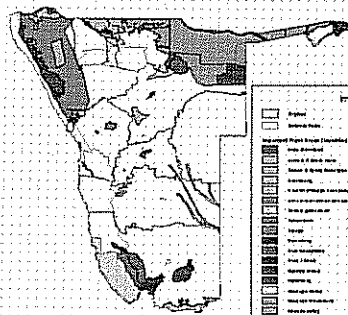
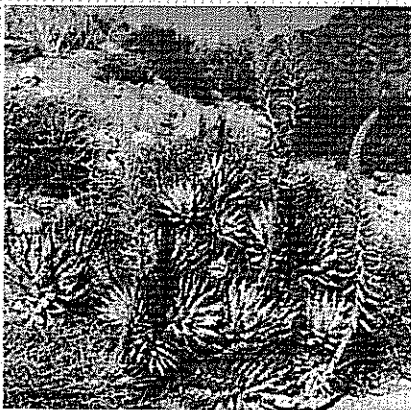
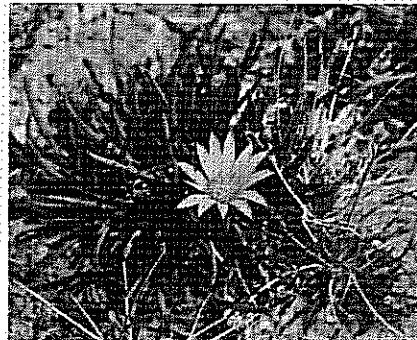


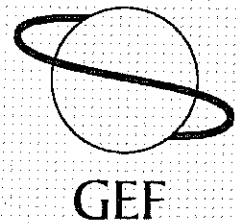
# Proceedings of the Important Plant Areas Workshop



Important Plant Areas	
[Symbol]	World Heritage Site
[Symbol]	National Park
[Symbol]	Wildlife Reserve
[Symbol]	Conservation Area
[Symbol]	Important Plant Area (Designated)
[Symbol]	Important Plant Area (Proposed)
[Symbol]	Important Plant Area (Under Consideration)
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[Symbol]	Important Plant Area (Not Not Not Not Under Consideration)



Windhoek,  
1 - 2 December 2004



## **Acknowledgements**

The National Botanical Research Institute (NBRI) gratefully acknowledges the following for their generous support:

This workshop was an activity planned under the Southern African Botanical Diversity Network (SABONET) Project, which is funded by the Global Environment Facility (GEF), through the United Nations Development Programme (UNDP).

The Southern African National Biodiversity Institute (SANBI) kindly provided two excellent facilitators in the form of Dr. Tamara Smith, the Bioregional Projects Officer, and Dr. Phoebe Barnard, from the Global Invasive Species Programme (GISP).

Dr. Tony Cunningham from People and Plants International agreed to be the third facilitator, and many thanks are due to him for his inputs and expertise.

The presenters provided informative background information on various relevant topics that successfully guided the workshop process, and participants contributed their time and expertise, and actively participated at the workshop to produce a successful outcome.

Esmeralda Klaassen printed out maps and Sonja Schubert transported participants to and from the airport.

The Government of the Republic of Namibia continually supports the activities of the NBRI and related conservation activities of the Ministry of Environment and Tourism (MET).

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Citation: Hofmeyr, W. (ed.) 2004. Proceedings of the Important Plant Areas Workshop. National Botanical Research Institute, Windhoek, Namibia (unpublished report).

## **Abbreviations and Acronyms**

BSSA	Botanical Society of South Africa
CBD	Convention on Biological Diversity
CoP	Conference of Parties
FAO	Food and Agriculture Organisation
GEF	Global Environment Facility
GISP	Global Invasive Species Programme
GSPC	Global Strategy for Plant Conservation
IBA	Important Bird Areas
IBA	Important Bird Areas
IPA	Important Plant Area
IPGRI	International Plant Genetic Resources Institute
IUCN	International Union for the Conservation of Nature
MAWRD	Ministry of Agriculture, Water and Rural Development
MET	Ministry of Environment and Tourism
NBRI	National Botanical Research Institute
NEPAD	New Economic Plan for Africa's Development
QDS	quarter-degree square
RDL	Red Data List
SABONET	Southern African Biodiversity Network
UNDP	United Nations Development Programme
WIND	National Herbarium of Namibia

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## **Namibian Important Plant Areas Workshop**

**Windhoek, 1 – 2 December 2004**

### **Day 1, Session 1**

#### **1 Opening and welcome**

**Gillian Maggs-Kölling (NBRI)**

The Head of the National Botanical Research Institute (NBRI), Dr Gillian Maggs-Kölling, welcomed all participants to the workshop and thanked them for their willingness to contribute. She indicated that the Important Plant Areas (IPA) initiative is effectively the final chapter of the Southern African Biodiversity Network (SABONET) project which, when conceptualised a decade ago, was ahead of its time in its vision and methodology. SABONET is funded by the Global Environment Facility (GEF) via the United Nations Development Programme (UNDP). It has been responsible for training personnel and equipping herbaria across the region, and for numerous laudable outputs and activities that have translated into tangible benefits on the ground. The IPA initiative is the last in this line of outputs.

#### **2 Introduction to the IPA process and objectives**

**Summary of presentation by Tamara Smith (SABONET)**

The Global Strategy for Plant Conservation (GSPC) was adopted in April 2002 at the 6th meeting of the Conference of Parties (CoP) to the Convention on Biological Diversity (CBD), with its ultimate objective being to “halt the current and continuing loss of plant diversity”.

The five elements of the GSPC are:

- understanding and documenting plant diversity;
- conserving plant diversity;
- using plant diversity sustainably;
- promoting education and awareness about plant diversity; and
- building capacity for the conservation of plant diversity.

To achieve these elements there are 16 outcome-based targets to be met by 2010. SABONET, which is a capacity-building project, was initiated before the GSPC but has contributed to and provided a starting point for achieving eight of these targets:

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- Target 1: Compiling of a widely accessible working list of known plant species. The publication of national checklists, computerisation of 455 000 specimens and collecting trips in the SABONET region have contributed to this target.
- Target 2: Making a preliminary assessment of the conservation status of all known plants, at national, regional and international levels (Red Data Lists). The updated Namibian Red Data List will soon be available.
- Target 3: Developing models with protocols for plant conservation and sustainable use, based on research and practical experience.
- Target 5: Assuring the protection of 50% of the most important areas of plant diversity.
- Target 8: Placing 60% of threatened plant species in accessible *ex situ* collections, preferably in the country of origin, with 10% of them being included in recovery and restoration programmes.
- Target 14: Raising public awareness of the importance of plant diversity and incorporating the need for plant diversity conservation in educational programmes.
- Target 15: Increasing the number of people working in plant conservation facilities, which has been achieved through workshops, internships and studentships.
- Target 16: Establishing and strengthening networks for plant conservation activities, including the publication of the SABONET News and support for conferences and workshops.

In eastern and central Europe, IPAs have been employed as a means to address Target 5. The CBD has nominated Plantlife International and the International Union for the Conservation of Nature (IUCN) as lead organisations for Target 5.

IPAs are defined as natural and semi-natural areas of botanical diversity and/or areas that support outstanding assemblages of rare, threatened and/or endemic plant species and/or vegetation of high botanical value. Essentially, they are the most important areas for wild plant diversity that can be protected and managed as specific sites. (For the purposes of IPAs, "wild plants" include vascular plants, bryophytes, algae, fungi and lichens.)

Although many IPAs will fall into existing protected areas, many will not, and management plans should be drawn up for these IPAs. Where possible, private land purchases should be considered, and cooperation with landowners and other stakeholders should be engendered.

The IPA model has been based on the Important Bird Areas (IBA) model, as this has proven to be effective. The IPA criteria were developed internationally and include threatened species, botanical richness and threatened habitats. Rather than simply being adopted wholesale for southern Africa, the European IPA criteria have been adapted to suit botanical conditions in southern Africa.

The IPA process involves two phases, namely 1) identification, and 2) implementation. Identification involves the development of regional criteria; the establishment of IPA national teams; data collection and collation; fieldwork; IPA database and data analysis; and the publication of an IPA list with site descriptions. Implementation involves gaining recognition under existing protected area mechanisms; encouraging the development of incentive schemes; promoting the sustainable use of plant resources; undertaking immediate conservation action (management); and involving local inhabitants and stakeholders.

