# A PRELIMINARY FIELD ASSESSMENT OF PROTECTION WORTHY AREAS OF SWAZILAND

**Swaziland Biodiversity Program Implementation Committee**
**Southern African Biodiversity Support Program**
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GEF Swaziland Government SEA

[1]

## FINAL REPORT

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[1] **Photo:** Ntungulu PWA

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## Introduction

It is an ancient and widespread human practice to set aside areas for the preservation of natural values. The royal burial and "Butimba" hunting grounds of Swaziland are traditional local examples common to much of Africa. Some areas protect natural resources and ecosystem services such as the delivery of clean water or the supply of timber. Others protect recreational and aesthetic values. More recently, areas are increasingly being protected principally for the conservation of biodiversity, including ecosystems, biological assemblages, species and populations (Margules & Pressey 2000). Many of these areas meet the World Conservation Union's definition of a strictly protected area (IUCN categories I–IV, IUCN 1994), and hereafter such areas are referred to as 'reserves'. The basic role of reserves is to protect biodiversity from unnatural processes that threaten its existence in the wild. In Swaziland, they must do this within the constraints imposed by rapidly increasing numbers of humans and their associated requirements for space, resources and waste disposal.

In planning a system of reserves to protect biodiversity, two objectives are paramount (Margules & Pressey 2000). The first is to represent, or sample, as much variation in biodiversity as possible. The second is to sustain the biodiversity by maintaining natural processes and viable populations and by excluding threats. To meet these objectives, conservation planning must deal not only with the location of reserves in relation to patterns of biodiversity, but also with reserve design (size, connectivity, alignment of boundaries etc) and management. In the face of competing land-uses, particularly in Swaziland, conservation planning must usually use limited resources to achieve defendable conservation goals, and it must be accountable in allowing decisions to be critically reviewed.

[2]

In general, economically productive land-uses prevail when they compete with biodiversity conservation. As a result, reserves tend to be concentrated on land that, at least at the time of establishment, was too remote or unproductive to be important economically (Margules & Pressey 2000). This means that many species occurring in productive landscapes or landscapes with development potential are not protected. Moreover, goals such as the protection of grand scenery and wilderness often focus on areas that are remote, rugged and residual from intensive uses, giving them a political advantage over goals such as representativeness, which also consider disturbed, economically productive landscapes (Margules & Pressey 2000).

## Background

Despite a number of conservation planning exercises, Swaziland has a history of reserves being established in a relatively unsystematic manner. Swaziland's first reserve, Hlatikulu, was proclaimed in 1905, and it's second, Ubombo, in 1907 (Hackel & Carruthers 1993). The primary goal for these areas was the conservation of large mammal species. Up until 1917, these areas covered well over 10% of the country and appeared to be achieving their goal. Thereafter, an outbreak of Nagana (sleeping sickness) resulted in game being seen as a threat to the livestock industry

[2] **Photo:** Mdzimba PWA

and with concurrent economic recession, the majority of the area was de-proclaimed. By 1922 both reserves had been entirely de-proclaimed.

Forty two years later, following the near decimation of Swaziland's large mammals (Reilly 1994), the Kingdom's first existing reserve, Mlilwane Wildlife Sanctuary, was proclaimed under the Game Act of 1953. Later in 1967, Hlane Game Reserve was proclaimed under the same act. In 1972, the Swaziland National Trust Commission (SNTC) was formed specifically to conserve areas and features representative of Swaziland's natural and cultural heritage. As part of the establishment of SNTC, an initial assessment of protection worthy areas in Swaziland was done in 1972 (Grimwood 1973). The report was a first step towards developing a plan for creating "a pattern of [National] parks representative of all of the four main regions of Swaziland and covering as many as possible of the various ecosystems of each of them" (Grimwood 1973). Grimwood's work involved approximately 4 months of aerial and field based investigation. This report identified 6 protection worthy areas including Mlilwane and Hlane. Following this report, one of the proposed areas was proclaimed, Malolotja Nature Reserve, in 1977.

[3]

A second survey of national protection worthy areas was commissioned by SNTC in 1978 (Reilly 1979). The survey identified 31 protection worthy areas, including Mlilwane, Hlane and Malolotja, which would have resulted in protection of 9.47% of the Kingdom. Of this, 58% was proposed as National Parks, 13% as Nature Reserves, 24% as National Landscapes and 5% as National Wetlands. Only one of the 31 areas proposed was proclaimed, Mlawula Nature Reserve, in 1980. A fifth reserve, Mkhaya Game Reserve, was proclaimed in 1985 although it was not identified in either of the surveys. Two areas adjacent to existing reserves, Hawane (Malolotja) and Mantenga (Mlilwane) have since been proclaimed in 1992 and 1994 respectively. These total Swaziland's seven existing reserves, which cover 64100 ha, only 3.7 % of the country.

As part of the Ministry of Agriculture and Co-operatives' National Forest Policy and Legislation Project, another avenue for setting aside areas for the conservation of flora was created through the Flora Protection Act of 2000. This Forest Policy and Legislation Project commissioned a desk-top assessment of protection worthy areas in 2000 (Deale *et al.* 2000). This identified 11 areas in addition to the 30 previously identified (excluding proclaimed areas), and did a preliminary desk-top prioritisation of these 41 areas in terms of their conservation value.

Following Swaziland's ratification of the Convention on Biological Diversity in 1994, it developed a national Biodiversity Strategy and Action Plan (BSAP). This BSAP highlights an urgent need for increased protection of representative examples of biodiversity. The objectives of this study are 1) to rapidly assess a set of identified areas in order to determine their conservation value, and 2) of these, to identify a set of top priority areas where field surveys should be done to collect necessary biodiversity information.

[3] **Photo:** Nyonyane PWA, Komati River

## Study area

The study area includes the entire Kingdom of Swaziland which is between 30°45'-32°10' E and 25°40'-27°20' S.

## Methods

*Field surveys*
Areas worthy of considering for this study were identified based on 1) areas previously identified as protection worthy (Grimwood 1972, Reilly 1979, Deall *et al*. 2000) and 2) areas with virtually no human settlement considered to have potentially high biodiversity value by local biodiversity experts. Using these criteria, 44 potential PWAs were identified.

Each of the 44 areas was visited at least once by the surveyor (K.Roques) and usually one, or more, other biodiversity specialists between April 2001 and December 2001. On visiting an area, the surveyors covered as much of the area as possible by vehicle and/or foot. On average, approximately 4 hours were spent surveying each area. For each area the following were recorded: functional vegetation types present; threatened species of vertebrates (Monadjem & Boycott 2001) and plants (Dlamini *et al.* 2001) observed (the time available permitted very little attention to this); causes of threat to biodiversity; and optimal reserve boundary position.

*Rapid assessment*
A methodology developed by WWF (Ervin 2000), for rapidly assessing protected areas and their management effectiveness, was modified to rapidly assess protection worthy areas. This was a participatory exercise done using local expertise. Eight biodiversity experts (Appendix 1) were selected based on their field experience with biodiversity data collection and management in Swaziland. In an open forum workshop these field biologists agreed on a set of biodiversity assets at the ecosystem and species level. These assets could then be assessed for each area to determine its biological importance.

Table 1. Biodiversity assets for protection worthy areas

| | | |
|---|---|---|
| Ecosystem level | Globally or regionally threatened ecosystem | Highveld grassland<br>Highveld forest<br>Lubombo forest<br>Vleis and marshes |
| | Locally threatened ecosystem | Middleveld grassland<br>Riverine forest<br>Seasonal pans<br>Perennial rivers and streams |
| | Critical landscape functions | Important breeding area<br>Large water catchment |
| | Exemplary and intact ecosystem | Containing most of its natural elements (including full array of native species)<br>Containing structures and patterns associated with historical |

| | | |
|---|---|---|
| | | disturbance regimes |
| Species level | Globally threatened species | Southern African red data list for vertebrates () and plants () |
| | Regionally or locally threatened species | Swaziland red data list for vertebrates () and plants () |
| | Nationally endemic species | 80% of known species range is in Swaziland |
| | High levels of biodiversity | High numbers of species |

With a common understanding of these assets, the field biologists then debated and answered a set of biological and socio-economic questions pertaining to the biodiversity of each area (see Appendix 3). Their answers were based on information from the field survey and their biodiversity field expertise. Answers to each question were scored as follows: "yes"=5; "maybe yes"=3; "maybe no"=1; "no"=0; and "unknown"=0 (Ervin 2000).

Based on information from the field survey, the surveyor (K.Roques) then scored threats to each PWA. The following threats were considered: alien animals, alien plants, resource utilisation, poaching, settlement, land conversion, isolation, pollution and erosion. For each threat, a set of questions was answered pertaining to the imminence, range, impact and permanence of the threat (see Appendix 3). Answers to each question were scored as follows:

| Imminence | Range | Impact | Permanence | |
|---|---|---|---|---|
| "very likely | throughout | very high | permanent" | =4; |
| "somewhat likely | widespread | high | long term" | =3; |
| "somewhat unlikely | scattered | moderate | medium term" | =2; |
| "highly unlikely | localised | low | short term" | =1; |

(Ervin 2000).

[4]

*Calculations*
Biological importance was calculated as the sum of the scores for the questions on biological importance (section 1). Biological representativeness was calculated as the sum of the scores for questions 1a-1e and 1i. Biological persistence was calculated as the sum of the scores for questions 1f-1h and 1j.

Socio-economic importance was calculated as the sum of the scores for the questions on socio-economic importance (section 2). Tourism potential was calculated as the sum of the scores for questions 2e and 2h. Cultural importance was calculated as the sum of the scores for questions 2c and 2d. Resource importance was calculated as the sum of the scores for questions 2c, 2f, 2i and 2j.

For each threat to each area, magnitude of threat of was calculated as the product of the score for range and impact, degree of threat was calculated as the product of the

[4] **Photo:** Mahamba PWA, Mhamba Gorge

score for magnitude and permanence, and urgency of threat was calculated as the product of the score for magnitude and imminence.

*Analysis*
Correlations between variables for each area were identified using a correlation analysis. Relationships between variables for each area were hypothesised then investigated using regression analysis.

A multiple regression analysis of all areas pooled was used to determine the relative importance of the various threats on overall degree of threat.

Single sample t-tests were used to determine whether the overall importance of areas is significantly different from zero.

*Awareness*
An awareness and participation campaign was conducted, which involved communication with specific stakeholder groups via radio shows, newspaper articles, workshops, direct mailings and telephonic communication.

## Results

*Scores*
The scores for the various calculations relating to biological and socio-economic importance, as well as overall degree of threat, for each area are presented in Table 2. The raw data used to compile these scores are presented in Appendix 4.

[5]

**Table 2.** **Scores for the importance and threat calculations for all areas. Areas of high priority (see protection priority section below) are in bold.** (Bio = biological, Import = importance, Repres = representativeness, Persist = persistence, SE = socio-economic, Touris = tourism potential, Resour = resource value, Cultur = cultural value)

| ***PWA*** | **Bio Import** | Bio Repres | Bio Persist | **SE Import** | SE Touris | SE Resour | SE Cultur | **Overall Import** | **Overall degree threat** |
|---|---|---|---|---|---|---|---|---|---|
| *Big Bend Conservancy* | 29 | 11 | 18 | 21 | 4 | 8 | 0 | 50 | 108 |

