodiversity conservation within existing protected areas, there simply isn't currently enough finance available to PRs to do the work that needs doing at the scale that it must be done. PRs need to strategically plan for the minimum requirements to effectively secure their ecological and biodiversity assets and budget accordingly to establish their minimum financial requirements. It is then important that the conservation sector, led by the DFFE and relevant provincial conservation authorities, leverage alternative mechanisms to finance protected area management, and ideally have multiple approaches within any given landscape to ensure financial resilience. This approach will ensure the long-term security of ecosystem integrity but does not imply that national fiscal support should not be included in the priority allocation.

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# APPENDIX A

## KUNMING-MONTREAL GLOBAL BIODIVERSITY FRAMEWORK, DECEMBER 2022

### SECTION H. KUNMING-MONTREAL 2030 GLOBAL TARGETS

The Kunming-Montreal Global Biodiversity Framework has 23 action-orientated global targets to be actioned by 2030. Below are a subset of the 23 targets which relate to protected area networks and their importance:

#### Target 1

Ensure that all areas are under participatory integrated biodiversity inclusive spatial planning and/or effective management processes addressing land and sea use change, to bring the loss of areas of high biodiversity importance, including ecosystems of high ecological integrity, close to zero by 2030, while respecting the rights of indigenous peoples and local communities.

#### Target 2

Ensure that by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and coastal and marine ecosystems are under effective restoration, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity.

#### Target 3

Ensure and enable that by 2030 at least 30 per cent of terrestrial, inland water, and of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem functions and services, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures, recognizing indigenous and traditional territories, where applicable, and integrated into wider landscapes, seascapes and the ocean, while ensuring that any sustainable use, where appropriate in such areas, is fully consistent with conservation outcomes, recognizing and respecting the rights of indigenous peoples and local communities, including over their traditional territories.

#### Target 4

Ensure urgent management actions to halt human induced extinction of known threatened species and for the recovery and conservation of species, in particular threatened species, to significantly reduce extinction risk, as well as to maintain and restore the genetic diversity within and between populations of native, wild and domesticated species to maintain their adaptive potential, including through in situ and ex situ conservation and sustainable management practices, and effectively manage human-wildlife interactions to minimize human-wildlife conflict for coexistence.

#### Target 5

Ensure that the use, harvesting and trade of wild species is sustainable, safe and legal, preventing overexploitation, minimizing impacts on non-target species and ecosystems, and reducing the risk of pathogen spill-over, applying the ecosystem approach, while respecting and protecting customary sustainable use by indigenous peoples and local communities.

#### Target 6

Eliminate, minimize, reduce and or mitigate the impacts of invasive alien species on biodiversity and ecosystem services by identifying and managing pathways of the introduction of alien species, preventing the introduction and establishment of priority invasive alien species, reducing the rates of introduction and establishment of other known or potential invasive alien species by at least 50 per cent, by 2030, eradicating or controlling invasive alien species especially in priority sites, such as islands.

#### Target 9

Ensure that the management and use of wild species are sustainable, thereby providing social, economic and environmental benefits for people, especially those in vulnerable situations and those most dependent on biodiversity, including through sustainable biodiversity-based activities, products and services that enhance biodiversity, and protecting and encouraging customary sustainable use by indigenous peoples and local communities.

## Target 11

Restore, maintain and enhance nature's contributions to people, including ecosystem functions and services, such as regulation of air, water, and climate, soil health, pollination and reduction of disease risk, as well as protection from natural hazards and disasters, through nature-based solutions and/or ecosystem-based approaches for the benefit of all people and nature.

## Target 19

Substantially and progressively increase the level of financial resources from all sources, in an effective, timely and easily accessible manner, including domestic, international, public and private resources, in accordance with Article 20 of the Convention, to implement national biodiversity strategies and action plans, by 2030 mobilizing at least 200 billion United States dollars per year, including by:

- a. Significantly increasing domestic resource mobilization, facilitated by the preparation and implementation of national biodiversity finance plans or similar instruments according to national needs, priorities and circumstances
- b. Leveraging private finance, promoting blended finance, implementing strategies for raising new and additional resources, and encouraging the private sector to invest in biodiversity, including through impact funds and other instruments
- c. Stimulating innovative schemes such as payment for ecosystem services, green bonds, biodiversity offsets and credits, benefit-sharing mechanisms, with environmental and social safeguards
- d. Optimizing co-benefits and synergies of finance targeting the biodiversity and climate crises
- e. Enhancing the role of collective actions, including by indigenous peoples and local communities, Mother Earth centric actions and non-market-based approaches including community based natural resource management and civil society cooperation and solidarity aimed at the conservation of biodiversity
- f. Enhancing the role of collective actions, including by indigenous peoples and local communities, Mother Earth centric actions<sup>22</sup> and non-market-based approaches including community based natural resource management and civil society cooperation and solidarity aimed at the conservation of biodiversity
- g. Enhancing the effectiveness, efficiency and transparency of resource provision and use.