Regarding identification, it should be borne in mind that it is not possible to immediately conserve all areas that fall within the ambit of one or more of the criteria, and that potential IPA sites will have to be prioritised. The workshop should aim to identify IPA sites, subject to the understanding that whatever list of IPA sites is drawn up will only be a provisional list, and will be subject to subsequent review. For actual implementation, use should as far as possible be made of existing conservation mechanisms.

The SABONET IPA workshop held in Pretoria in May 2004 focussed on plant data resources in southern Africa, and on the identification of IPAs and their use for conservation purposes. Workshop participants gained insight into the nature of IPAs, their potential to assist in the conservation of plant species and habitats, and their limitations, and formulated a draft set of criteria for the identification of IPAs.

In southern Africa, which has greater species diversity but less comprehensive baseline data on species than is the case in Europe, three SABONET countries – Mozambique, South Africa and Namibia – are participating in the IPA programme. In Mozambique, the “expert opinion” route was chosen to select 28 IPA sites. In South Africa, 90 potential IPA regions have been identified on the basis of the herbarium database (PRECIS), and these sites will be scrutinised by experts with a view to a final identification of sites.

IPAs can be located on private, public or communal land. Ideally, there should be a complementarity of sites rather than a multitude of sites that contain essentially similar species and habitats. More will be achieved by managing a smaller number of sites that have high biodiversity value, than many sites each with relatively low biodiversity value. Given that economic activities will continue on many IPA sites,



management plans should focus on sustainable utilisation of resources. There is no fixed size or number of IPAs - what is important is that sufficient national coverage is obtained, and that management of identified IPAs is feasible. The delimitation of IPA sites should be done on a case-by-case basis, using available physical features such as roads, rivers and mountain ranges, or range boundaries of vegetation types.

In conclusion, IPAs provide a framework for governments to achieve Target 5 of the GSPC, and can help to support and strengthen existing conservation initiatives. Workshop participants should identify priority sites for plant conservation that collectively include the largest possible plant diversity, paying special attention to rare, threatened and endemic species. It should, however, be borne in mind that while it is relatively easy to identify IPA sites, the real challenge will lie in subsequently protecting the selected sites.

### **Discussion**

The point was made, and accepted, that while ideally only sustainable land-use practices occur in IPAs, there is all the more need for IPA status in areas where land-use practices are not sustainable.

## **3 Overview of the Red List**

### **Summary of presentation by Sonja Loots (NBRI)**

Namibia's Plant Red List primarily addresses Target 2) of the GSPC (a preliminary assessment of the conservation status of all known plants, at national, regional and international levels) and is also pertinent to Targets 7) and 8).

Initially, 1 272 species were assessed against the 1994 IUCN Red List criteria, and published in the Southern African Plant Red Data Lists (Golding 2002). This gave little more than species' names and an indication of their conservation status. Approximately 280 threatened species were re-assessed against the 2001 criteria, but the regional Red List authority was not satisfied with the assessment. The assessments were revisited, and reduced to 23 threatened species, 38 near-threatened species and 96 rare species. For 360 species, insufficient data are available for assessment against the IUCN criteria. A Red Data List which gives more detail (with descriptions, distribution maps, habitat notes, threats and photos where available) is currently in press. Aloes and lithops feature prominently amongst the threatened species. Of the threatened species, more than half are in the family Mesembryanthemaceae.

The threatened species are the following:

<b>Species</b>	<b>Status</b>
<i>Aloe erinacea</i>	EN B2ab(v)
<i>Aloe pillansii</i>	EN C1
<i>Eriospermum halenbergense</i>	VU D2
<i>Hessea bruce-bayeri</i>	VU B1ab (ii, iii)
<i>Euphorbia leistneri</i>	VU D2
<i>Antimima eendornensis</i>	VU D2
<i>Conophytum halenbergense</i>	VU D2
<i>Juttadinteria albata</i>	CR B2ab(ii, iii, v)
<i>Juttadinteria kovisimontana</i>	VU D2
<i>Lithops pseudotruncatella</i> subsp. <i>groendrayensis</i>	VU D2
<i>Lithops dinteri</i> subsp. <i>multipunctata</i>	VU D2
<i>Lithops francisci</i>	VU D2
<i>Lithops pseudotruncatella</i> subsp. <i>archerae</i>	VU D2
<i>Lithops pseudotruncatella</i> subsp. <i>volkii</i>	VU D2
<i>Lithops schwantesii</i> subsp. <i>gebseri</i>	VU D2
<i>Lithops wernerii</i>	VU D2
<i>Lithops hermetica</i>	VU D2
<i>Ruschianthus falcatus</i>	VU D2
<i>Schwantesia constanceae</i>	VU D2
<i>Lobelia hereroensis</i>	VU B1ab (iii) c (iv)
<i>Plectranthus unguentarius</i>	VU D2
<i>Stapeliopsis neronis</i>	VU D2
<i>Gazania thermalis</i>	CR B2 ab (ii, iii)

An example of a Critically Endangered species is *Gazania thermalis*. In the absence of legislation conferring protection, its survival will be dependent on the voluntary cooperation of individuals, for example farmers on whose land the remaining populations occur.

It is important that IPAs cover all 23 threatened species; it might be necessary to prioritise the near-threatened species and to cover those deemed to be most at risk in IPAs.

#### **4 Overview of available vegetation data from the Vegetation Survey of Namibia**

##### **Summary of presentation by Ben Strohbach**

The aim of the Vegetation Survey is to update the Giess vegetation map<sup>1</sup> and to improve other vegetation maps. Accurate descriptions of the distribution of vegetation types should provide a set of baseline data that can in future be referenced to monitor changes occurring as a result of processes such as desertification and bush encroachment.

The survey employs the Braun-Blanquet methodology: all species present on 1000m<sup>2</sup> survey sites are recorded; where unknown species are encountered, samples are removed for later identification in the National Herbarium. Estimates are made of the numbers of each species, and the typical growth form is also noted. The location and habitat of the sites are recorded.

The surveyed sites, referred to as *relevés*, are databased and classified using numerical classification techniques and manual table analysis. Each *relevé* is assigned a ground truth point for remote sensing purposes. To date, 3 106 *relevés* with their corresponding longitudes and latitudes have been databased. (The data from other sites surveyed prior to the availability of GPS mapping are also available, although the location of these sites is necessarily less accurately determined.)

Although some areas have not yet been thoroughly mapped, regional vegetation maps are being developed. An example of a regional vegetation map is that for the eastern communal areas (former Hereroland); an example of a local vegetation map is that for the Auas-Oanob Conservancy; examples of species distribution maps are those for *Combretum apiculatum*, *Gladiolus permeabilis* subsp. *edulis*, *Leucosphaera bainesii*, *Polygala pallida*, *Harpagophytum procumbens* and *H. zeyheri*.

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<sup>1</sup> Giess, W. 1998. A preliminary vegetation map of Namibia. *Dinteria* 4 (3<sup>rd</sup> revised edn.).

## **5 Herbarium specimen database**

### **Summary of presentation by Esmeralda Klaassen (NBRI)**

Since digital encoding of the collection began in 1997, 135 999 records have been entered, including 55 609 records repatriated from the National Herbarium, Pretoria, South Africa. A problem encountered in the past was that quality control was not always adequate, but efforts at remedying this situation are ongoing.

The National Herbarium of Namibia (WIND) policy regarding access to the database is in line with that of the Ministry of Agriculture, Water and Rural Development (MAWRD). Requests for information should be accompanied by an indication of the purposes for which the information is required, and agreement to recognise WIND in any resultant outputs. In order to protect vested interests, sensitive information is not divulged. Parties who are provided with information are also requested to provide feedback on how useful the information has proven to be. Applications should be made two to three weeks in advance. As manpower remains in short supply, it is necessary to prioritise requests. Failure to comply with the conditions laid down by WIND results in denial of assistance in the future.

The database includes a species list that can deliver information per region, per grid, or per family/genus/species, and a queries database. An integrated taxonomic database that orders information in terms of categories such as common name, distribution, Red Data List (RDL) status, uses, ecology, horticulture, germplasm availability, related literature etc. is currently under development.

Outputs of the database have included checklists, papers in scientific publications, environmental impact assessment reports and regional environmental assessments.