[5] **Photo:** Mdzimba PWA, montane forest.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Bulembu* | 27 | 22 | 5 | 16 | 4 | 6 | 6 | 43 | 96 |
| *Dwaleni hills* | 15 | 7 | 8 | 18 | 4 | 10 | 3 | 33 | 113 |
| ***Gebeni*** | **26** | **12** | **14** | **34** | **8** | **14** | **6** | **60** | **145** |
| *Hele hele* | 15 | 5 | 10 | 18 | 4 | 5 | 1 | 33 | 115 |
| *Hlane west* | 34 | 16 | 18 | 30 | 2 | 16 | 6 | 64 | 126 |
| *IYSIS* | 34 | 16 | 18 | 30 | 6 | 11 | 3 | 64 | 112 |
| **Jilobi** | **40** | **24** | **16** | **29** | **8** | **14** | **5** | **69** | **127** |
| *Libetse* | 10 | 5 | 5 | 7 | 1 | 3 | 1 | 17 | 110 |
| *Luhlokohlo* | 1 | 1 | 0 | 6 | 0 | 5 | 4 | 7 | 145 |
| ***Maguga*** | **27** | **19** | **8** | **32** | **6** | **12** | **10** | **59** | **176** |
| **Mahamba** | **37** | **23** | **14** | **25** | **8** | **4** | **6** | **62** | **139** |
| *Mahlangatsha* | 32 | 18 | 14 | 22 | 6 | 12 | 3 | 54 | 130 |
| **Mahhuku** | **41** | **21** | **20** | **33** | **8** | **9** | **6** | **74** | **128** |
| ***Makhonjwa*** | ***32*** | ***23*** | ***9*** | ***37*** | ***10*** | ***18*** | ***6*** | ***69*** | ***103*** |
| *Mananga* | 32 | 21 | 11 | 20 | 5 | 9 | 4 | 52 | 92 |
| **Manzimyame** | **48** | **28** | **20** | **21** | **8** | **10** | **3** | **69** | **109** |
| *Matsapha vlei* | 17 | 8 | 9 | 16 | 1 | 8 | 3 | 33 | 165 |
| *Mbuluzi* | 27 | 11 | 16 | 30 | 8 | 9 | 0 | 57 | 91 |
| **Mdzimba** | **41** | **23** | **18** | **45** | **10** | **20** | **10** | **86** | **162** |
| *Mhlumeni* | 32 | 18 | 14 | 28 | 8 | 14 | 3 | 60 | 107 |
| *Mjoli* | 28 | 14 | 14 | 26 | 4 | 16 | 5 | 54 | 148 |
| *Mkhondvo* | 22 | 12 | 10 | 24 | 10 | 10 | 3 | 46 | 140 |
| *Mliba* | 1 | 1 | 0 | 7 | 1 | 3 | 6 | 8 | 163 |
| **Muti muti** | **40** | **24** | **16** | **25** | **8** | **4** | **0** | **65** | **83** |
| **Ndlotane** | **46** | **26** | **20** | **30** | **10** | **16** | **3** | **76** | **145** |
| *Ndzeleni* | 2 | 2 | 0 | 11 | 4 | 6 | 5 | 13 | 183 |
| *Ngudzeni* | 22 | 12 | 10 | 27 | 6 | 18 | 5 | 49 | 186 |
| *Nisela* | 16 | 9 | 7 | 21 | 3 | 5 | 0 | 37 | 88 |
| *Nkhalashane* | 24 | 15 | 9 | 10 | 2 | 5 | 3 | 34 | 108 |
| *Nsongweni* | 28 | 18 | 10 | 24 | 10 | 10 | 5 | 52 | 122 |
| **Ntungulu** | **46** | **26** | **20** | **36** | **10** | **16** | **6** | **82** | **162** |
| **Nyonyane** | **50** | **30** | **20** | **35** | **10** | **18** | **6** | **85** | **123** |
| ***Panata*** | **22** | **8** | **14** | **35** | **8** | **9** | **3** | **57** | **97** |
| *Phophonyane* | 21 | 9 | 12 | 28 | 10 | 2 | 3 | 49 | 78 |
| *Pongola* | 30 | 12 | 18 | 22 | 8 | 5 | 0 | 52 | 112 |
| **Shewula** | **38** | **24** | **14** | **39** | **6** | **18** | **5** | **77** | **107** |
| *Shonalanga* | 5 | 4 | 1 | 5 | 0 | 1 | 0 | 10 | 137 |
| ***Sibebe*** | ***30*** | ***20*** | ***10*** | ***33*** | ***10*** | ***7*** | ***8*** | ***63*** | ***163*** |
| ***Sinceni*** | ***26*** | ***12*** | ***14*** | ***37*** | ***10*** | ***16*** | ***5*** | ***63*** | ***128*** |
| *Sondeza* | 28 | 21 | 7 | 24 | 6 | 14 | 6 | 52 | 102 |
| *Tulwane* | 18 | 13 | 5 | 18 | 4 | 12 | 5 | 36 | 174 |
| *Usutu gorge* | 34 | 20 | 14 | 20 | 10 | 6 | 4 | 54 | 104 |

*Importance of areas*

A wide range of scores were obtained for biological importance of the 44 areas, ranging from 50 down to 1. Nyonyane, Manzimnyame, Ntungulu, Ndlotane, Mdzimba and Mahuku had the highest biological importance while Shonalanga, Ndzeleni, Mliba and Luhlokohlo had the lowest (see Appendix 2, Map 1).

A wide range of scores were also obtained for socio-economic importance of the 44 areas, ranging from 45 down to 5. Mdzimba, Shewula, Makhonjwa, Sinceni,

Ntungulu and Nyonyane had the highest socio-economic importance, while Libetse, Mliba, Luhlokohlo and Shonalanga had the lowest (see Appendix 2, Map 2).

Summing biological importance and socio-economic importance gave a wide range of scores for overall importance of the 44 areas, ranging from 86 down to 7. Mdzimba, Nyonyane, Ntungulu, Shewula, Ndlotane, Mahhuku, Manzimnyame, Jilobi and Makhonjwa had the highest overall importance, while Libetse, Ndzeleni, Shonalanga, Mliba and Luhlokohlo had the lowest (see Appendix 2, Map 3)

In general, there is a positive correlation between biological importance and socio-economic importance of areas ($r=0.70$, $P<0.001$). In particular, there is a positive correlation between the biological importance and tourism potential of the areas ($r=0.72$, $P<0.001$) (i.e. areas with high biodiversity value also have high tourism potential).

*Threats to areas*

A wide range of scores were obtained for threats to the 44 areas, ranging from 186 down to 78. Ngudzeni, Ndzeleni, Maguga, Tulwane, Sibebe and Mliba had the highest overall degree of threat and areas such as Phophonyane, Muti-muti Nisela, Mananga, Mbuluzi, Bulembu and Panata had the lowest (see Appendix 2, Map 2).

As one might expect, there is a negative relationship between the biodiversity persistence value and isolation threat of the areas ($R^2=0.4$, $b=-0.4$, $P<0.001$) (i.e. areas under high threat of becoming isolated have low value for biological persistence).

There is a positive relationship between the threat of alien animals and the threat of erosion ($R^2=0.27$, $b=0.5$, $P<0.01$) i.e. areas under high threat by alien animals are also under high erosion threat.

The multiple regression analysis indicates the contribution of the various threats to the variation in overall degree of threat. All threats were significant in the multiple regression ($P<0.001$). The results indicate that land-use change was the most important threat ($\beta =0.48$), followed by settlement ($\beta =0.41$), isolation ($\beta =0.27$), resource use ($\beta =0.21$), alien animals ($\beta =0.20$), erosion ($\beta =0.19$), alien plants ($\beta =0.14$), poaching ($\beta =0.13$) and pollution ($\beta =0.12$).

*Protection worthiness*

Of the 44 areas surveyed, the following areas are not considered protection worthy since the mean of their overall importance is not significantly different from zero ($P > 0.01$): Shonalanga ($t = 2.36$, $P = 0.029$, $df = 19$), Ndzeleni ($t = 2.29$, $P = 0.033$, $df = 19$), Luhlokohlo ($t = 2.10$, $P = 0.049$, $df = 19$) and Mliba ($t = 1.90$, $P = 0.072$, $df = 19$). The remaining 40 areas have scores for overall importance significantly greater than zero and therefore are considered protection worthy, nevertheless, these scores vary dramatically.

*Protection priority*

Figure 1 indicates the overall priority of areas through a scatter plot of overall importance against overall degree of threat. Areas of high overall priority have high overall importance and high overall degree of threat. Nine areas of high overall priority can be identified (see area H on figure 1). These are, in descending order of

priority: Mdzimba, Ntungulu, Nyonyane, Ndlotane, Mahuku, Jilobi, Shewula, Manzimnyame and Makhonjwa (see Appendix 2 Map. Five areas of low overall priority can be identified (see area L on figure 1). These are, in descending order of priority: Ndzeleni, Mliba, Shonalanga, Luhlokohlo and Libetse.

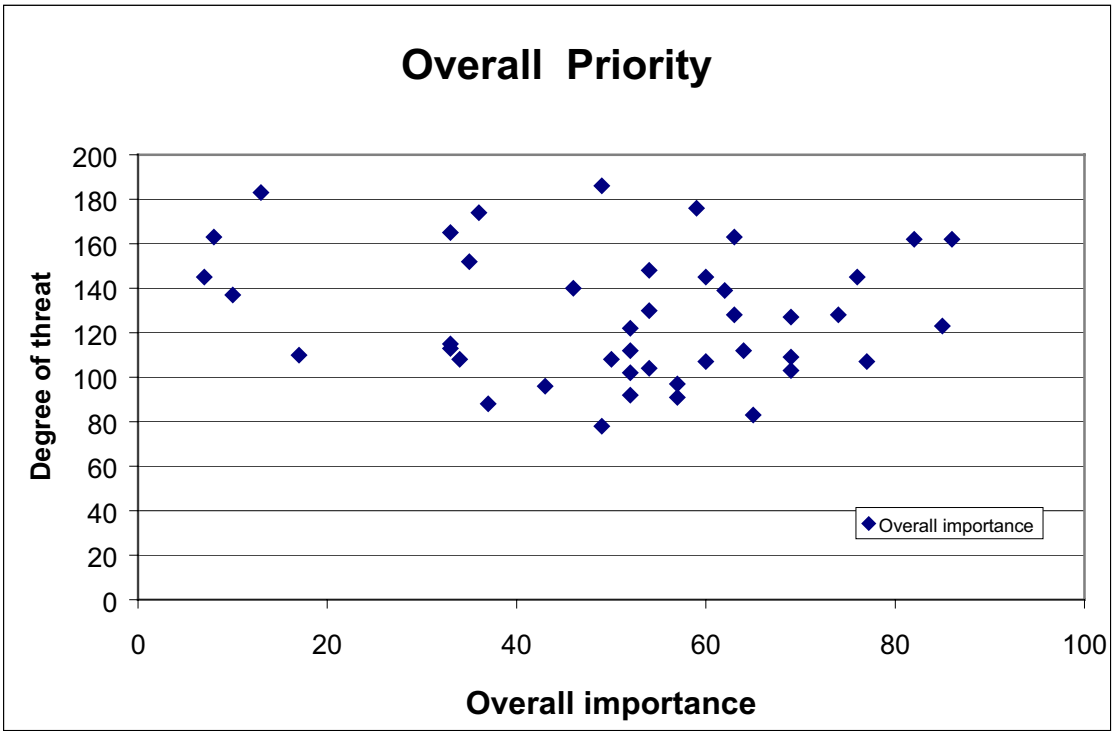


**Figure 1.** **A plot of overall importance vs overall degree of threat for all areas to indicate their overall priority. Each point on the plot represents one protection worthy area.**

Figure 2 indicates the biological priority of areas through a scatter plot of biological importance against overall degree of threat. Areas of high biological priority have high biological importance and high overall degree of threat. Ten areas of high biological priority can be identified (see area H on figure 2). These are, in descending order of priority: Ntungulu, Nyonyane, Ndlotane, Mdzimba, Manzimnyame, Mahuku, Jilobi, Mahamba, Shewula and Muti muti. Five areas of low biological priority can be identified (see area L on figure 2). These are, in descending order of priority: Ndzeleni, Mliba, Libetse, Shonalanga and Luhlokohlo.

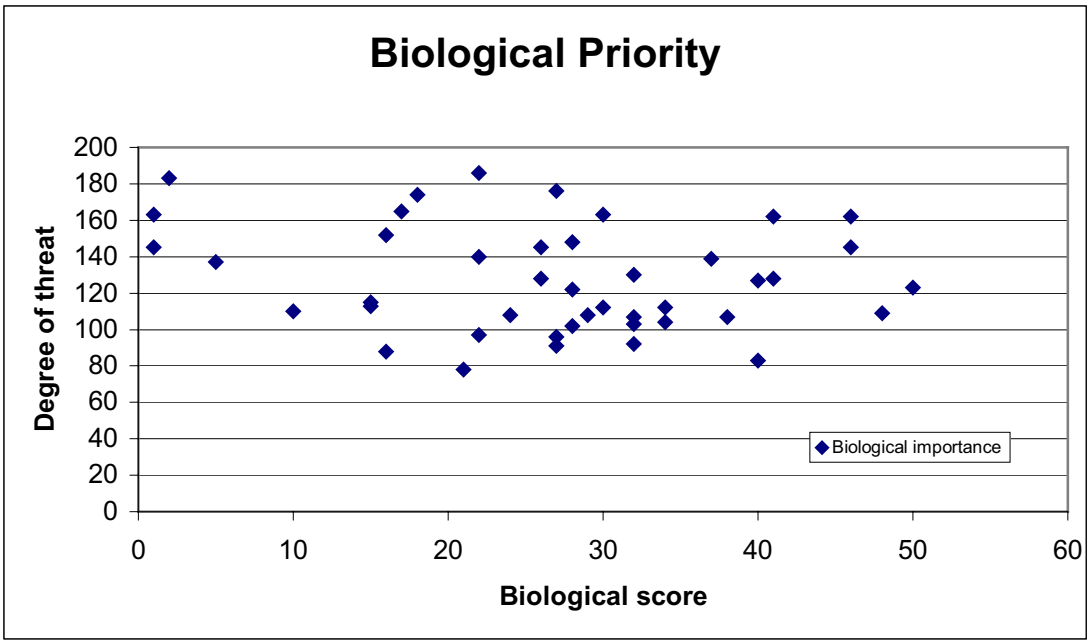


**Figure 2.** **A plot of biological importance vs overall degree of threat for all areas to indicate their biological priority. Each point on the plot represents one protection worthy area.**

Figure 3 indicates the socio-economic priority of areas through a scatter plot of socio-economic importance against overall degree of threat. Areas of high socio-economic priority have high socio-economic importance and high overall degree of threat. Eleven areas of high socio-economic priority can be identified (see area H on figure 3). These are, in descending order of priority: Mdzimba, Ntungulu, Shewula, Sinceni, Maguga, Sibebe, Gebeni, Makhonjwa, Panata, Nyonyane and Mahuku. Five areas of low biological priority can be identified (see area L on figure 3). These are, in descending order of priority: Mliba, Nkalashane, Luhlokohlo, Libetse and Shonalanga.

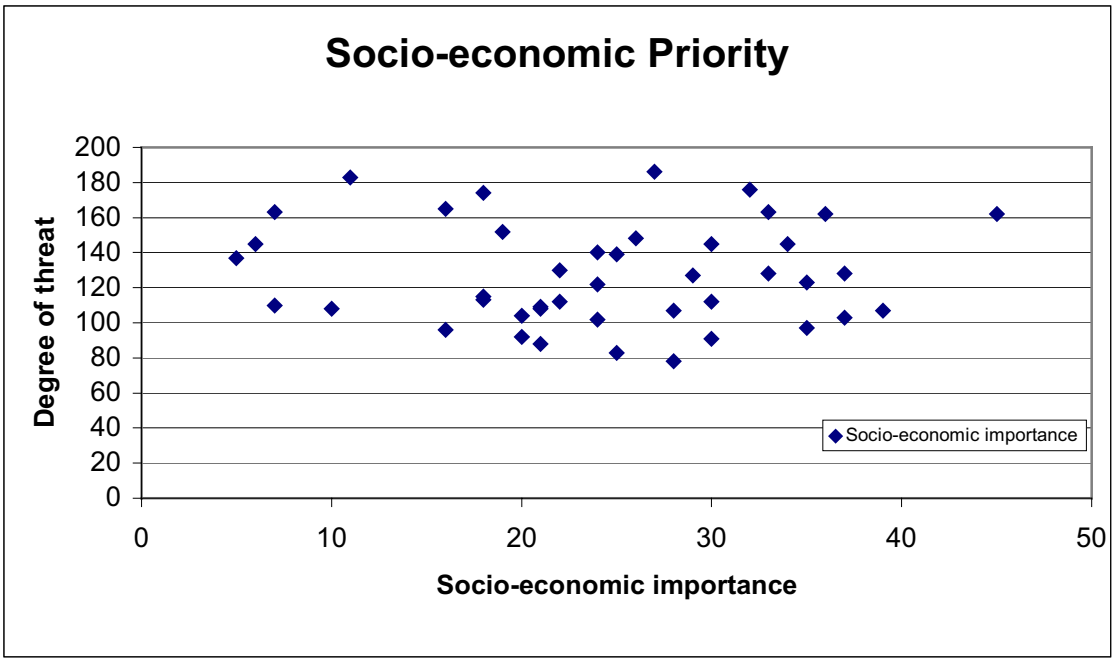


**Figure 3.** **A plot of socio-economic importance vs overall degree of threat for all areas to indicate their socio-economic priority. Each point on the plot represents one protection worthy area.**

Bringing these results together, nine areas of overall priority are identified (Mdzimba, Ntungulu, Nyonyane, Ndlotane, Mahuku, Jilobi, Shewula, Manzimnyame and Makhonjwa), with an additional two areas of biological priority (Mahamba and Muti muti) and an additional five areas of socio-economic priority (Sinceni, Maguga, Sibebe, Gebeni and Panata).

*Protection category*
The following categories of Protected Area are proposed for Swaziland: National Park (IUCN category 2), National Monument (IUCN category 3), Nature Reserve (Private and National, IUCN category 4), Protected Landscape (IUCN category 5) and Resource Reserve (IUCN category 6).

Based on the assets of the different areas and their current and likely future ownership and management status, it is proposed that the Protection Worthy Areas be categorised as described in Table 3 (see Appendix 2).

**Table 3. Proposed categories of management for protected and protection worthy areas. Areas identified as having high priority are in bold.**

| *Proposed management category* | Area name | Proposed Act for Proclamation |
|---|---|---|
| *National Park* | **Hlane** | SNTC |
| | **Malolotja** | SNTC |
| | **Mlawula** | SNTC |
| | **Mlilwane** | SNTC |
| *National Mounument* | **Maguga** | SNTC |
| | Mantenga | SNTC |
| | **Mdzimba** | SNTC |
| | **Sibebe** | SNTC |
| *Nature Reserve (National)* | Hawane | SNTC |
| | **Ntungulu** | SNTC |
| | **Mahamba** | SNTC |
| | **Nyonyane** | SNTC |
| | **Manzimyame** | SNTC |
| | Sondeza | Flora Protection |
| | **Shewula** | SNTC |
| *(private)* | Mbuluzi | Game |
| | Mkhaya | SNTC |
| | **Muti muti** | Flora Protection |
| | Nisela | Game |
| *Protected Landscape* | Bulembu | SNTC |
| | Mahlangatsha | Flora Protection |
| | Mananga | Flora Protection |
| | **Makhonjwa** | SNTC |
| | **Gebeni** | Flora Protection |
| | Mhlumeni | Flora Protection |
| | **Ndlotane** | SNTC |
| | Nsongweni | SNTC |
| | Usutu gorge | Flora Protection |
| | Phophonyane | SNTC |
| | **Sinceni** | Flora Protection |
| | Tulwane | Flora Protection |
| *Resource Reserve* | **Mahuku** | Game |
| | Big Bend Conservancy | Game |
| | **Jilobi** | Flora Protection |
| | Hlane west | Game |
| | IYSIS | Game |
| | **Panata** | Game |
| | Pongola | Game |
| | Mjoli | Flora Protection |
| | Mkhondvo | Flora Protection |
| | Nkhalashane | Flora Protection |

Category I (Strict Nature Reserve or Wilderness area) is probably not appropriate for Swaziland given the countries current socio-economic status, although there may be wilderness zones within other categories of protected area. Category II (National Park) is most appropriate for Hlane, Malolotja, Mlawula and Mlilwane. Category III (National Monument), of which there are presently none even though the current legislation does allow for these, is most appropriate for Mdzimba and Sibebe. Category IV (Nature Reserve), which our current legislation does allow for, is most appropriate for Ntungulu, Mahamba, Nyonyane, Manzimnyame and Shewula. Category V (Protected Landscape) is most appropriate for Ndlotane, Sinceni and

Makhonjwa as potential examples. Finally, Category VI (Resource Reserve) is most appropriate for Mahuku, Jilobi and Mjoli as potential examples.

*Awareness*
A number of radio shows have been presented on the project, 15 articles were published in local newspapers, 5 competitions with prizes were completed, and more than 150 interested and affected parties with mail boxes were sent an information flyer, questionnaire and workshop invitation. The campaign was a success and positive feedback was received from a wide variety of stakeholders. The results of the questionnaires that were distributed via direct mailing included perceived benefits (assistance, ecological, management related and socio-economic) of proclaiming areas and perceived negative impacts or concerns (loss of future options, ineffective support, sustainability, privacy) of proclaiming areas by stakeholders. Feedback was also obtained concerning the conservation/tourism activities already planned by stakeholders. See Appendix 5 for a report of the awareness campaign.

Source: Mud Hut[6]

**Discussion**

The importance of conserving biodiversity is widely recognised and can be strongly argued in ecological, economic and social terms. Swaziland has recognised this and, as such, has ratified the Convention on Biological Diversity and incorporated biodiversity conservation into the Kingdom's National Development Plan. Despite this, pressure on biodiversity as a result of human needs is growing rapidly. In 1976 Swaziland had 0.5 million people. In a period of twenty years the population almost doubled (0.95 million in 1997). In 2016 it is expected to have increased to 1.7 million people (Swaziland Government 2001)! This emphasises the need to act quickly to conserve biodiversity and realise the benefits therefrom. It is globally recognized that protecting areas is one of the most successful and sustainable means of conserving biodiversity.

*Importance*
Through visiting and rapidly assessing each of the 44 areas in this study two things have become glaringly apparent. Firstly, Swaziland has a great richness of biodiversity and landscapes within its limited area, and secondly very little is known about the biodiversity of many of the areas visited.

A wide range of scores for the biological and socio-economic importance of areas are presented in this document. These scores offer a means of prioritising areas in terms of their value for conservation. It is important to highlight the limitations of this preliminary assessment. The scores for the biological and socio-economic importance of the areas are for the purposes of preliminary prioritisation only and should not be afforded undue confidence.

Consideration was given to various weightings for the questions on biological and socio-economic importance. It was felt that each question is of sufficient importance

[6] **Photo:**Sibebe PWA, Sibebe Rock.

to warrant high weighting and ultimately it was agreed that there is no justification for giving any one question greater weighting than another. Therefore, each answer was given equal weighting in the analysis.

The positive relationship between biological importance and tourism potential of the areas suggests that if conservation and tourism land-uses conflict, there is potential for competition between them, but if they are in harmony, they are potentially mutually promoting. This implies support for integrating biodiversity conservation with tourism development but emphasises the need to promote *ecotourism* rather than more environmentally damaging tourism.

*Threats*

The fact that land conversion was the greatest threat to biodiversity in the areas surveyed highlights this as a major cause for concern in policies and strategies to conserve biodiversity. Integrated land-use planning and management are required so that a variety of goals (including biodiversity conservation) are met.

The fact that settlement was the next most important threat is in line with the rapid population growth trends in Swaziland. Most of the PWAs contained some level of settlement and this will require that, in many of the areas, a new style of conservation should be developed and practised. This conservation policy will need to meet the needs of people and wildlife living together.

Isolation was the third most important threat. The negative relationship between persistence value and isolation threat of the areas and the high relative importance of isolation to overall degree of threat emphasises the need to ensure linkages between PWAs. Resource utilisation was the next most important threat. This excludes most bird and mammal resources since these are protected by law and harvesting of them is therefore considered to be poaching. Effective strategies for controlling resource use need to be developed particularly on communal areas.

Alien animals and erosion respectively, were the next most important threats. The positive relationship between alien animals and erosion threat most likely reflects the influence of heavy cattle grazing and trampling on soil erosion (the most ubiquitous alien animals were cattle). The impact and permanence of erosion was high, though its range was limited. On the other hand, cattle grazing and trampling was widespread, but of relatively low impact and permanence.

Alien plant invasion was the next most important threat. This was observed to be a problem in most PWAs and, in many cases, the alien species present are known to be very invasive. Therefore, while the degree of threat by alien plants was not particularly high relative to some other threats, the urgency of this threat is high since by comparison with other threats.

Poaching (or the illegal harvesting of wildlife resources) was a relatively minor threat because, in most cases, the impacts of poaching had already been felt (i.e. it is a pressure rather than a threat). Furthermore, there are limited legal restrictions on the harvesting of wildlife resources in such non-proclaimed areas.

Pollution was the least important of the threats in the areas assessed, largely because of its limited extent.

7

*Protection worthiness*
It is no easy task to determine the cut off point between whether an area is worthy of biodiversity protection or not. Whatever criteria are used will be relatively arbitrary. Here, it was decided that an area is not worthy of biodiversity protection if it does not have a mean biodiversity score (determined using the WWF rapid assessment method described) significantly greater than zero. The level of significance used was the 99% confidence level, which is an accepted standard statistical level of significance (Zar 1984). The results of this correspond fairly well with the prioritisation of the areas, since the above areas also fall within the zone of low overall priority in Figures 1 and 2.

The results of this survey identify the following three categories of priority for biodiversity protection at a national level: 16 areas of high priority, 24 additional areas of importance and 4 areas that are not important.

*Protection category*
At present in Swaziland there are three laws that permit areas to be set aside for conservation, the SNTC act of 1972, the Game act of 1953 amended in 1991 and 1993, and the Flora Protection act of 2000. The SNTC Act refers to National Parks (all land owned by the state), Nature Reserves (at least some of the land not owned by the state) and National Monuments. The Game Act refers to Game Reserves and Wildlife Sanctuaries. The Flora Protection Act refers to Flora Reserves and Botanical Gardens.

The Game act and Flora Protection act focus on specific components of biodiversity (Game and Plants) rather than specific geographic areas. Both contain lists of specially protected animals and plants with restrictions on activities that threaten the survival of these. Both are applicable throughout the country and can therefore be enforced anywhere. Although areas can be designated for conservation under these acts, the objectives of doing such are not clearly specified and there is little explicit restriction on activities within these areas. On the other hand, the SNTC act focuses on specific geographical areas. It was developed specifically to set aside areas for conservation and gives the strongest power to conserve areas and the broadest inclusion of all components of biodiversity.

According to the SNTC Act 9/1972 the objectives of the declaration of a park or reserve in Swaziland are:

- To promote and conserve indigenous animal and plant life and to eliminate non-indigenous animal and plant life,
- To collect together and restore a representative selection of the animal and plant life indigenous to the area,

[7] **Photo:** Mjoli PWA, view of Mjoli Dam and Mananga Mountain.

- To protect, preserve and/or restore objects of geological, archeological, historical, ethnological and scientific interest,
- To promote and protect the natural ecology and environment,
- To provide facilities for scientific study and education,
- To promote public appreciation of the social, economic and moral value of wildlife conservation,
- Without conflicting with the foregoing objects, to provide enjoyment to visitors.

There is an urgent need for the above laws to state objectives for proclaiming different classes of conservation area and to state associated restrictions on activities. Furthermore, there is a need for the law to recognise lower categories (IUCN V and VI) of conservation area. Without this, Swaziland is unlikely to succeed in achieving its goals for biodiversity conservation.

There are advantages to using the internationally accepted IUCN guidelines for protected area categories (IUCN 1994) as a basis for proposing categories of protected areas relevant to the needs of the people and environment of Swaziland. IUCN category 1 areas (strict wilderness or scientific reserves) would not be appropriate in Swaziland given its economic and social needs. Otherwise, a Swaziland equivalent for each of the IUCN categories is proposed.

*Recommendations*
It is recommended that the following be done subsequent to completion of this preliminary study:

1) starting with the 9 areas of highest overall priority, and following with the additional 7 areas of highest biological and socio-economic priority, all identified protection worthy areas should be surveyed further to gather sufficient information about their biodiversity to determine their conservation value;
2) awareness about the project should be promoted and stakeholders should be consulted;
3) areas of highest conservation value should be identified and proposed for proclamation;
4) plans should be developed for the management of these areas;
5) the appropriate legislation should be amended to provide for the conservation categories mentioned above with appropriate associated restrictions on activities.
6) a systematic spatial planning approach should be implemented under the Biodiversity Conservation and Participatory Development Program to complement the PWA survey;

**8**

[8] **Photo:** Shewula PWA, view from Shewula Mountian Camp

**Acknowledgements**

Thanks are owed to a large number of people who contributed valuable inputs to this assessment. The specialists who gave input to compiling the data are listed in Appendix 1. A number of other people were also involved, in particular, Steve Zuke, Lungile Magagula-Gumbi, Stephanie Login, Dzelisa Dlamini, Sandile Gumedze, Freddie Magagula and Morris Mtsambiwa. Linda Dobson provided all of the photographs but one. The latter was provided by Mut Hut Pty Ltd. Thanks are due to the entire Biodiversity Program Implementation Committee, SEA, SNTC and the Ministry of Tourism, Environment & Communications for their support. Finally all stakeholders who gave feedback are thanked and encouraged to continue to support this initiative, ultimately it is the will of the public that will determine the success of the initiative.