Constraints experienced include a shortage of dedicated staff, the poor quality of some of the data, and the fact that not all of the staff in place have received adequate training.

WIND plans in the future to hold open days, to facilitate internet access to the database, and to complete the integrated taxonomic database.

### **Discussion**

Assurance was given that the implication of there being "a shortage of dedicated staff" is not that some staff lack dedication; "dedicated", in this context, should be understood to mean "assigned to the database project".

Divergent opinions were expressed regarding the question of access to the database. On the one hand, it was argued that since the database is ultimately funded by the taxpayer, the information contained therein should fall within the public domain. On the other hand, it was pointed out that in other contexts, state (taxpayer) funding of projects does not guarantee open access to the projects' outputs. In the case of the herbarium specimen database, information could, for example, have potential economic value, and WIND therefore has a fiduciary responsibility to protect the interests of stakeholders.

## **6 The Namibian Tree Atlas project database**

### **Summary of presentation by Barbara Curtis**

The Namibian Tree Atlas project commenced seven years ago, and will be published in the near future. Throughout, the project has enjoyed excellent cooperation from professionals and amateurs alike. The Namibian Tree Atlas documents 380 large woody species (in excess of 1 metre in height). However, not all of the tree species on the Red Data List have been included.

Distribution maps employ the quarter-degree square (QDS) system, which translates into blocks of approximately 27 km X 27 km. Where available, GPS references have been used, but use has also been made of verbal descriptions of localities. The abundance of species in given localities has been assessed on the basis of the informed "gut feel" of informants, who have also provided descriptions of growth forms (e.g. tree, shrub) and indicated whether species were flowering or fruiting when surveyed. Most of the species entries in the Namibian Tree Atlas include a distribution map, a habitat description and an indication of seasonal variation.

The data are to be made widely available, and species lists have been supplied to the regions. Information that could be relevant to IPAs includes the number of taxa per QDS. This appears to be relatively low in the south, where fewer than 50 taxa were recorded per QDS, and highest in the eastern Caprivi and Impalila Island, along the Kavango River, in Kunene Region, particularly in the Baynes Mountains, and in the Otavi mountains.

The intensity of specimen collection plays a role in the assessment of species density. In the past, more species were recorded in the Windhoek area, for the simple reason that the majority of botanists, both amateur and professional, are based there. This skewing of data has subsequently been redressed by more methodical countrywide surveying initiatives.

Endemic species occur mainly along the western and north-western escarpment, and in the Naukluft area. There are no endemic species in the north-east, as this part of the country is, in botanical terms, effectively a corridor that extends into the broader habitat of central southern Africa.

## **Discussion**

For the purposes of the Namibian Tree Atlas, habitats were defined in terms of topographical features, for example rivers, plateaus, hilltops and sand dunes.

## **7 General discussion and questions**

An issue of relevance to initiatives that involve data processing (e.g. the overview of available vegetation data, the herbarium specimen database and the Namibian Tree Atlas) is, when putting together the various data sources, how best to aggregate data so as to improve the predictiveness of information that is derived. In Queensland, Australia, for example, the BIOCLIM model, which collates rainfall and topography, is proving to be useful. On the other hand, however, it should be borne in mind that Queensland is a relatively high rainfall area, whereas Namibia is predominantly arid. A model that works in one context won't necessarily be relevant in other contexts.

A drawback of the QDS system is that it is quite rough, in the sense that the size of units of analysis (over 700 km<sup>2</sup>) makes it difficult to observe vegetation patterns. In order to render the data more complex and fine-grained, attempts are being made to combine data sets. One problem is that there is variability in the extent and nature of knowledge of vegetation resources. In managing data with a view to obtaining a more complete picture, it is necessary to go beyond objectively proven facts and to enter the realm of possibility and likelihood, for example by working on the assumption that a given species *may* occur in a given locality, rather than that it has actually been recorded there.

For the purposes of state protection of forested areas, these areas must first be defined. The Directorate of Forestry finds this to be problematic in the face of a high degree of habitat diversity. There is a need for an integrated national overview of species and habitats, involving formally trained experts and local communities, and the IPA initiative could be helpful in this regard. The National Forest Inventory project is ongoing, and has provided information that is incorporated in the Namibian Tree Atlas.

## **8 Centres of endemism and diversity in Namibia**

### **Summary of presentation by Patricia Craven**

Centres of endemism and diversity in Namibia relate to Criterion B (botanical richness) for the identification of IPAs. Species diversity is a measure of the total number of species present in a given area. The starting point for ascertaining diversity levels was to estimate the number of species per QDS, and to translate this information into a diversity map. The species numbers are only estimates, and cannot be taken to be entirely accurate for any particular region. The study concluded that species diversity in Namibia is associated with areas where one vegetation type shifts to another; where summer rainfall species overlap with winter rainfall species; with an increase in altitude; and with mist along the coastal desert. It is furthermore influenced by the underlying substrate and soil overlay in particular areas.

Endemism was initially defined in terms of political boundaries. This can be problematical: from Angola, for example, there is little information available that may confirm the presence of species that occur in north-western Namibia. A measure was also made of the number of endemic species found per QDS to identify centres of endemism. These tend to occur on mountains, in the hot desert, where there is a diversity of substrates, and in microclimates.

There are two approaches to establishing centres of high endemism and high diversity: firstly, overall diversity is superimposed onto overall endemism; and secondly, congruent distribution patterns for endemic species are established.

Although there is often a correspondence between the extent of diversity and the number of endemics in given localities, the count is based solely on the number of species and the number of endemics, and widespread species are accorded the same numerical significance as other important species. Areas of richness cannot be distinguished by a particular combination of species or endemics, and associated floral elements can also not be identified. The data can provide additional information, but its value for conservation purposes is limited – mapping centres of plant endemism and diversity for conservation or management purposes is of greater value.

Newly described species are usually endemics, and the total number of Namibian endemics (using political boundaries) is in excess of 600. (A phytogeographic standard would result in a far higher number of endemics.)

The determination of natural rich floristic areas and centres of endemism is being carried out with the aid of programmes such as Turboveg. An

example of such a numerical analysis was given for north-western Namibia / south-western Angola and suggestions made on how this could help identify IPAs.

Consideration should be given to the issues of the sizes of IPAs, and their numbers and ranges. Ideally, complementarity between IPAs should be attained, so that the widest possible range of species is covered by the various IPAs. Potential sites will have to be prioritised, with due regard given to threats to plant species and the benefits that local communities derive from species. Taxonomic considerations and the status of other biota should also be borne in mind.

A proposed "Orange List" aims to provide a safety net for biodiversity in South Africa by recognising species which are at risk of becoming threatened, but which do not meet the IUCN criteria for threatened categories. A proposal is made for a systematic method for assessing the rarity of plant taxa in South Africa, and for determining which plants used for medicinal, horticultural or other purposes should be listed on the Orange List. Workshop participants and other stakeholders might consider a similar approach in Namibia.

An IPA is defined as a natural site with exceptional botanical richness and/or outstanding rare, threatened and/or endemic species, and/or vegetation of high botanic value. The three proposed criteria used to identify IPAs relate to A) threatened species; B) botanical richness; and C) threatened habitats. Regarding C) (threatened habitats), it should be noted that a European-style hierarchical analysis is totally inappropriate for Namibia. The factors promoting diversity and endemism in Namibia – microclimates and microhabitats – differ from more mesic areas, where factors such as rainfall are dominant. The question arises whether habitat should be considered independently of vegetation.

Namibia is rich in endemics and large areas have limited plant communities. Biotopes such as "gravel plains", "washes" and "inselbergs" might be more appropriate than broad vegetation descriptions such as "savannah".

By way of summary, Namibia has about 4 000 indigenous species, about 600 of which are endemic taxa confined within the political borders. There are many more endemics shared with south-western Angola and the northern Cape. A study of endemism is sensitive to species names and collection sites.



## **9 Management and financing options for IPAs**

**Summary of presentation by Phoebe Barnard (GISP, SANBI),  
jointly prepared with Mark Botha (BSSA)**

At the outset it is necessary to sound a cautionary note: it is one thing to declare certain areas to be IPAs, but altogether another to determine how to manage and protect them in the future.