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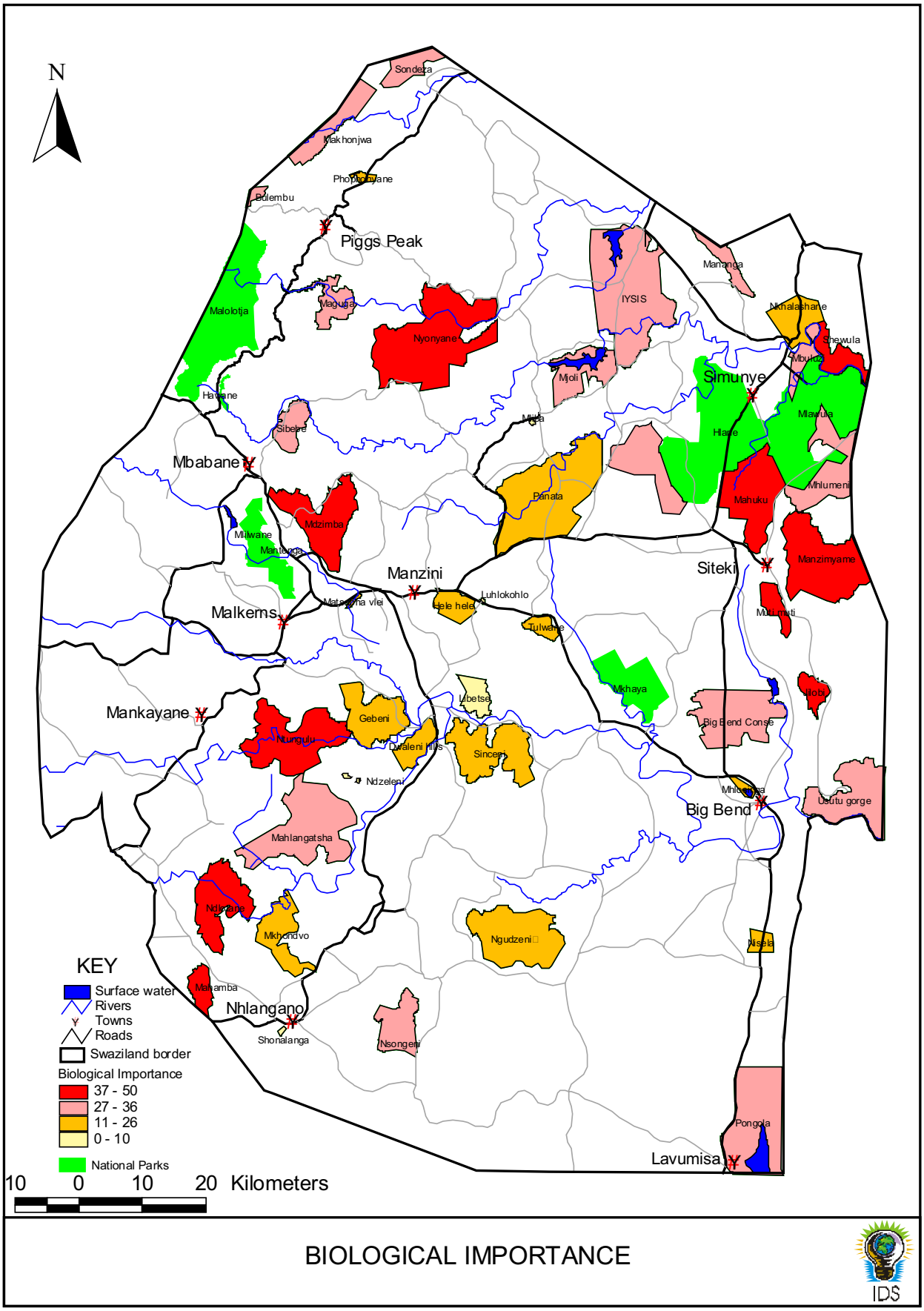
**Appendix 1**

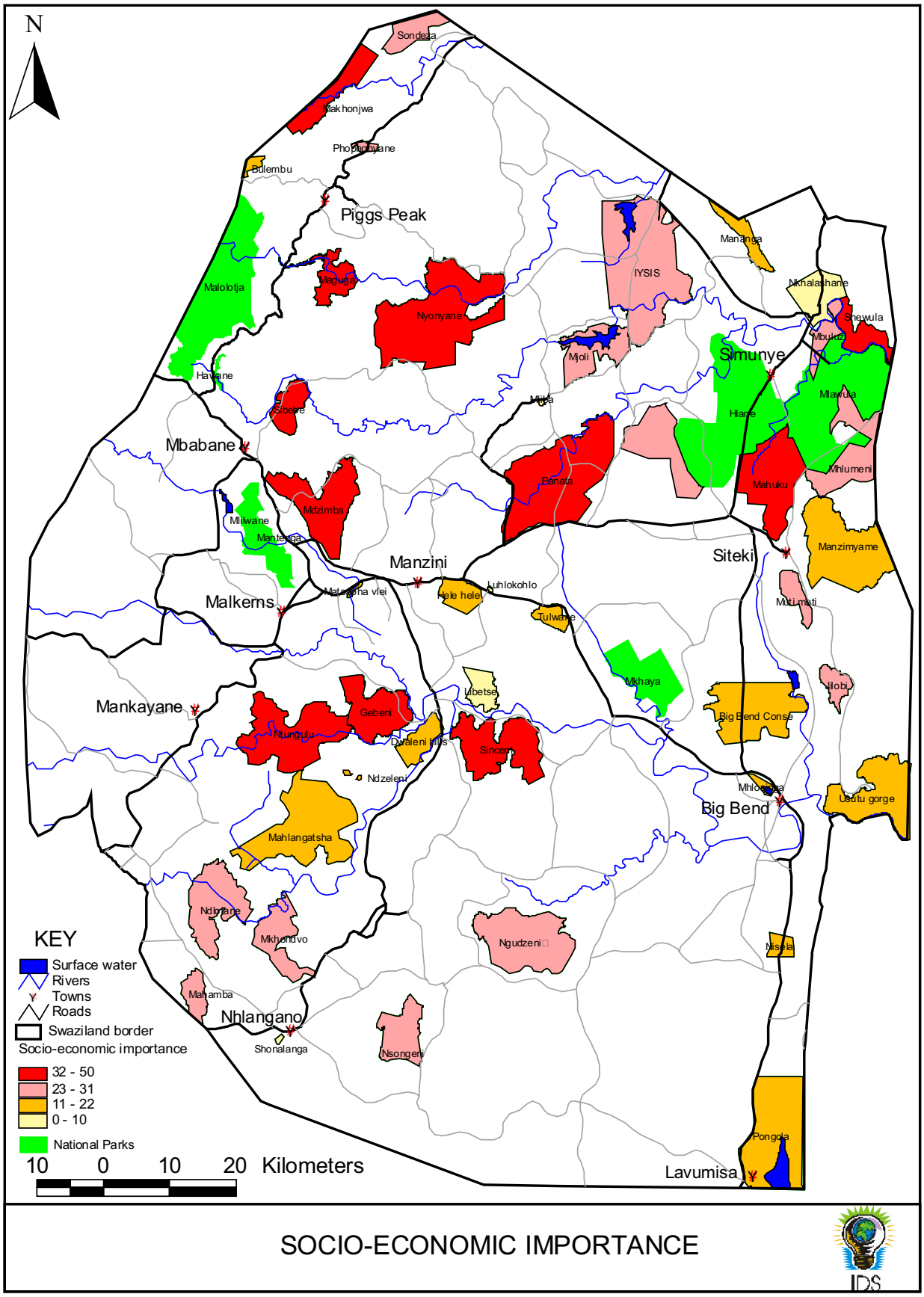
*Specialists involved in the assessment*

| Title | Name | Organisation |
|---|---|---|
| Dr | Ara Monadjem | UNISWA |
| Dr | Cebsile Magagula | UNISWA |
| Mr | Kim Roques | MTEC |
| Mrs | Linda Dobson | Private Botanist |
| Mr | Mickey Reilly | BGP |
| Mr | Ray Gama | SNTC |
| Mr | Richard Boycott | SNTC |
| Mr | Themba Mahlaba | UNISWA |

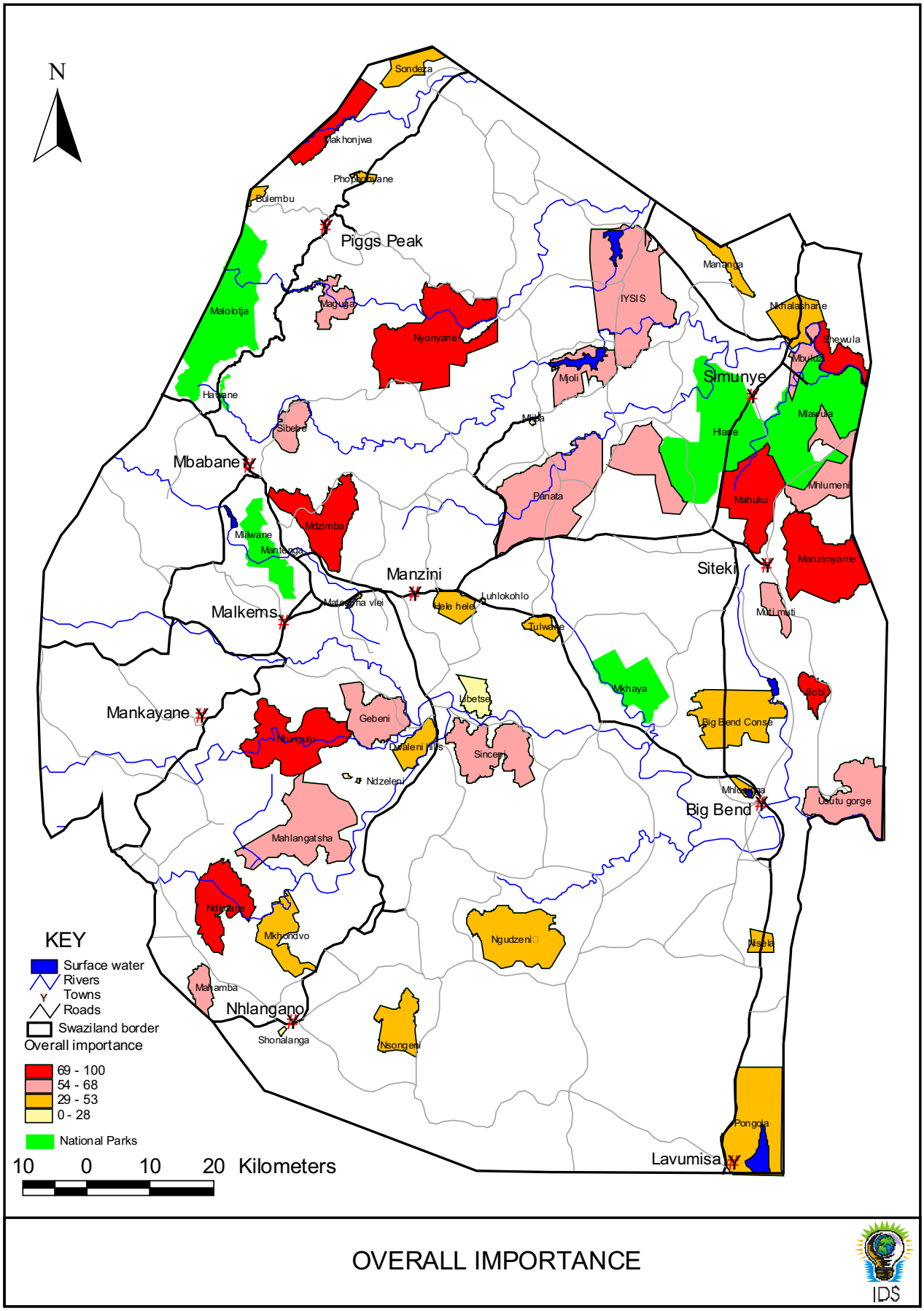
**Appendix 2**




*Maps of PWAs*
*Map 1*


N
Sondeza
Makhonjwa
Phophonyane
Bulembu
Piggs Peak
Malolotja
Maguga
Nyonyane
Hawane
Sibelene
Mbabane
Mdzimba
Mhlume
Mantenga
Manzini
Malkerns
Matsapha vlei
Luhlokohlo
Hele hele
Tulwane
Mankayane
Gebeni
Ntungulu
Dwaleni mills
Sincen
Ndzeleni
Mahlangatsha
Ndlotane
Mkhondvo
Mahamba
Nhlangano
Shonalanga
Ngudzeni
Nsongeni
Lavumisa
Pongola
Big Bend
Mhlosheni
Usutu gorge
Ubetse
Mkhaya
Big Bend Conse
Ilobi
Siteki
Manzimyame
Mati-muti
Mahuku
Panata
Mjoli
Mbikwa
Hlane
Simunye
Mlawula
Mbuluzi
Shewula
Nkhalashane
Mananga
IYSIS
KEY
Surface water
Rivers
Towns
Roads
Swaziland border
Socio-economic importance
32 - 50
23 - 31
11 - 22
0 - 10
National Parks
10 0 10 20 Kilometers
SOCIO-ECONOMIC IMPORTANCE
IDS

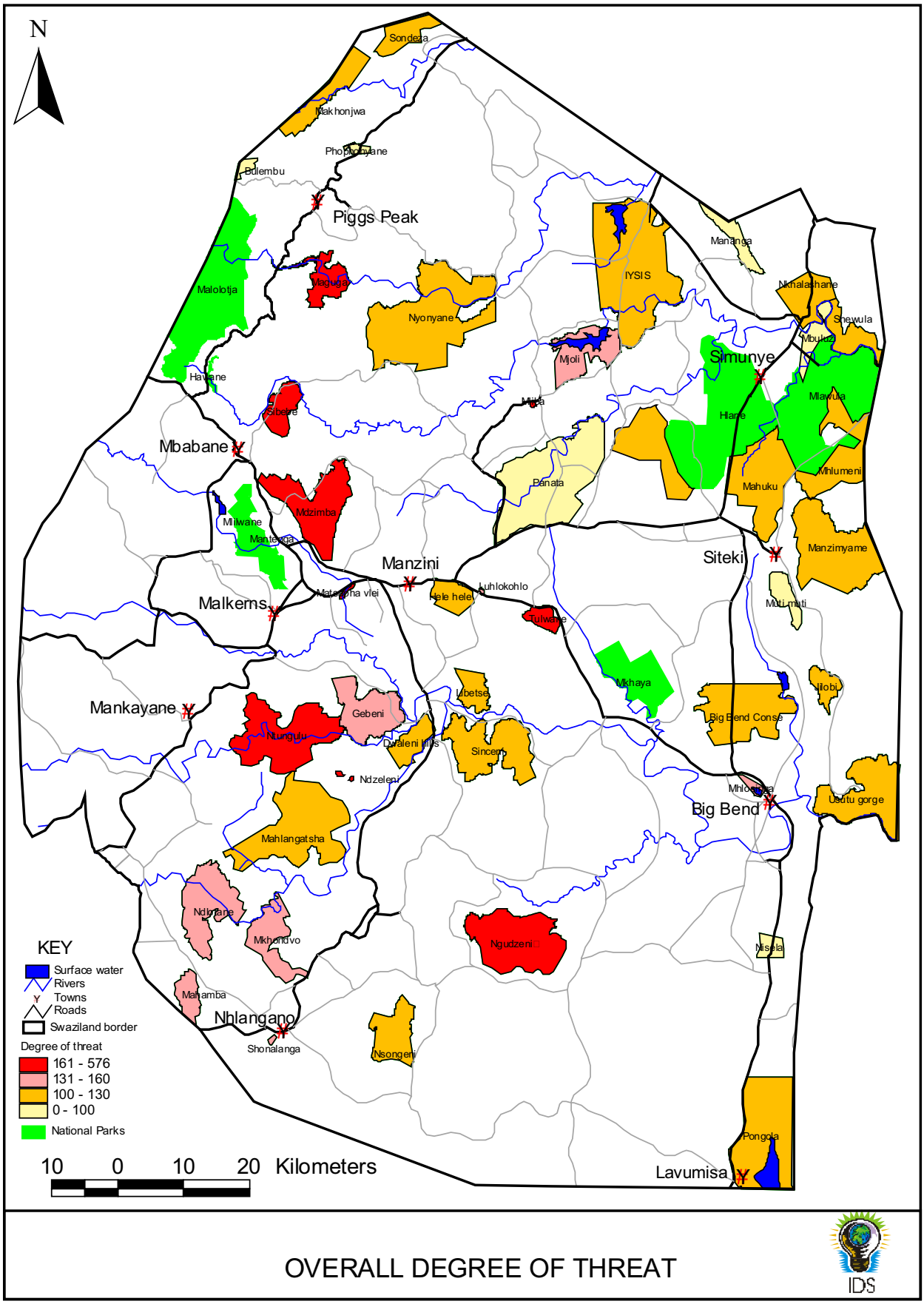
*Map 2*




OVERALL IMPORTANCE

IDS

*Map 3*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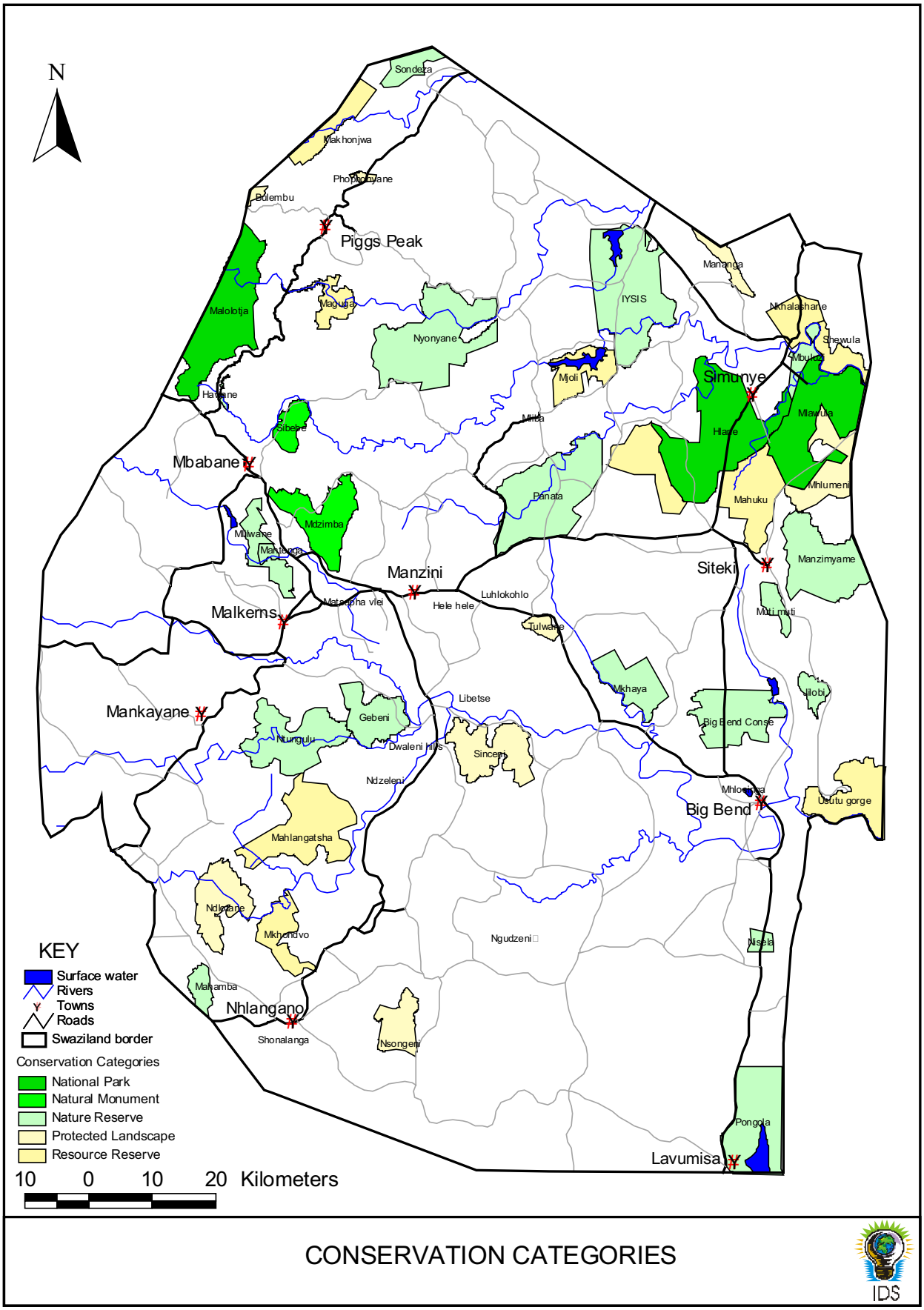
Phophonyane
Bulembu
Piggs Peak
Malolotja
Nyonyane
IYSIS
Mananga
Nkhalashane
Shewula
Mbuluzi
Simunye
Mjoli
Mlawula
Hlane
Mbabane
Sibebe
Mhlume
Ponata
Mahuku
Mhlumeni
Manzimyame
Siteki
Mdzimba
Mhlwane
Manteniga
Manzini
Malkerns
Matsapha vlei
Luhlokohlo
Tulwane
Mkhaya
Mankayane
Gebeni
Nungulu
Lubetse
Big Bend Conse
Ndzeleni
Sincem
Big Bend
Mahlangatsha
Ngudzeni
Nisela
Mkhondvo
Mahamba
Nhlangano
Shonalanga
Nsongeni
Pongola
Lavumisa
KEY
Surface water
Rivers
Towns
Roads
Swaziland border
Degree of threat
161 - 576
131 - 160
100 - 130
0 - 100
National Parks
10 0 10 20 Kilometers
OVERALL DEGREE OF THREAT
IDS

*Map 4*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Sondeza
Makhonjwa
Phophonyane
Bulembu
Piggs Peak
Malolotja
Maguga
Nyonyane
Mananga
IYSIS
Nkhalashane
Shewula
Mbuluzi
Simunye
Mjoli
Hlane
Mlawula
Mhlumeni
Mahuku
Mbabane
Sibebe
Mlilwane
Mdzimba
Manteniga
Manzini
Malkerns
Matsapha vlei
Luhlokohlo
Hele hele
Tulwane
Siteki
Manzimyame
Moti muti
Mankayane
Gebeni
Ntungulu
Dwaleni hills
Libetse
Sincemi
Ndzeleni
Mkhaya
Ilobi
Big Bend Conse
Mhlosheni
Big Bend
Usutu gorge
Mahlangatsha
Ndlotane
Mkhondvo
Ngudzeni
Nisela
Mahamba
Nhlangano
Shonalanga
Nsongeni
Pongola
Lavumisa
KEY
Surface water
Rivers
Towns
Roads
Swaziland border
Conservation Categories
National Park
Natural Monument
Nature Reserve
Protected Landscape
Resource Reserve
10 0 10 20 Kilometers
CONSERVATION CATEGORIES
IDS

*Map 5*

**Appendix 3**

## *PWA RAPID ASSESSMENT QUESTIONNAIRE*

| **A. BACKGROUND** | **A.7) Specific PWA Objectives:** |
|---|---|
| 1) Name of PWA _____<br>2) Location of PWA _____<br>3) Date surveyed _____<br>4) Size of PWA _____<br>5) Name of respondent _____<br>6) Date questionnaire completed _____ | |

### 1. BIOLOGICAL IMPORTANCE

| y | m/y | m/n | n | u | | NOTES |
|---|---|---|---|---|---|---|
| O | O | O | O | O | a) The PWA contains a globally threatened ecosystem. | |
| O | O | O | O | O | b) The PWA contains globally rare, threatened or endangered species. | |
| O | O | O | O | O | c) The PWA contains regionally or locally rare, threatened or endangered species. | |
| O | O | O | O | O | d) The PWA has high levels of biological diversity. | |
| O | O | O | O | O | e) The PWA has a high number of endemic species. | |
| O | O | O | O | O | f) The PWA provides a critical landscape function. | |
| O | O | O | O | O | g) The PWA is large enough to support minimum viable populations of umbrella species, or is relatively large for the region. | |
| O | O | O | O | O | h) The PWA contains exemplary and intact ecosystems. | |
| O | O | O | O | O | i) The PWA would significantly contribute to the overall representativeness of the PA system. | |
| O | O | O | O | O | j) The PWA contains important, high quality habitat types for key species. | |

### 2. SOCIO-ECONOMIC IMPORTANCE

| y | m/y | m/n | n | u | | NOTES |
|---|---|---|---|---|---|---|
| O | O | O | O | O | a) The PWA provides economic opportunities for individuals within or near the PWA. | |
| O | O | O | O | O | b) The PWA demonstrates opportunities for sustainable development, consistent with the PWA objectives. | |
| O | O | O | O | O | c) The PWA has a high level of subsistence and/or traditional use by local communities. | |
| O | O | O | O | O | d) The PWA has religious or spiritual significance. | |
| O | O | O | O | O | e) The PWA has unusual features of aesthetic importance (e.g. hot springs, scenic vistas, geoheritage areas). | |
| O | O | O | O | O | f) The PWA contains species of high social or economic value (e.g. medicinal value, food prototypes). | |
| O | O | O | O | O | g) The PWA has high value for education and/or scientific research. | |
| O | O | O | O | O | h) The PWA has high recreation value. | |
| O | O | O | O | O | i) The functions of the ecosystems within the PWA contribute significant social or economic benefits (e.g. water recharge area). | |
| O | O | O | O | O | j) The local community or economy is highly dependent, either directly or indirectly, upon the resources in the PWA. | |

PWA Name: ……

**3. THREATS (future)**

| | | |
|---|---|---|
| **Threat 1: Alien animals *** □ Not a threat<br><br>Notes: | a. The likelihood of this activity occurring or increasing in the next 20 years is:<br>□ Very likely<br>□ Somewhat likely<br>□ Somewhat unlikely<br>□ Possible but unlikely | The impact of this threat is likely to be:<br>b. Range (Over next 20 yrs)<br>□ Throughout (>50%)<br>□ Widespread (15-50%)<br>□ Scattered (5-15%)<br>□ Localized (<5%)<br>c. Impact (Over next 20 yrs)<br>□ Severe impact<br>□ High impact<br>□ Moderate impact<br>□ Mild impact<br>d. Permanence<br>□ Permanent (>500 years)<br>□ Long term (50-500 years)<br>□ Medium term (10-50 years)<br>□ Short term (<10 years) |
| **Threat 2: Alien plants **** □ Not a threat<br><br>**Notes:** | a. The likelihood of this activity occurring or increasing in the next 20 years is:<br>□ Very likely<br>□ Somewhat likely<br>□ Somewhat unlikely<br>□ Possible but unlikely | The impact of this threat is likely to be:<br>b. Range (Over next 20 yrs)<br>□ Throughout (>50%)<br>□ Widespread (15-50%)<br>□ Scattered (5-15%)<br>□ Localized (<5%)<br>c. Impact (Over next 20 yrs)<br>□ Severe impact<br>□ High impact<br>□ Moderate impact<br>□ Mild impact<br>d. Permanence<br>□ Permanent (>500 years)<br>□ Long term (50-500 years)<br>□ Medium term (10-50 years)<br>□ Short term (<10 years) |

* Alien animals: Includes feral cats, dogs, donkeys, cattle, etc., as well as Indian Mynas, trout and other undesirable alien species.