The presentation deals with four topics:

- Why establish protected areas and IPAs?
- Management issues for IPAs
- Legal and policy issues
- Financing mechanisms

It will be important to recognise that IPAs cannot be regarded as isolated and static: they will occur in “living landscapes”, and the challenge will be to safeguard ecosystem patterns and processes.

We need to look ahead to the probable social and environmental realities of Namibia in the immediate and more distant future. It is quite conceivable that by 2030, Namibia’s population will number in excess of 3.5 million. The social demography of the country will have been substantially altered by land reform and economic transition in agriculture. Mounting pressure for land and economic opportunities will result in people having access to areas that are currently “off limits”.

The Millennium Ecosystem Assessment’s southern African study concluded that with low educational levels and widespread poverty, overall food security will diminish, while at the same time the use of fertilisers will increase. North of the Zambezi River, water availability should not be a problem, but to the south, water will be increasingly scarce. Given that all major southern African river basins are shared, international cooperation will be imperative. Fuelwood supplies are currently adequate, but the negative trends in this regard do not allow for complacency, and the resource should be seen as being vulnerable. Almost 90% of the region is still covered by natural vegetation, and approximately 15% is protected. While plant populations are relatively sound, over-utilisation of resources in non-protected areas constitutes a serious threat to biodiversity and ecosystem integrity.

Protection of plant species and habitats has a political dimension. Unless specific attention is paid to ecosystem management services, at least half of the Millennium Development Goals will not be met, and the New Economic Plan for Africa’s Development (NEPAD) initiative will substantially have failed.

Imminent climate change also poses a serious threat, as southern Africa, where in all likelihood the climate will become hotter and drier, is adjudged to be highly vulnerable. The impact of climate change on plants cannot easily be predicted, but it is likely that invasive alien species will thrive, particularly if effective fire management systems are not put in place.

The goal of protected areas, and IPAs in particular, will be to maximise the persistence of threatened and endemic species over time, and in as many areas as possible. This will require effective management, an enabling legal and policy framework that rewards responsible actions and penalises counterproductive ones, and a clear financing strategy, all tailored to meet the challenges posed by specific sites. For example, different actions will be required to respond to threats posed by illegal harvesting, by the loss of pollinators, by inappropriate fire regimes and by bush encroachment.

In the absence of active threats, passive management relying on a regulatory framework of laws, policies and tenure status is a viable option, and is relatively inexpensive from the landholder's point of view. Active management (for example measures to counteract bush encroachment) can be extremely costly for the landholder, and would require incentives such as tax breaks and subsidies.

The sizes (and number) of IPAs should also be given consideration. While it is not feasible to take a "one-size-fits-all" approach, care should be taken to avoid creating too many small IPAs, as monitoring their management would be problematical. All other things being equal, species in smaller IPAs are also likely to be more at risk of extinction. Rather than focussing on individual species, management should focus on ecological process and pattern, integrating IPAs into "living landscape" planning that takes account of factors such as pollinators and dispersers, catchment processes and ecological potential.

The legislative and policy framework in Namibia is, at least on paper, significantly better developed than in other southern African countries. Pertinent legislation and policies are:

- the Environmental Protection and Assessment Bill;
- the Parks and Wildlife Bill;
- the Draft Access to Genetic Resources and Related Traditional Knowledge Bill;
- the Environmental Investment Fund Act;
- the Communal and Commercial Lands Acts;
- the Conservancies Amendment to NCO 4 of 1975;
- the Biodiversity Strategy and Action Plan;
- the MET's policy on biodiversity conservation (1992); and
- the MET's policy on research (1992).

Having an excellent policy and legislation framework on paper does not guarantee action on the ground, however, and it remains to be seen how effective monitoring and enforcement will be, particularly in remote rural areas.

Tenure is critical for protection. Tenure and legal options for IPA protection may differ by scale, threat and other factors (e.g. land use history), and a realistic approach that takes account of these factors is required. Short term solutions with one landowner or community elder will be no substitute for a more systematic and thoroughgoing approach. It will also be beneficial to liaise with Important Bird Areas (IBA) stakeholders and to seek synergies between IPA and IBA implementation strategies.

Regarding financing options, it is clear that if IPAs are to be nationally recognised and effective, the costs of establishing and managing them must be shared by the government. The protection of the biodiversity and ecology of Namibia is a constitutionally ordained responsibility of the government, and the “ecological infrastructure” of the country (watersheds, resource nurseries etc.) is thus deserving of government investment.

Financing options include direct land acquisitions, tax breaks and subsidies, and creative public-private partnership investments. Attention should also be given to private sponsorship / marketing logos, voluntary incentives, land taxes or levies on economic sectors and dedicated funds for community grants. An alternative to formal taxation could be stewardship investment programmes funded by entities such as Namdeb.

While the absence of short-term returns might engender resistance (on the part of both the government and private entities) to incurring expenses through such ecological investment, the question that must be asked is: What seeds must be sown to reap a harvest in 100 years?

In conclusion, the goal of the current workshop is the identification of IPA sites. This may be a complex task, but participants should bear in mind that the greater challenge will lie in implementation and achieving long-term persistence.

## **10 Plant resource management and local communities**

### **Summary of presentation by Tony Cunningham (People and Plants International)**

It is essential that the role of local communities be incorporated in the plans for the management of plant resources. Many IPAs will be located in conservancies, communal lands, community forests and commercial

farms, rather than in national parks or other protected areas (for example, in north-western and central Namibia, and in the Karstveld.) Local people should be seen as custodians of plants resources, with vested interests in such resources' survival. Indeed, the habitats of many areas have been shaped over time by their interaction with people, and it is simply not realistic to exclude people in formulating management plans. Under these circumstances, Target 5 of the GSPC cannot be implemented without also addressing GSPC Target 13. PPI, along with the Food and Agriculture Organisation (FAO) and the International Plant Genetic Resources Institute (IPGRI), has been mandated by the CBD to render support in respect of the implementation of Target 13 by national governments.

Since the early 1990s, as demonstrated by Richard Cowling and his colleagues in South Africa and Bob Pressey and Chris Margules in Australia, systematic conservation planning has moved to active involvement in implementation of areas that are not only representative, but will also persist through the maintenance of ecological and evolutionary processes.

Implementation of IPAs is an opportunity to become involved in far greater detail than has been the case with conservation priority setting exercises such as WWF's "ecoregions" or Conservation International's "hot-spots".

Within the Gariep centre of endemism, for example, much smaller areas (which could be termed IPAs) have already been identified. Many of these are affected by livestock or people. With limited time and funding, a practical focus in arid and semi-arid systems should be on areas where water and browsing and grazing resources are available, as this is where local plant communities are impacted and where work with local people on IPA implementation is often really necessary. Areas where species of high value to collectors occur are also threatened. *Pachypodium* populations, for example, are both exploited by collectors and browsed by livestock. Inaccessible, waterless areas are more capable of "looking after themselves" as long as off-road driving and mining are controlled.

The difference between IPA identification and implementation in Europe compared to Africa is that Europe has far fewer species, far more collection data and often, more resources for implementation. In trying to deal with uncertainties arising from less detailed collection data, one approach that can be taken is to focus on indicator species, then rank habitats according to threat level. This approach to biodiversity planning proceeds from an analysis of the relative threats faced by various species, posing the questions: What species are at risk? What are the threats? Which species are most sensitive? At what level do the threats need to be managed to protect the most sensitive species? If these focal species are

protected, other, less sensitive species should also be protected, even though they are not the direct target of protection measures.

Certain characteristics render some species more subject to threat than others. Those that feature in commercial trade; are of high value; have a long shelf life; reproduce only by seed; fall within a monotypic family; are dispersed by interactions with large mammals; have very particular habitat requirements; have multiple uses; occur in high rainfall areas with arable lands; are harvested by destructive means; are subject to diseases (e.g. Family Proteaceae, which are subject to fungal attacks); are slow-growing; or are parasitic (and therefore depend on the survival of the host plant) are most threatened. The more of these characteristics that apply to a given species, the more it is at risk.

Species abundance or rarity can be evaluated by assessing geographic range (large or small); habitat specificity (wide or narrow); and local population size (large and dominant or small and non-dominant). The rarest species will have a small geographic range, narrow habitat specificity and small, non-dominant populations.

Habitats can be evaluated for IPA purposes by cross-referencing the threat status of the habitat (from critically threatened to relatively intact) against the distinctiveness of the habitat (from globally outstanding to locally outstanding). Habitats that most require IPA status are those that tend towards being both globally distinctive and critically threatened.

Conclusions derived from such matrix evaluations should be cross-checked against local perceptions as well as the IUCN 1997 Red List, for example.

It is important to build long-term relationships with local communities. While accessing the best available technical knowledge, it should be borne in mind that local communities are themselves sources of knowledge which can be very useful in implementing IPAs. Action also needs to take place at a policy level, such as land-use policies on sinking boreholes in otherwise waterless areas. Examples of research relevant to Targets 5 and 13 of the GSPC in arid areas like Namibia would be on sheep and goat food-plants and nomadic pastoralist ranges.

Obtaining the full participation of local communities in IPAs is a process that ideally moves from full government control to full community control. Any agency working with a local community begins by informing, and moves through the phases of consultation, collaboration and partnership before finally handing over responsibility to the local community. Community responses, in turn, should progress from initial compliance through cooperation and participation to self-directed action.

In some cases, local people can be involved in monitoring within selected IPAs. Monitoring of IPAs by means of fixed-point photographs is only viable for long-lived, large species, and where baseline photographs of given localities are available. Some user-friendly new technologies, for example Cybertracker, make it possible for knowledgeable local people to be actively involved in monitoring, despite not being significantly literate or numerate.

Linking the land and the people who live on the land makes sense for IPAs. Conservation practice should rest on three foundations: firstly, the empowerment of people and institutions; secondly, systematic conservation planning and priority-setting; and thirdly, implementation that secures conservation action.

## **11 Strengthening the system of National Protected Areas project**

### **Summary of presentation by Rãili Hasheela (MET)**

There are currently 21 national parks in Namibia, accounting for 13.8% of the country's surface area. An important development is that transfrontier conservation areas are also being established. These include the Ai-Ais/Richtersveld National Park, the Four Corners Park in eastern Caprivi and the Skeleton Coast/Iona link with south-western Angola.

The goal of the project is to increase management effectiveness so as to safeguard biological diversity and to encourage sustainable and equitable economic development. Barriers to be overcome are the incomplete coverage of the network of protected areas; the absence of an adequate policy and planning framework; inadequate human and institutional capacity; and inadequate integration of protected areas with landscape management activities. Generally, protected areas suffer from an inadequate infrastructure and insufficient financing. There is also a need for monitoring and research.

In order to redress this state of affairs, the Ministry of Environment and Tourism (MET) is encouraging institutional and individual capacity building through support for the Parks and Wildlife Management Bill; support for park management plans; analysis of organisational structures, decision-making mechanisms and the financial management structure; and in-service training and incentive schemes.

The protected areas network within Namibia is being realigned in order to attain more comprehensive bio-geographical representation. A major development in this regard is the proclamation of the Sperrgebiet as a National Park. Alternative/additional financing options for protected

areas are being investigated, together with mechanisms for measuring and controlling revenues and expenditures. A framework of plans is in place to ensure coordinated and targeted monitoring of biodiversity. Where necessary, scientific expertise will be sourced externally.

Five parks have been identified as testing grounds for the interventions. These are Etosha/Skeleton Coast; Namib-Naukluft; Ai-Ais/Richtersveld; Bwabwata; and the Sperrgebiet, where options such as integrated management with adjacent lands, transfrontier management and management involving local communities are being piloted (2004 – 2005) prior to the implementation of Phase 1 (2006 – 2010) and Phase 2 (2011 – 2015).

The expected outputs are:

- Output 1: Economic analysis and feasibility study for parks financing;
- Output 2: Capacity assessment for parks management in conservation at individual, institutional and systemic levels;
- Output 3: Conservation needs assessment;
- Output 4: M and E plan; and
- Output 5: Project document for presentation to GEF and other parties.

## **Discussion**

There is recognition within the MET that there are deficiencies in the existing protection mechanisms for protected areas, and the project to strengthen the protection mechanisms is of relevance to the current workshop regarding IPAs. Noteworthy developments are that Cabinet has recently approved concessions between Etosha and the Skeleton Coast Park, and the proclamation of the Sperrgebiet as a national park. Regarding the project to strengthen protection mechanisms, the related consultancies have almost run their courses and reports are expected shortly. The project is currently in the preparatory phase, with the bulk of activities and developments still to come. The focus thus far has been on upgrading capacity within the MET.

Regarding the prioritisation of areas of biodiversity, difficulties have been experienced as a result of “trashed” areas, which are regarded as being effectively beyond redemption, as against their background, the definition of areas of land degradation and land conversion floundered. This is an issue which should be borne in mind in the current process.

Although there might be deficiencies in the protected areas network and safeguarding mechanisms, it should be noted that the current network provides for in excess of 90% of the vertebrates in Namibia, and with the

newly proclaimed areas, the coverage will be even higher. Nevertheless, a “don’t care” attitude to the remaining 5% or 10% of vertebrate species cannot be defended on the grounds that they might be mainly little-known lizards. Moreover, the species not covered in existing protected areas are likely to be concentrated in potential IPA sites, and protection of the habitats in which they live will confer protection on them too.

The “big five” mentality dominates the public’s thinking on conservation matters. In a sense, plants with growing international profiles, for example *Hoodia*, can be seen as the botanical big game of Namibia.

When thinking of potential IPAs, attention should be given not only to plants, but also to broader landscapes. For example, the omuramba habitat cannot be protected unless the hinterland is protected as well, as it depends on the seasonal flooding from the north (the *efundja*).

The issue of invasive species clearly needs to be addressed. The Directorate of Forestry is faced with conflicting agendas. On the one hand, there is pressure to eradicate invasive alien species, but on the other, there are requests from some communities to plant *Prosopis*. In Kenya, the forestry authority is involved in litigation against the FAO. The latter was instrumental in introducing *Prosopis*, which was initially thought to be advantageous. In addition to invasive alien species, “indigenous” translocations should be put under the spotlight, as even though in terms of political boundaries they may not be “alien”, they can be every bit as invasive, and deleterious, as is the case in the Karstveld.

## **12 Overview and discussion of the IPA criteria**

### **Summary of presentation by Tamara Smith (SANBI)**

The southern African IPA criteria have evolved from the criteria developed for Europe between 1993 and 2002. By 1998, three broad criteria had been finalised, relating to threatened species, exceptional species (botanical) richness, and threatened habitats. The criteria for Europe were published in 2002, and in 2003 the French summary and the Spanish translation of the criteria were published.

Criterion A: The site holds significant populations of one or more species that are of global or regional conservation concern.

Criterion B: The site has an exceptionally rich flora in a regional context in relation to its biogeographic zone.

Criterion C: The site has an outstanding example of a habitat or vegetation type of global or regional plant conservation and botanical importance.



In southern Africa, the initial IPA Workshop bringing together plant taxonomists, conservation planners, ecologists and IBA specialists was held in May 2004 to discuss IPAs and the criteria in a southern African context, and to determine a set of draft criteria for southern Africa.

**Criterion A** (threatened species) was defined thus: “The site holds significant populations of one or more species or infraspecific taxa that are of conservation concern.” There are four elements to this criterion:

- A1: Site contains globally threatened species or infraspecific taxa;
- A2: Site contains regionally threatened species or infraspecific taxa;
- A3: Site contains nationally threatened species or infraspecific taxa;  
and
- A4: Site contains restricted-range species (e.g. narrow endemics) or infraspecific taxa.

As IPA site choices must be defensible, countries must refer to peer-reviewed documentation. For categories A 1-4 above, this is taken to mean:

- A1: Species must be listed as threatened on IUCN global red lists (CR, EN, VU of the new IUCN criteria, or EX/E, E,V of the original IUCN criteria);
- A2: At present no regional red lists are available for southern Africa;
- A3: Species must be listed as threatened on recognised or published national red lists (CR, EN, VU of the new IUCN criteria or EX/E, E,V of the original IUCN criteria); and
- A4: Species must be listed as restricted-range species / narrow endemics in any recognised list or publication (can include potentially threatened species i.e. Orange Lists).

Principles applicable to Criterion A are:

- Species are considered as range-restricted / narrow endemics if the extent of occurrence is <20 000 km<sup>2</sup> or the area of occupancy is <2 000 km<sup>2</sup>.
- The national IPA network should represent the full range of the national Criterion A (threatened) species.
- The degree of threat and the need for protection should be considered.
- IPAs should only be selected for populations that are viable.
- The genetic composition of the species should be taken into account.
- Select the best areas to target conservation action and prevent selecting lots of sites for one species.