** Alien plants: Non-indigenous plants which establish and advance aggressively and out-compete natural indigenous vegetation, resulting in dense infestations.

| | | |
|---|---|---|
| **Threat 3: Resource utilisation *** □ Not a threat<br><br>**Notes:** | a. The likelihood of this activity occurring or increasing in the next 20 years is:<br>□ Very likely<br>□ Somewhat likely<br>□ Somewhat unlikely<br>□ Possible but unlikely | The impact of this threat is likely to be:<br>b. Range (Over next 20 yrs)<br>□ Throughout (>50%)<br>□ Widespread (15-50%)<br>□ Scattered (5-15%)<br>□ Localized (<5%)<br>c. Impact (Over next 20 yrs)<br>□ Severe impact<br>□ High impact<br>□ Moderate impact<br>□ Mild impact<br>d. Permanence<br>□ Permanent (>500 years)<br>□ Long term (50-500 years)<br>□ Medium term (10-50 years)<br>□ Short term (<10 years) |
| **Threat 4: Poaching **** □ Not a threat<br><br>Notes: | a. The likelihood of this activity occurring or increasing in the next 20 years is:<br>□ Very likely<br>□ Somewhat likely<br>□ Somewhat unlikely<br>□ Possible but unlikely | The impact of this threat is likely to be:<br>b. Range (Over next 20 yrs)<br>□ Throughout (>50%)<br>□ Widespread (15-50%)<br>□ Scattered (5-15%)<br>□ Localized (<5%)<br>c. Impact (Over next 20 yrs)<br>□ Severe impact<br>□ High impact<br>□ Moderate impact<br>□ Mild impact<br>d. Permanence<br>□ Permanent (>500 years)<br>□ Long term (50-500 years)<br>□ Medium term (10-50 years)<br>□ Short term (<10 years) |

* Resource utilisation (legal): Includes thatch, fodder, wood, medicinal plants, bark, tapping of sap, fish, etc.

** "Poaching" (illegal destruction, or removal of indigenous organisms): Poaching of plants and animals, poisoning of birds of prey/predators, cranes, etc.

PWA Name: ……

| | | |
|---|---|---|
| **Threat 5: Settlement *** □ Not a threat<br><br>Notes: | a. The likelihood of this activity occurring or increasing in the next 20 years is:<br>□ Very likely<br>□ Somewhat likely<br>□ Somewhat unlikely<br>□ Possible but unlikely | The impact of this threat is likely to be:<br>b. Range (Over next 20 yrs)<br>□ Throughout (>50%)<br>□ Widespread (15-50%)<br>□ Scattered (5-15%)<br>□ Localized (<5%)<br>c. Impact (Over next 20 yrs)<br>□ Severe impact<br>□ High impact<br>□ Moderate impact<br>□ Mild impact<br>d. Permanence<br>□ Permanent (>500 years)<br>□ Long term (50-500 years)<br>□ Medium term (10-50 years)<br>□ Short term (<10 years) |
| **Threat 6: Land use change **** □ Not a threat<br><br>Notes: | a. The likelihood of this activity occurring or increasing in the next 20 years is:<br>□ Very likely<br>□ Somewhat likely<br>□ Somewhat unlikely<br>□ Possible but unlikely | The impact of this threat is likely to be:<br>b. Range (Over next 20 yrs)<br>□ Throughout (>50%)<br>□ Widespread (15-50%)<br>□ Scattered (5-15%)<br>□ Localized (<5%)<br>c. Impact (Over next 20 yrs)<br>□ Severe impact<br>□ High impact<br>□ Moderate impact<br>□ Mild impact<br>d. Permanence<br>□ Permanent (>500 years)<br>□ Long term (50-500 years)<br>□ Medium term (10-50 years)<br>□ Short term (<10 years) |

* Settlement: occupation and inhabitancy of the land by people, e.g. "squatting", establishment of homesteads.

** Land use change: Change to a form of land use conflicting with biodiversity conservation.

| | | |
|---|---|---|
| **Threat 7: PWA Isolation *** □ Not a threat<br><br>Notes: | a. The likelihood of this activity occurring or increasing in the next 20 years is:<br>□ Very likely<br>□ Somewhat likely<br>□ Somewhat unlikely<br>□ Possible but unlikely | The impact of this threat is likely to be:<br>b. Range (Over next 20 yrs)<br>□ Throughout (>50%)<br>□ Widespread (15-50%)<br>□ Scattered (5-15%)<br>□ Localized (<5%)<br>c. Impact (Over next 20 yrs)<br>□ Severe impact<br>□ High impact<br>□ Moderate impact<br>□ Mild impact<br>d. Permanence<br>□ Permanent (>500 years)<br>□ Long term (50-500 years)<br>□ Medium term (10-50 years)<br>□ Short term (<10 years) |
| **Threat 8: Pollution **** □ Not a threat<br><br>Notes: | a. The likelihood of this activity occurring or increasing in the next 20 years is:<br>□ Very likely<br>□ Somewhat likely<br>□ Somewhat unlikely<br>□ Possible but unlikely | The impact of this threat is likely to be:<br>b. Range (Over next 20 yrs)<br>□ Throughout (>50%)<br>□ Widespread (15-50%)<br>□ Scattered (5-15%)<br>□ Localized (<5%)<br>c. Impact (Over next 20 yrs)<br>□ Severe impact<br>□ High impact<br>□ Moderate impact<br>□ Mild impact<br>d. Permanence<br>□ Permanent (>500 years)<br>□ Long term (50-500 years)<br>□ Medium term (10-50 years)<br>□ Short term (<10 years) |

* PWA Isolation: Isolation of PWA as a result of incompatible, external land use change.

** Pollution (airborne, river-borne, groundwater): Agro-chemicals and pesticides, insect control (internal and external), sewerage spills, seepage from mine dumps, etc. (Does not refer to global pollution.)

PWA Name: ……

| **Threat 9: Erosion (man induced) *** | a. The likelihood of this activity occurring or increasing in the next 20 years is: | The impact of this threat is likely to be: | | |
|---|---|---|---|---|
| | | b. Range (Over next 20 yrs) | c. Impact (Over next 20 yrs) | d. Permanence |
| □ Not a threat | □ Very likely | □ Throughout (>50%) | □ Severe impact | □ Permanent (>500 years) |
| Notes: | □ Somewhat likely | □ Widespread (15-50%) | □ High impact | □ Long term (50-500 years) |
| | □ Somewhat unlikely | □ Scattered (5-15%) | □ Moderate impact | □ Medium term (10-50 years) |
| | □ Possible but unlikely | □ Localized (<5%) | □ Mild impact | □ Short term (<10 years) |

* Erosion (man-induced): As a result of cattle, tracks, footpaths etc.

## Appendix 4

*Raw data for determining the scores for importance and threat*

Table 1. Scores for questions on Biological and Socio-economic importance of all areas.

| | **Biological Importance question** | | | | | | | | | | | **Socio-economic Importance question** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***PWA*** | **1a** | **1b** | **1c** | **1d** | **1e** | **1f** | **1g** | **1h** | **1i** | **1j** | | **2a** | **2b** | **2c** | **2d** | **2e** | **2f** | **2g** | **2h** | **2i** | **2j** |
| *Big Bend Conservancy* | 0 | 0 | 5 | 5 | 0 | 3 | 5 | 5 | 1 | 5 | | 3 | 3 | 0 | 0 | 1 | 5 | 3 | 3 | 3 | 0 |
| *Bulembu* | 3 | 5 | 5 | 3 | 5 | 1 | 0 | 1 | 1 | 3 | | 3 | 0 | 3 | 3 | 3 | 3 | 0 | 1 | 0 | 0 |
| *Dwaleni hills* | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 5 | 5 | 1 | | 3 | 0 | 3 | 0 | 1 | 3 | 1 | 3 | 1 | 3 |
| *Gebeni* | 3 | 0 | 1 | 3 | 0 | 5 | 3 | 3 | 5 | 3 | | 5 | 3 | 5 | 1 | 3 | 1 | 3 | 5 | 3 | 5 |
| *Hele hele* | 0 | 0 | 1 | 1 | 0 | 3 | 1 | 5 | 3 | 1 | | 5 | 1 | 1 | 0 | 1 | 1 | 3 | 3 | 3 | 0 |
| *Hlane west* | 0 | 1 | 5 | 5 | 0 | 3 | 5 | 5 | 5 | 5 | | 5 | 3 | 5 | 1 | 1 | 5 | 3 | 1 | 3 | 3 |
| *IYSIS* | 0 | 1 | 5 | 5 | 0 | 3 | 5 | 5 | 5 | 5 | | 5 | 5 | 3 | 0 | 1 | 5 | 3 | 5 | 3 | 0 |
| *Jilobi* | 3 | 3 | 5 | 5 | 3 | 3 | 3 | 5 | 5 | 5 | | 5 | 1 | 5 | 0 | 3 | 3 | 1 | 5 | 1 | 5 |
| *Libetse* | 0 | 0 | 3 | 1 | 0 | 0 | 1 | 3 | 1 | 1 | | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| *Luhlokohlo* | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| *Maguga* | 0 | 3 | 5 | 5 | 5 | 0 | 0 | 3 | 1 | 5 | | 5 | 3 | 5 | 5 | 3 | 3 | 1 | 3 | 1 | 3 |
| *Mahamba* | 5 | 5 | 5 | 3 | 0 | 3 | 1 | 5 | 5 | 5 | | 5 | 0 | 1 | 5 | 5 | 3 | 3 | 3 | 0 | 0 |
| *Mahlangatsha* | 3 | 3 | 5 | 3 | 1 | 3 | 3 | 3 | 3 | 5 | | 3 | 1 | 3 | 0 | 3 | 1 | 0 | 3 | 5 | 3 |
| *Mahuku* | 0 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 1 | 5 | | 5 | 3 | 1 | 5 | 3 | 5 | 3 | 5 | 3 | 0 |
| *Makhonjwa* | 5 | 3 | 5 | 5 | 0 | 3 | 0 | 3 | 5 | 3 | | 3 | 5 | 5 | 1 | 5 | 5 | 0 | 5 | 3 | 5 |
| *Mananga* | 0 | 5 | 5 | 3 | 3 | 0 | 3 | 3 | 5 | 5 | | 0 | 0 | 3 | 1 | 5 | 5 | 5 | 0 | 0 | 1 |
| *Manzimyame* | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | 1 | 1 |
| *Matsapha vlei* | 0 | 0 | 0 | 5 | 0 | 1 | 5 | 0 | 3 | 3 | | 3 | 1 | 3 | 0 | 0 | 3 | 3 | 1 | 1 | 1 |
| *Mbuluzi* | 0 | 0 | 5 | 5 | 0 | 3 | 3 | 5 | 1 | 5 | | 5 | 5 | 0 | 0 | 3 | 5 | 3 | 5 | 3 | 1 |
| *Mdzimba* | 5 | 5 | 5 | 3 | 0 | 5 | 5 | 3 | 5 | 5 | | 5 | 0 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| *Mhlumeni* | 1 | 3 | 5 | 3 | 3 | 3 | 3 | 5 | 3 | 3 | | 5 | 0 | 3 | 0 | 3 | 5 | 1 | 5 | 3 | 3 |
| *Mjoli* | 0 | 1 | 3 | 5 | 0 | 3 | 3 | 3 | 5 | 5 | | 5 | 0 | 5 | 0 | 1 | 5 | 1 | 3 | 3 | 3 |
| *Mkhondvo* | 0 | 0 | 3 | 3 | 1 | 1 | 1 | 5 | 5 | 3 | | 3 | 0 | 3 | 0 | 5 | 3 | 1 | 5 | 1 | 3 |
| *Mliba* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 0 |