**Criterion B** (botanical diversity) was defined thus: "Site contains a high number of species and/or species of special interest that represent all vegetation types."

Principles applicable to Criterion B are:

- Species of special interest include restricted-range species; endemics; evolutionarily important species / taxonomically unique species; species of scientific interest; or species of utilisation importance.
- The number of species needed to qualify a site as an IPA must be determined.
- The best available national vegetation map should be used, but sites selected should be important in a regional context, not only a national context.
- If insufficient data are available to select an area, topographic diversity can be used as a surrogate for: habitat diversity; refugia for climate change; speciation zones; species movement; and species diversity.
- Complementarity should be considered when selecting sites.

**Criterion C** was defined thus: "Site contains one or more threatened habitat types." This entails C1: regionally threatened habitats; and C2: nationally threatened habitats.

Principles applicable to Criterion C are:

- As there is no regionally threatened habitat list for southern Africa, for identification of sites using category C1, a regional vegetation map should be used.
- A peer-reviewed regionally threatened habitats list should be used for identification of sites at a regional level.
- For identification of sites using category C2, use the best available national vegetation map.
- Nationally threatened habitat lists should be developed by experts within each country.
- The degree of threat to the habitat and the need for protection should be taken into account.
- Additional microhabitats/special habitats (gallery forests, quartz fields) that are not mapped on general vegetation maps may be included.
- The suggested cut-off for nationally threatened habitats is <30% of the remaining habitat.
- Degradation (together with other extractive uses, for example logging) should be incorporated.

South Africa is, at present, the only country that is developing a nationally threatened habitat list.

General guidelines for the selection of sites using the criteria are:

- To qualify as an IPA, a site needs to satisfy one or more of the criteria, i.e. either criterion A, B or C, or any combination of these.
- Using the information available, these criteria should as far as possible be adhered to.
- Criteria and thresholds may, however, need to be adapted to account for variation; this must be done on a regional level.

Basic site information required for each IPA:

- Site name
- Estimated area
- Central coordinates
- Altitude range
- Qualifying criteria (A, B, C)
- General habitats
- Land-use patterns
- Protected area status
- Threats
- Compiler of information

## **Discussion**

The European IPA criteria presented at the SABONET IPA Workshop in Pretoria, South Africa, in May 2004 were not analysed in great detail for the purposes of the Namibian IPA workshop, and were in effect taken on as they stood. The criteria are currently being developed and refined for southern Africa.

One of the functions of the present workshop is to determine the number of plant species occurring in an area in order to define the area as an IPA using Criterion B (botanical diversity).

Namibia has more detailed information at its disposal than some of the other SABONET countries, like Mozambique. This information (pertaining to both species and habitats) should be used as a starting point and refined in time.

Regarding the size of IPAs, for practical reasons, sites should not be too large, as they would be unmanageable. Equally well, sites that are too small might fail to achieve adequate coverage, and too many small sites would also result in an unmanageable situation. A balance has to be struck between the number of sites and their sizes.

The criteria being discussed have their origin in the development of criteria for wetter climates than Namibia. The fact that Namibia is as arid

as it should be taken into account in the development of locally appropriate criteria.

Sites are generally going to be identified on the basis of expert knowledge and experience. It will be necessary after the initial identification process to confirm their validity as IPA sites by conducting on-site surveys. The environmental surveys required for this need not be very detailed.

In the case of vertebrates, 95% of species have viable populations in the 15% of Namibia that falls within protected areas. A substantial percentage of plant species might also have such viable populations in protected areas. An approach might therefore be to see what IPAs are required to secure the remaining unprotected percentage of species. A problem with this approach, however, is that unlike in the case of vertebrates, knowledge of what plant species are to be found in viable populations in protected areas is relatively limited. Unlike animals, plant species also can't move from one area to another, which renders them more vulnerable to factors such as encroachment by invasive species and habitat degradation. Furthermore, it is advisable to avoid a situation where the focus is almost exclusively on identifying individual species.

An idealistic approach to IPAs will not work, particularly at the financing level. It might be necessary to make some hard decisions after working out the costs of protecting plants in different areas, and between protecting them inside and outside of existing protected areas.

One cannot simply assume that plant species are protected because they occur within "protected areas". In some cases, their protection in such areas might require the fencing off of plant populations.

There has been positive, documented experience in the past with working with local communities in the implementation of management plans for biodiversity areas. It is important that local communities be involved in the implementation of IPAs. Unless the buy-in of local communities is achieved because they see themselves as having a vested interest, success will be unlikely. A CITES mentality can sometimes be too obsessed with "scientific" processes.

Regarding the involvement of local communities, however, it should be borne in mind that the task at hand is to identify IPA sites. Community involvement will be part of the implementation phase.

In the case of IBAs, the sites were identified, and support groups were then set up. This was possible because of the widespread public interest in bird watching. It is unlikely that there is anything like the same level of public interest in plants, however, and workshop participants cannot simply rely on enthusiasts.

The first phase of the IPA initiative is to establish the sites. It is important that follow-up work is done in the future to establish whether or not, or to what extent, strategies are working. The first phase will serve as a baseline for future studies.

The question arose whether to include or exclude Criterion C (threatened habitats), and whether the process should be expert-driven or confirmed by peer review. Given the clamour for land and the land reform process, it would be advantageous to have a strong scientific basis on which to defend the selection of IPA sites. On the other hand, as has been done in South Africa and Australia, in Namibia it would be useful and defensible to work with current data in selecting sites, even if such data are not strictly scientifically unexceptionable. Given the changes taking place through land reform in conservancies and protected areas, there will necessarily be a payoff between the accuracy of existing data, the time needed to generate improved data, and the immediate need to identify IPA habitat sites.

A different way of approaching "habitat" might be considered. The terminology should be refined, with greater focus on the human use of habitats, including concepts such as "hidden harvest" and classifications of grass types on the basis of their nutritional value, including "grazing which is available when there is nothing else". An example from central Australia supports this view: a "scientific" habitat study failed to identify an important habitat that was subsequently pointed out by local aboriginal people.

Although it is still too early in the process to make definitive statements regarding the legal status of IPAs, it is appropriate to look ahead. One view is that ideally, they should have legal status, and the capacity to enforce measures put in place to protect species and habitats. On the other hand, even without such status, they could function as useful plant management tools. It is in any event unlikely that they would be accorded legal status in Namibia, where there is already some overlap between entities such as community forests, protected areas and communal lands.

The issue of legal status also speaks to the relationship between IPAs and community forests. The IPA criteria are somewhat narrower than those that apply to community forests, and it might be appropriate to re-evaluate the IPA criteria against the community forest criteria. As matters stand, community forests can be designated on non-IPA grounds.

There shouldn't be a fixed number of IPAs or a minimum size limit. Local realities, for example where a small succulent occurs only in a very narrow range, should determine whether or not an area should be accorded IPA status.

In South Africa, there are different views regarding the definition and roles of IPAs. Some provinces see IPAs as being an important driving mechanism in the formulation of their overall conservation plans, while other provinces already have conservation plans in place, and feel that IPAs should fit into the existing framework. While Namibia is obviously free to define IPAs as it sees fit, a measure of regional consistency is also desirable.

**Note:** Criterion B was discussed in detail in the context of the discussion of the outcomes of the break-away sessions (see Section 15.1 below.) A modified wording was accepted, which is included here for the sake of completeness:

### **Criterion B**

The site contains one or more of the following:

- B1: a botanically rich habitat
- B2: species of special interest\*
- B3: representative of a unique or special habitat type .

\*Species of special interest include: restricted range spp.; endemics; evolutionarily important / taxonomically unique species; species of special scientific interest; species of utilisation importance

## **Day 1, Session 2**

### **13 Application of criteria to a potential IPA site, and division into break-away groups**

Namuskluft farm in south-western Namibia was chosen as a site against which to consider the criteria. It was found that it would qualify as an IPA:

Threatened species:	<i>Aloe pillansii</i>
Local endemics:	>36
Plant diversity	√
Threats:	Mines and mineral deposits

Consideration was given to collapsing the qualifying characteristics of diversity and endemism into a single category and requiring both, but this was rejected, as it would have the effect of disqualifying north-eastern Namibia, where there are no endemics.