| *PWA* | 1a | 1b | 1c | 1d | 1e | 1f | 1g | 1h | 1i | 1j | | 2a | 2b | 2c | 2d | 2e | 2f | 2g | 2h | 2i | 2j |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Muti muti* | 3 | 3 | 5 | 5 | 3 | 3 | 3 | 5 | 5 | 5 | | 5 | 5 | 0 | 0 | 3 | 1 | 3 | 5 | 3 | 0 |
| *Ndlotane* | 5 | 5 | 5 | 3 | 3 | 5 | 5 | 5 | 5 | 5 | | 3 | 0 | 3 | 0 | 5 | 3 | 1 | 5 | 5 | 5 |
| *Ndzeleni* | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | | 1 | 0 | 5 | 0 | 3 | 1 | 0 | 1 | 0 | 0 |
| *Ngudzeni* | 0 | 0 | 1 | 1 | 1 | 3 | 5 | 1 | 5 | 1 | | 3 | 0 | 5 | 0 | 3 | 3 | 0 | 3 | 5 | 5 |
| *Nisela* | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 3 | 3 | 1 | | 5 | 5 | 0 | 0 | 0 | 5 | 3 | 3 | 0 | 0 |
| *Nkhalashane* | 0 | 3 | 5 | 3 | 3 | 0 | 3 | 3 | 1 | 3 | | 0 | 0 | 3 | 0 | 1 | 1 | 3 | 1 | 1 | 0 |
| *Nsongweni* | 3 | 1 | 3 | 3 | 5 | 3 | 1 | 3 | 3 | 3 | | 3 | 1 | 5 | 0 | 5 | 1 | 0 | 5 | 1 | 3 |
| *Ntungulu* | 3 | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | 5 | 1 | 3 | 3 | 5 | 3 | 1 | 5 | 5 | 5 |
| *Nyonyane* | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | 5 | 0 | 5 | 1 | 5 | 5 | 1 | 5 | 3 | 5 |
| *Panata* | 0 | 1 | 1 | 3 | 0 | 3 | 3 | 3 | 3 | 5 | | 5 | 5 | 0 | 3 | 3 | 3 | 5 | 5 | 5 | 1 |
| *Phophonyane* | 0 | 0 | 1 | 3 | 0 | 1 | 3 | 3 | 5 | 5 | | 5 | 5 | 0 | 3 | 5 | 1 | 3 | 5 | 1 | 0 |
| *Pongola* | 0 | 0 | 3 | 5 | 1 | 3 | 5 | 5 | 3 | 5 | | 5 | 3 | 0 | 0 | 3 | 1 | 1 | 5 | 3 | 1 |
| *Shewula* | 3 | 3 | 5 | 5 | 5 | 3 | 3 | 5 | 3 | 3 | | 5 | 5 | 5 | 0 | 3 | 3 | 5 | 3 | 5 | 5 |
| *Shonalanga* | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | | 0 | 3 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| *Sibebe* | 3 | 3 | 3 | 3 | 5 | 3 | 1 | 3 | 3 | 3 | | 5 | 5 | 3 | 5 | 5 | 3 | 1 | 5 | 1 | 0 |
| *Sinceni* | 0 | 3 | 3 | 3 | 0 | 3 | 3 | 3 | 3 | 5 | | 5 | 3 | 5 | 0 | 5 | 3 | 3 | 5 | 3 | 5 |
| *Sondeza* | 5 | 3 | 5 | 3 | 0 | 1 | 0 | 3 | 5 | 3 | | 3 | 0 | 5 | 1 | 3 | 3 | 0 | 3 | 1 | 5 |
| *Tulwane* | 0 | 1 | 3 | 1 | 5 | 0 | 1 | 1 | 3 | 3 | | 1 | 0 | 5 | 0 | 3 | 1 | 1 | 1 | 1 | 5 |
| *Usutu gorge* | 3 | 3 | 5 | 3 | 3 | 1 | 3 | 5 | 3 | 5 | | 3 | 0 | 3 | 1 | 5 | 1 | 0 | 5 | 1 | 1 |

Table 2. Scores for threats to biodiversity for all areas (m=magnitude of threat, p=permanence of threat, d=degree of threat).

| | **Magnitude and Permanence of threats** | | | | | | | | | | | | | | | | | | | **Degree of threats** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***PWA*** | **1m** | **1p** | **2m** | **2p** | **3m** | **3p** | **4m** | **4p** | **5m** | **5p** | **6m** | **6p** | **7m** | **7p** | **8m** | **8p** | **9m** | **9p** | | **1d** | **2d** | **3d** | **4d** | **5d** | **6d** | **7d** | **8d** | **9d** |
| *Big Bend Conservancy* | 4 | 1 | 6 | 3 | 2 | 2 | 6 | 1 | 3 | 3 | 12 | 4 | 2 | 3 | 2 | 2 | 3 | 3 | | 4 | 18 | 4 | 6 | 9 | 48 | 6 | 4 | 9 |
| *Bulembu* | 3 | 2 | 4 | 3 | 4 | 1 | 9 | 1 | 4 | 4 | 2 | 4 | 8 | 3 | 4 | 2 | 3 | 3 | | 6 | 12 | 4 | 9 | 16 | 8 | 24 | 8 | 9 |
| *Dwaleni hills* | 4 | 1 | 6 | 3 | 4 | 2 | 8 | 1 | 4 | 3 | 8 | 4 | 6 | 3 | 2 | 2 | 3 | 3 | | 4 | 18 | 8 | 8 | 12 | 32 | 18 | 4 | 9 |
| *Gebeni* | 8 | 2 | 6 | 3 | 4 | 2 | 12 | 1 | 8 | 4 | 8 | 4 | 4 | 3 | 3 | 2 | 3 | 3 | | 16 | 18 | 8 | 12 | 32 | 32 | 12 | 6 | 9 |
| *Hele hele* | 8 | 2 | 6 | 3 | 4 | 2 | 12 | 1 | 3 | 4 | 6 | 4 | 4 | 3 | 2 | 2 | 3 | 3 | | 16 | 18 | 8 | 12 | 12 | 24 | 12 | 4 | 9 |
| *Hlane west* | *4* | *2* | 6 | 3 | 6 | 2 | 9 | 1 | 6 | 4 | 12 | 3 | 2 | 3 | *2* | *2* | *3* | *3* | | 8 | 18 | 12 | 9 | 24 | 36 | 6 | 4 | 9 |

| ***PWA*** | **1m** | **1p** | **2m** | **2p** | **3m** | **3p** | **4m** | **4p** | **5m** | **5p** | **6m** | **6p** | **7m** | **7p** | **8m** | **8p** | **9m** | **9p** | | **1d** | **2d** | **3d** | **4d** | **5d** | **6d** | **7d** | **8d** | **9d** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *IYSIS* | 4 | 2 | 6 | 3 | 2 | 2 | 9 | 1 | 3 | 4 | 12 | 3 | 4 | 3 | 2 | 2 | 3 | 3 | | 8 | 18 | 4 | 9 | 12 | 36 | 12 | 4 | 9 |
| *Jilobi* | 6 | 1 | 6 | 3 | 9 | 3 | 8 | 1 | 4 | 4 | 4 | 3 | 4 | 3 | 2 | 2 | 8 | 3 | | 6 | 18 | 27 | 8 | 16 | 12 | 12 | 4 | 24 |
| *Libetse* | 8 | 2 | 6 | 3 | 4 | 2 | 8 | 1 | 3 | 3 | 8 | 3 | 4 | 3 | 3 | 2 | 3 | 3 | | 16 | 18 | 8 | 8 | 9 | 24 | 12 | 6 | 9 |
| *Luhlokohlo* | 8 | 2 | 9 | 3 | 9 | 2 | 12 | 2 | 0 | 0 | 0 | 0 | 12 | 3 | 3 | 2 | 6 | 3 | | 16 | 27 | 18 | 24 | 0 | 0 | 36 | 6 | 18 |
| *Maguga* | 8 | 2 | 6 | 3 | 8 | 2 | 12 | 1 | 8 | 4 | 6 | 4 | 12 | 3 | 2 | 2 | 6 | 3 | | 16 | 18 | 16 | 12 | 32 | 24 | 36 | 4 | 18 |
| *Mahamba* | 8 | 2 | 4 | 3 | 6 | 1 | 12 | 1 | 6 | 4 | 8 | 4 | 8 | 3 | 2 | 2 | 3 | 3 | | 16 | 12 | 6 | 12 | 24 | 32 | 24 | 4 | 9 |
| *Mahlangatsha* | 4 | 2 | 6 | 3 | 2 | 1 | 9 | 1 | 8 | 4 | 12 | 3 | 4 | 3 | 2 | 2 | 3 | 3 | | 8 | 18 | 2 | 9 | 32 | 36 | 12 | 4 | 9 |
| *Mahuku* | 3 | 1 | 4 | 3 | 2 | 1 | 9 | 1 | 3 | 4 | 16 | 4 | 2 | 3 | 1 | 2 | 6 | 3 | | 3 | 12 | 2 | 9 | 12 | 64 | 6 | 2 | 18 |
| *Makhonjwa* | 6 | 2 | 6 | 3 | 6 | 1 | 9 | 1 | 3 | 4 | 6 | 4 | 3 | 3 | 2 | 2 | 3 | 3 | | 12 | 18 | 6 | 9 | 12 | 24 | 9 | 4 | 9 |
| *Mananga* | 3 | 2 | 9 | 3 | 6 | 1 | 9 | 1 | 6 | 4 | 0 | 0 | 3 | 3 | 2 | 1 | 3 | 3 | | 6 | 27 | 6 | 9 | 24 | 0 | 9 | 2 | 9 |
| *Manzimyame* | 3 | 2 | 6 | 3 | 2 | 1 | 9 | 1 | 6 | 3 | 8 | 4 | 3 | 3 | 2 | 3 | 3 | 3 | | 6 | 18 | 2 | 9 | 18 | 32 | 9 | 6 | 9 |
| *Matsapha vlei* | 6 | 4 | 6 | 2 | 4 | 1 | 6 | 1 | 8 | 4 | 6 | 3 | 6 | 3 | 12 | 2 | 9 | 3 | | 24 | 12 | 4 | 6 | 32 | 18 | 18 | 24 | 27 |
| *Mbuluzi* | 4 | 1 | 6 | 3 | 2 | 1 | 6 | 1 | 3 | 3 | 9 | 3 | 4 | 3 | 2 | 2 | 3 | 3 | | 4 | 18 | 2 | 6 | 9 | 27 | 12 | 4 | 9 |
| *Mdzimba* | 8 | 2 | 6 | 3 | 6 | 2 | 12 | 1 | 8 | 4 | 8 | 4 | 6 | 3 | 2 | 2 | 6 | 3 | | 16 | 18 | 12 | 12 | 32 | 32 | 18 | 4 | 18 |
| *Mhlumeni* | 8 | 1 | 6 | 3 | 4 | 2 | 12 | 1 | 6 | 3 | 6 | 3 | 4 | 3 | 2 | 2 | 3 | 3 | | 8 | 18 | 8 | 12 | 18 | 18 | 12 | 4 | 9 |
| *Mjoli* | 4 | 1 | 6 | 3 | 4 | 2 | 12 | 1 | 8 | 4 | 16 | 3 | 3 | 3 | 4 | 2 | 3 | 3 | | 4 | 18 | 8 | 12 | 32 | 48 | 9 | 8 | 9 |
| *Mkhondvo* | 6 | 2 | 6 | 3 | 4 | 2 | 12 | 1 | 8 | 4 | 6 | 3 | 6 | 3 | 2 | 2 | 6 | 3 | | 12 | 18 | 8 | 12 | 32 | 18 | 18 | 4 | 18 |
| *Mliba* | 8 | 2 | 9 | 3 | 9 | 2 | 12 | 2 | 6 | 3 | 0 | 0 | 12 | 3 | 3 | 2 | 6 | 3 | | 16 | 27 | 18 | 24 | 18 | 0 | 36 | 6 | 18 |
| *Muti muti* | 6 | 1 | 6 | 3 | 6 | 3 | 6 | 1 | 0 | 0 | 3 | 4 | 4 | 3 | 1 | 2 | 3 | 3 | | 6 | 18 | 18 | 6 | 0 | 12 | 12 | 2 | 9 |
| *Ndlotane* | 4 | 2 | 6 | 3 | 4 | 2 | 9 | 1 | 8 | 4 | 12 | 3 | 4 | 3 | 2 | 2 | 6 | 3 | | 8 | 18 | 8 | 9 | 32 | 36 | 12 | 4 | 18 |
| *Ndzeleni* | 12 | 2 | 6 | 3 | 6 | 2 | 12 | 1 | 9 | 4 | 8 | 4 | 6 | 3 | 2 | 2 | 9 | 3 | | 24 | 18 | 12 | 12 | 36 | 32 | 18 | 4 | 27 |
| *Ngudzeni* | 12 | 2 | 6 | 3 | 6 | 2 | 12 | 1 | 12 | 4 | 8 | 4 | 6 | 3 | 2 | 2 | 6 | 3 | | 24 | 18 | 12 | 12 | 48 | 32 | 18 | 4 | 18 |
| *Nisela* | 4 | 1 | 6 | 3 | 2 | 2 | 6 | 1 | 3 | 3 | 8 | 3 | 4 | 3 | 1 | 2 | 3 | 3 | | 4 | 18 | 4 | 6 | 9 | 24 | 12 | 2 | 9 |
| *Nkhalashane* | 4 | 1 | 9 | 3 | 4 | 2 | 8 | 1 | 6 | 3 | 6 | 3 | 4 | 3 | 2 | 2 | 3 | 3 | | 4 | 27 | 8 | 8 | 18 | 18 | 12 | 4 | 9 |
| *Nsongweni* | 6 | 2 | 6 | 3 | 4 | 2 | 9 | 1 | 8 | 4 | 4 | 3 | 6 | 3 | 2 | 2 | 3 | 3 | | 12 | 18 | 8 | 9 | 32 | 12 | 18 | 4 | 9 |
| *Ntungulu* | 8 | 2 | 6 | 3 | 6 | 2 | 12 | 1 | 8 | 4 | 8 | 4 | 6 | 3 | 2 | 2 | 6 | 3 | | 16 | 18 | 12 | 12 | 32 | 32 | 18 | 4 | 18 |
| *Nyonyane* | 3 | 2 | 6 | 3 | 4 | 1 | 9 | 1 | 8 | 4 | 8 | 4 | 3 | 3 | 2 | 2 | 3 | 3 | | 6 | 18 | 4 | 9 | 32 | 32 | 9 | 4 | 9 |
| *Panata* | 4 | 2 | 6 | 3 | 2 | 1 | 6 | 1 | 3 | 4 | 8 | 4 | 2 | 3 | 2 | 2 | 3 | 3 | | 8 | 18 | 2 | 6 | 12 | 32 | 6 | 4 | 9 |
| *Phophonyane* | 4 | 2 | 4 | 3 | 4 | 1 | 12 | 1 | 2 | 4 | 0 | 0 | 8 | 3 | 2 | 2 | 2 | 3 | | 8 | 12 | 4 | 12 | 8 | 0 | 24 | 4 | 6 |
| *Pongola* | 4 | 2 | 6 | 3 | 4 | 2 | 9 | 1 | 4 | 4 | 12 | 3 | 2 | 3 | 2 | 1 | 3 | 3 | | 8 | 18 | 8 | 9 | 16 | 36 | 6 | 2 | 9 |
| *Shewula* | 8 | 1 | 9 | 3 | 4 | 2 | 12 | 1 | 3 | 3 | 6 | 3 | 4 | 3 | 2 | 2 | 3 | 3 | | 8 | 27 | 8 | 12 | 9 | 18 | 12 | 4 | 9 |
| *Shonalanga* | 6 | 1 | 6 | 2 | 0 | 0 | 9 | 1 | 6 | 4 | 12 | 3 | 8 | 3 | 4 | 2 | 6 | 3 | | 6 | 12 | 0 | 9 | 24 | 36 | 24 | 8 | 18 |