For the purposes of identifying potential Namibian IPA sites, the workshop divided into three break-away groups, focusing respectively on the north-west, the south and the north-east. Workshop participants decided which group to join on the basis of their individual interests and knowledge.

#### **14 Discussion session and Day 1 closing remarks**

**Tony Cunningham (People and Plants International)**

The identification of IPAs takes place in the context of the GSPC of the CBD, in which Namibia plays an active role in order to meet the agreed Targets of the GSPC by 2010. Five elements and several of the 16 targets under the GSPC link plant conservation targets to sustainable livelihoods (e.g. local food security and health care).

The criteria for the according of IPA status need to be scrutinised, as they have their origin in Europe, where different realities pertain. For example, in Namibia it will be necessary for IPA sites generally to be much larger than in Europe, and they will also have to be balanced against the survival needs of local communities. The basis on which species are prioritised (threat, taxonomy, benefits) should also be given attention. It is important that Namibia is in a strong position to come up with a first approximation of a viable linkage between protected areas and landscape management.

Habitat protection (e.g. of mountains and desert habitats) is a priority, as is detailed surveying of protected areas, in which there are only a few highly localised endemics to set up a plant species inventory. The occurrence of a plant species in a protected area does not guarantee its survival, however, and conflicts between conservation management plans for plants and animals can occur (for example with elephants in Namibia's Mahango Game Reserve).

Clear financial and implementation strategies are required, as are the commitment, enthusiasm and vision of stakeholders. Consideration should also be given to compiling a threatened habitats list. It might be strategically sound to concentrate efforts on fewer, larger sites than on a multitude of smaller sites, and to build community awareness through the establishment of "site support groups".

In prioritising potential sites, there are in the first instance three categories that should be considered: endemics, with priority being accorded to rarer species; plant diversity; and taxonomic distinctiveness. Thereafter, potential sites should be prioritised on the basis of:

- usefulness (horticulture, edible, medicinal, grazing etc.);

- threatened habitats;
- animal taxa with high conservation status;
- heritage sites, where there is a different emphasis in management planning; and
- catchments as the "macro-framework" for ecological and evolutionary processes.

The summary of the day's proceedings concluded with a brief overview of the findings of the sub-group for north-western Namibia. No major problems were experienced with applying the criteria, although it was felt that Criterion C (regionally threatened habitats) was too restrictive, in that it might be interpreted as not allowing for the small, but important wetlands found there. A distinction was drawn between "macro-sites" (the Ugab, Kunene and Hoanib catchments) and "micro-sites" (inselbergs of only a few km<sup>2</sup>, and springs and waterholes, which were deemed to be most threatened.) It was felt that the STEP programme in South Africa might offer useful insights. This programme charts the interplay of different land-use types in a given region, for example conservancies, national parks, mountain catchment areas, agriculture, game farming and restoration areas.

## **Discussion**

It is difficult to limit the extent of potential IPAs. In the case of north-western Namibia, the initial feeling of the sub-group was to declare the entire coastal strip from Swakopmund to the Kunene River an IPA. Choosing specific sites is problematical, as they are all important. Perhaps areas within each catchment will reflect broader diversity categories. As IPAs should cover diversity, focus should also fall on non-threatened species.

The IUCN's guideline of a species distribution of less than 20 000 km<sup>2</sup> for IPA qualification is arbitrary, and not applicable to Namibia. Choosing a different IPA range size also won't solve the problem, as range sizes vary considerably for different species. (The "Rabinowitz approach"<sup>2</sup> speaks to this issue.) At a global level, arbitrary cut-off points make sense, but at a local level they do not.

The IPA identification exercise thus far had demonstrated how complex the issues are. The task for Day 2 would be to continue with IPA

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<sup>2</sup> Rabinowitz, D., S. Cairns and T. Dillon. Seven forms of rarity and their frequency in the flora of the British Isles. In M.E. Soule (ed.) *Conservation Biology: The Science of Scarcity and Diversity* (pp. 182 - 204). Sinauer Associates, Massachusetts.



identification in more detail, with all sub-groups aiming for a common format.

A strategic option might be to identify a flagship species for popularisation. Alternatively, a prominent feature, for example the Brandberg, could be chosen for this purpose.

## **Day 2, Session 1**

### **15 Discussion of outcomes of break-away sessions**

Note: The original programme called for the full morning session to be devoted to break-away sessions for the three sub-groups, followed by discussion of the outcomes of these break-away sessions in the afternoon. In order to obtain consistency and evenness between the regions dealt with by the sub-groups, the decision was taken to collapse the processes of IPA identification and discussion of sub-group findings.

#### **15.1 Discussion of the IPA criteria**

Criterion B ("Site contains a high number of species and/or species of special interest that represent all vegetation types") was found to be problematical as defined. In Europe, where habitats tend to be contained within vegetation types, a hierarchical approach is warranted, but this does not apply to Namibia. It is not realistic in Namibia to require of an IPA site that it "represent all vegetation types".

One option would be to include Criterion B with the reference to representation of all vegetation types deleted (B1), and to add a category that refers to a diversity of vegetation types. Alternatively, the wording could refer to a site that contains many species **or** is representative of vegetation types **or** contains species of special interest. The intention should be to use a sufficiently wide definition, so that species that are not necessarily threatened can be included.

Given that no single site in Namibia can contain all vegetation types, an alternative wording might refer to a site that contains "a high number of species and/or species of special interest." Alternatively, the criterion could be simplified to refer only to a site being "botanically rich", or "botanically rich / rich in endemics", with more detail being included in the guidelines regarding the application of the criterion.

The criterion should be worded so that "normal, boring" vegetation types can be included. Although these might not presently excite special interest, they could become useful in the future.

As the selection of IPA sites must be scientifically valid, no reference should be made to "vegetation types", as these have not been defined in a Namibian context. Rather, "habitat" or "phyto-geographic zone" should be used.

In discussing Criterion B, so as not to lose sight of the wood for all the trees, a broader perspective of the criteria should be retained: Criterion A relates to species; Criterion C relates to habitat; Criterion B is a hybrid of A and C.

Given that Criterion A relates to threatened species and Criterion C relates to threatened habitats, it follows that Criterion B should make allowance for non-threatened species/habitats. Some endemics are not threatened, and are also not particularly range-restricted, but they should nevertheless enjoy IPA protection.

Attention shifted again to the proposal that Criterion B be split into B1 (a high number species, with the reference to representation of all vegetation types deleted); and B2 (a diversity of vegetation types). The mopane woodlands and the Rehoboth camelthorn forest are examples of sites that would satisfy such a criterion. The criterion should be left as open as possible, and allow for a focus on utilisation and benefits to people.

An opposing view was that workshop participants should not lose sight of the original underlying *raison d'être* of IPAs, which includes adding weight to fundraising initiatives for conservation. Leaving the criteria too wide might have the effect of diluting the significance of a site being accorded IPA status, and mopane woodlands ought for this reason not to be included. They can in any event be protected through other national initiatives. The primary focus should remain on sites of high biodiversity value, irrespective of whether or not they are perceived to have high value for humans.

On the other hand, IPAs came into being to avoid the situation where sites get no recognition as requiring protection and slip through the cracks because they do not enjoy special status, for example as designated "hotspots". IPAs are intended to provide for a better tool for international conservation that does, in fact, recognise the reality of people's utilisation of plant resources. Mopane woodlands could be included on the basis that they represent a monotypic genus.

A modified version of the original B1/B2 proposal for Criterion B was put forward, and accepted:

### **Criterion B**

The site contains one or more of the following:

- B1: a botanically rich habitat
- B2: species of special interest\*
- B3: representative of a unique or special habitat type

\*Species of special interest include: restricted range spp.; endemics; evolutionarily important / taxonomically unique species; species of special scientific interest; species of utilisation importance

In connection with Criterion C ("Site contains one or more threatened habitat types"), it was found to be useful to distinguish between micro- and macro-habitats. Focus should still be maintained on the intended function of IPAs, namely to provide a mechanism for protecting species and habitats that are not protected by other initiatives. Rather than introducing complexities, the focus should be on simplicity. In the case of Criterion C, this means a focus on threats and diversity interest.