| ***PWA*** | **1m** | **1p** | **2m** | **2p** | **3m** | **3p** | **4m** | **4p** | **5m** | **5p** | **6m** | **6p** | **7m** | **7p** | **8m** | **8p** | **9m** | **9p** | | **1d** | **2d** | **3d** | **4d** | **5d** | **6d** | **7d** | **8d** | **9d** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Sibebe* | 6 | 2 | 4 | 3 | 6 | 1 | 12 | 1 | 12 | 4 | 8 | 4 | 8 | 3 | 4 | 2 | 3 | 3 | | 12 | 12 | 6 | 12 | 48 | 32 | 24 | 8 | 9 |
| *Sinceni* | 6 | 1 | 6 | 3 | 4 | 2 | 8 | 1 | 12 | 3 | 6 | 3 | 4 | 3 | 2 | 2 | 6 | 3 | | 6 | 18 | 8 | 8 | 36 | 18 | 12 | 4 | 18 |
| *Sondeza* | 6 | 2 | 6 | 3 | 6 | 1 | 12 | 1 | 6 | 4 | 2 | 4 | 3 | 3 | 2 | 2 | 3 | 3 | | 12 | 18 | 6 | 12 | 24 | 8 | 9 | 4 | 9 |
| *Tulwane* | 6 | 2 | 6 | 3 | 9 | 3 | 9 | 1 | 8 | 4 | 8 | 4 | 6 | 3 | 4 | 2 | 6 | 3 | | 12 | 18 | 27 | 9 | 32 | 32 | 18 | 8 | 18 |
| *Usutu gorge* | 3 | 2 | 6 | 3 | 2 | 1 | 9 | 1 | 6 | 3 | 6 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | | 6 | 18 | 2 | 9 | 18 | 24 | 9 | 9 | 9 |

**Appendix 5**

*Awareness and participation campaign*

**Prepared by: Stephanie Login** with assistance from **Kim Roques** & **Dzelisa Dlamini**

GOALS AND ACHIEVEMENTS

The first stage of the project-wide awareness campaign began mid March and was completed mid May. The major goals of the campaign were to:

- Establish initial contact and create awareness with landowners and land managers.
- Establish initial contact and create awareness with Government Agencies.
- Establish initial contact and create awareness with Interested and Affected Parties (eg. businesses, NGO's, general public, etc).

These goals were achieved through a series of outputs including: radio shows, newspaper articles, a workshop, phone calls and direct mailings. According to the contract, all activities were completed (with the exception of the publication of the first newsletter and the first workshop, which was cancelled by SNTC. Due to overtime on the project, the newsletter will not be completed under this contract). Activities and outputs were generally on time, according to the original contract schedule, and any delays were due to minor logistical obstacles.

The campaign has been a success. We received positive feedback from community members on the scope of the newspaper articles, and a local school, Sifundzane Primary, became interested in biodiversity conservation and requested follow-up lectures. Landowners and stakeholders responded positively to the direct mailings with questions, support and general feedback (in the form of returned questionnaires, phone calls and letters).

The first workshop, which was cancelled, rescheduled, and cancelled again (under the direction of SNTC) resulted, unfortunately, in a loss of credibility for the entire campaign. The workshop was intended to introduce landowners to A) each-other, B) the project and C) ideas about categorization/cooperative management. It was supposed to act as a foundation for the second workshop, during which, results of the preliminary PWA surveys would be presented, and participants would actively work on tentative PWA categorization. We received feedback from many project participants who were frustrated and disillusioned by the cancellation. While SNTC is clearly supporting the project, this last minute intervention caused many potential project supporters to question the authenticity and sincerity of the project's goals, as well as the overall efficiency of all project work to be conducted in the future. Due to time restrictions, the second workshop was not able to cover all of the information from the first workshop. Therefore, it is recommended that landowners be contacted

again with information pertaining to benefits /obstacles to proclamation and the process involved.

The awareness campaign will continue, though its primary direction will now turn toward community awareness. With the help and input of NEEP staff and PWA stakeholders, a community awareness campaign has been outlined (see Local Community Awareness Plan below).

## PROJECT FEEDBACK

Thus far, we have received the following important feedback:

### *PERCEIVED BENEFITS FROM PWA PROJECT*

ASSISTANCE (educational/financial/logistical/legal)
Assistance with alien plant control and poaching
Assistance in identifying native vegetation to plant
Assistance with fencing and road building
Assistance against fires, poaching and illegal settlement

ECOLOGICAL
Safeguarding surroundings
Increasing current conservation areas (number and size)
Effective protection of ("at risk") plants and animals

MANAGEMENT
Closer cooperation and support between PWA Project (landowners and stakeholders) and SNTC, relevant Ministries and tourism affiliates
Partnership between the BCPD/PWA Projects and international projects
Security of ownership and protection from sabotage (eg. veld fires)

SOCIAL AND ECONOMIC
Increased tourism and associated benefits
Zoning for eco-tourism development with incentives for community participation
Infrastructural improvement around PWA sites
Biodiversity conservation capacity building
Reduced unemployment from commercial ventures

### *CONCERNS AND PERCEIVED NEGATIVE IMPACTS FROM PWA PROJECT*

LOSS OF CONTROL OVER FUTURE LAND-USE PLANNING AND MANAGMENT
Farming ventures
Housing
Too restrictive legislation (freedom of activities)

INEFFECTIVE SUPPORT
Ineffective law enforcement (regarding poaching, illegal settlement, etc.)

Ineffective cooperation between governing bodies (regarding poaching, illegal settlement, etc.)

SUSTAINABILITY
Long-term project success if managed by landowners (versus NGO or Government)

PRIVACY
Cooperative management/legal conservation status could mean loss of privacy

Potential Socio-Economic and Conservation Plans

ECOLOGICAL
Alien plant control
Preservation of indigenous forest, plants and animals
Native game re-introduction

COMMERCIAL
Motel
Flower gardens
Dairy cow, chicken, piggery projects
Beekeeping
Orchards
Tourist lodges

SOCIAL
Pooling land with neighboring landowners
Private retreats (for landowners)

## OUTPUTS

The following lists detail the exact dates of the various campaign outputs.

RADIO SHOWS:
The radio shows closely followed the information in the newspaper articles. Due to time restrictions, less information was conveyed in each slot, therefore the information was continually released more slowly, and as a result, after the articles. Each radio slot was run twice/week and began the first week of April.

NEWSPAPER ARTICLES:
1- 20 March, What Is Biodiversity Conservation? (Times)
2- 27 March, Biodiversity: Why Should I Conserve Nature's Variety? (Times)
3- 28 March, Nature Conservation, What Is Biodiversity Conservation? (Observer)
4- 3 April, Swaziland and Biodiversity Conservation (Times)
5- 4 April, Nature Conservation, Swaziland and Biodiversity Conservation (Observer)
6- 10 April, SD's PWA Project: Proclaiming Land for Conservation (Times)
7- 12 April, Nature Conservation: Proclaiming Land for Conservation (Observer)
8- 17 April, Proclaiming Biodiversity Conservation Areas:

The (PWA) Project (Times)
9- 18 April, Nature Conservation: Proclaiming Biodiversity Conservation Areas (Observer)
10- 24 April, Protection Worthy Area (PWA) Highlights: Ntungulu and Nyonyane (Times)
11- 25 April, Nature Conservation: Protection Worthy Area (PWA) Highlights: Ntungulu and Nyonyane (Observer)
12- 1 May, Protection Worthy Area (PWA) Highlights:
Mdzimba And Manzimnyame (Times)
13- 2 May, Nature Conservation: Protection Worthy Area (PWA) Highlights:
Mdzimba And Manzimnyame(Observer)
14- 8 May, The Protection Worthy Areas Project....
Looking Ahead: Biodiversity Conservation Today And Tomorrow
(Times)
15- 9 May, Nature Conservation: The Protection Worthy Areas Project....
Looking Ahead: Biodiversity Conservation Today And Tomorrow (Observer)

COMPETITIONS & PRIZES
1- What is Biodiversity Conservation in SiSwati? (weekend for 2 at Hlane)
2- What is Biodiversity Conservation in SiSwati? (student prize: guided hike and sleepover in Bushman cave in Mlilwane)
3- Describe, in detail, how Swaziland can benefit economically, socially and environmentally from biodiversity conservation? (weekend for 2 at Nisela, honeymoon suite, includes dinner, bed and breakfast)
4- Come up with 3 great ideas about HOW to conserve biodiversity in Swaziland. (free weekend for 2 at the Shewula community's stunning Mountain Camp)
5- Identify 3 obstacles to biodiversity conservation, KONGA IMPHILO NGEKWEHLUKANA KWAYO, in Swaziland and come up with solutions for each. (free white water rafting trip for 2 people on the Great Usutu River with Swazi Trails, valued at E840.00!)

CONTACT WITH LANDOWNERS:
1- Early March, Introductory Flier Sent, Project Briefing
2- Late March, Project Details, Workshop 1&2 Invitations and Questionnaire
3- Mid April, Workshop Reminder

CONTACT WITH INTERESTED AND AFFECTED PARTIES (IAPS)
1- Early March, Introductory Flier Sent, Project Briefing
2- Early April, Project Details, Workshop 2 Invitation and Questionnaire

WORKSHOPS
1- 23 April CANCELLED, Landowners: What Does Proclamation Mean For Me?
2- 16 May, Landowners and IAPs: Results of PWA Preliminary Surveys

NEWSLETTER IDEAS
(July 2002, October 2002, January 2003, April 2003)

1- Results of Preliminary PWA Surveys: Highlights and Priorities
2- UN Conservation Categories Outlined, Activities and Restrictions

Described
3- Current Conservation Ideas (Ecosystem v/s Species Conservation)
4- Global "Hotspots"- A South African Success Story: Southern Cape Conservation
5- Current Ideas on Conservation Law Enforcement (local "deputies", squatters, poaching, etc)
6- Community Support (Interviews with SNTC, NEEP, MTEC, Yonge Nawe, School Groups)
7- A Voice From the Past: Views on Conservation (interview an older, rural Swazi man or woman)

LOCAL COMMUNITY AWARENESS PLAN

1. With the help of Sandile Gumedze, identify all affected and interested local communities, Chiefs and Tikhundlas (refer to Landowner Contact Details listed below).

2. Prepare a project briefing and interview form in siSwati. Previously produced project briefings and comment forms for stakeholders can be used as a guideline. Highlight socio-economic benefits from proclamation.

3. Make preliminary contact, in person, with all Chiefs and Tikhundlas. Deliver project briefings in siSwati. Conduct interviews.

4. Organize and facilitate community meetings for all interested and affected communities. Invite Chiefs and Tikhundlas to co-facilitate.

5. Conduct further interviews to gather feedback.

6. If appropriate, organize follow-up meetings.

7. Facilitate communication (meetings, workshops, letters, etc.) between local community leaders (Chiefs and Indvunas) and local PWA site landowners.

8. Organize quarterly visits by PWA Project staff to visit local community leaders and local communities with project updates. Prepare and distribute pamphlets in siSwati detaling progress.

9. Organize and facilitate local school workshops/talks to involve children in the project. Children will then communicate project details to families.

10. Create a forum for receiving/giving feedback from/to communities (a closed box for comments to be picked up 1/month with replies delivered, in writing, in siSwati)

LANDOWNER AND STAKEHOLDER CONTACT DETAILS

The following landowners and targeted stakeholders were identified. Landowners' contact details are included by PWA area, and stakeholders are listed by name only (a bulk email list is included below). This list is current as of April 2002, and should be cross-referenced with Mr. K. Roques' list of PWA contact details (spreadsheet format):

**Table: A5.1 PWA stakeholders with contact details**

| Stakeholder Group | Institution | Name | Email | Tel | Fax | Cell | Postal |
|---|---|---|---|---|---|---|---|
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| | Rose Roques | **Mhlumeni** | Ben Way | | Richard and Shela Freemantle |
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