The aim of IPAs should not be to prevent economic and social development. There is nevertheless a need to be explicit regarding the criteria. While workshop participants may have a common understanding of the criteria, others may interpret them differently.

The danger exists that in the absence of an area being designated as an IPA, people may feel free to abuse it at will. In defining IPAs, it must therefore be made clear that they are only the sites of the highest importance, and that a free-for-all in other areas would not be acceptable.

## **15.2 Discussion of provisional IPA sites**

Note: The potential IPA site lists originally put forward underwent substantial modification and refinement, particularly for the south and the north-west. This report focuses on the issues raised in discussion of the initial IPA site proposals. The IPA sites finally agreed upon are recorded in Figure 1 (Namibian Important Plant Areas (identified 2 December 2004)) (see Section 15.3 below).

### **15.2.1 North-east**

The Auas mountains qualify on the basis of Criterion A (threatened species); Criterion B (there are some relics of Mesembs and some believed to be of Karoo/grassland origin; and Criterion C (high altitude habitats

are typically important in Namibia.) There are threats in the form of Windhoek's expansion into the aquifer, commercial farming and invasive alien species in the riverbeds.

The Omatako Omuramba catchment is a slow-flowing wetland system with endemics, though these are not necessarily threatened. Mountains in the area consist of sandstone layers related to Waterberg sandstone. The geological history of the plains is complex. Dense populations of *Aloe littoralis* occur on koppies, and there are numerous geophytes in the wetlands. Higher up the Omatakos, there is interesting mountain vegetation. Land-use includes livestock farming, and some areas have been targeted for resettlement. The area warrants further investigation.

The Waterberg escarpment has unique vegetation, with many large figs and a vulture colony. The sandstone escarpment supports a wide diversity of lichens (at least 100) that require further systematic study. It is possible that some of these are endemics or range-restricted. The fountain micro-habitat supports pteridophytes and bryophytes not encountered elsewhere in Namibia. There is concern regarding invasive alien species and fountains that are drying up as a consequence of water extraction. It is the escarpment itself that is important, rather than the plateau or the plains.

The Otavi mountains fall within the Karstveld, and are home to at least four narrow endemics, and trees and cover shrubs that have restricted ranges. The relatively high rainfall in the area results in a high degree of diversity. With the sinking of the Tsumeb mine shaft, a great deal of logging took place and invasives such as *Lantana camara* and *Penisetum setaceum* (fountain grass) were introduced. It is feared that should NamWater proceed with water extraction in the area, the water table could be permanently lowered by 5 – 10 metres. There is commercial farming in the area, including some maize cultivation, and the tourism potential is substantial. The lower slopes and the inter-slopes, where the fountains emerge, are the most threatened. A detailed vegetation survey and inventory is required.

Four hydrological studies have been conducted in the Omuramba Owambo. While the evidence is not conclusive, it is believed that it is fed by the excess of the Otavi system. There are some plants with limited distributions, and others that are of special interest, for example baobabs and tambuti forests, though they are not restricted to the area. The wetlands are particularly threatened. Threats include water extraction in the Otavi mountains, bush encroachment and resettlement. Most maps underestimate the extent of the omuramba, which stretches from Fisher's pan in Etosha via Tsintsababis and Maroelaboom to the Kokasib mountains. It might make sense (both biologically and financially) to link the Omuramba Owambo to the Otavi mountains.

The Daneib Omuramba has not been well studied, but is clearly a very special area. It is in a deep valley with steep cliffs of 50 – 60 metres, and contains vegetation that is not found in the surrounding areas. The substrate is limestone, which is unusual in the wider area (Kalahari sand plains), and the habitat is limited. Following the repatriation of Hereros from Botswana, population density has risen in this localised karst, and the upper slopes are being degraded through overgrazing, while local *Aloe* populations have been destroyed by road building. It would qualify for IPA status mainly in terms of Criteria B and C. Wild dogs are occasionally encountered. Because of its inaccessibility, only a few studies have been undertaken, but an ecologist's "gut feel" suggests that there are many caves with breeding populations of bats, which are next encountered in Botswana to the east.

The Nyae- Nyae Pan system has some endemics, a high variety of large trees, e.g. baobabs, and also birds and game. Its high diversity is the result of its complex geological history, which has resulted in an underlay of shallow rocks beneath the Kalahari sands. Development is taking place along the pan's edges. It is an important wetland system with high tourism potential. The land use is communal, with grazing and wild-harvesting. Incoming grazers and invasive alien species pose threats.

The Kavango River valley is an important wetland system with some near-endemics, but the formerly occurring *Protea gagedi* is now extinct. The riverine forests have been cleared (over 95 % destroyed) with some isolated islands remaining, e.g. around Popa Falls. The cultivation system in this communal area is destroying vegetation. Deforestation is a problem that is exacerbated by elephants in the east and southeast. The Green Scheme, which aims at large-scale irrigated crop cultivation involving partnerships between commercial cultivators and local small-scale cultivators, also poses a threat.

The Kavango woodlands are unique in Namibia, though they do not contain endemics and are not necessarily threatened, apart from by timber collection operations. Tree diversity is high, and there are several special interest species. Communal farming takes place in the area, and there are some national parks, conservancies and state forests. The most significant threats come from logging, fires, elephants and grass collection for thatching.

The Zambezi floodplains to the east of Katima Mulilo are a diverse riverine system that fall within the Four Corners programme. A rare bryophyte, observed only once before in the Congo, has recently been recorded. Land use is mainly communal farming, and the Sambalala Conservancy is said to be considering rice and sugar plantations. There are many species with commercial value, but they occur in small

populations. The Zambezi River (like the Kalahari Red Sand) is not covered by the current protection network.

Impalila Island also falls within the Four Corners programme, and contains species of importance to Namibia. It is not known, however, if there are endemics or threatened species. It is mainly state land, but there are also some lodges.

The wetland floodplains of the Kwando River valley contain vegetation that is unique in a Namibian context, but it is not known if there are endemic or threatened species. Threats come in the form of elephants, invasive alien species (e.g. *Salvinia molesta*), some plankton species and irrigation schemes. The Kwando River Conservancy is situated in the area.

The Oshana system to the west of Oshakati flows down towards Etosha Pan and contains important wetland species. Although diversity is high, species are not always present, or visible. Communal farming activities and grazing are serious threats, as is wood cutting, whether legal or illegal. The area is subject to deforestation and land degradation, and invasion by alien species such as guava, *Prosopis* and *Eucalyptus*.

The Ekuma grassland area may be regarded as a “boring” habitat, with no threatened or endemic species, but it does contain salt-tolerant species. It is one of Namibia’s few grassland systems, and is under threat from grazing and the planting of exotic tree species. Human settlement will easily damage the thin soil layer above the salt layer. The area includes Lake Oponono.

### **15.2.2 South**

The problem facing the south sub-group was that, in a sense, it was too easy to identify potential IPA sites, as almost any locality in a crescent comprising the Sperrgebiet and the area extending down to Onseepkans could be shown to qualify in terms of the criteria. Candidates included Lüderitz/Kowisberge, where there are many species, including endangered Lithops, and the Klinghardtberge, where there are many small elevations, each with a unique complement of species, including endemics. It therefore became apparent that the initially identified IPA sites should be collapsed into fewer sites.

In the Sperrgebiet, the main threats are mining, tourism and illegal collecting. (A catalogue has been encountered in Germany offering succulents with a diameter of 30 cm – which implies great age – for sale. Illegal collecting is very big problem.) Given the intense pressure on Lüderitz Bay and its surrounds, it might be necessary to regard it as a “sacrifice area”. On the other hand, it is the recorded locality of

numerous species (in excess of 400) and is home to lichen fields. It should be noted, however, that the database might be somewhat inaccurate: in the past, any species recorded in a wide area accessible from Lüderitz were given a Lüderitz range allocation. The actual number of species is likely to be significantly lower. Nevertheless, with the proclamation of the Sperrgebiet Park (though as a park in which mining is to be allowed), Lüderitz and its surrounds should not simply be consigned to the dustbin. There is almost no area in the Sperrgebiet - whether inselberg or plain - that is not botanically important.

An approach should be agreed upon regarding whether to subdivide the Sperrgebiet or treat it as a single entity. An argument in favour of the latter approach is that with the ongoing threat of mining, extra ammunition might prove to be useful: not only is it a declared park, but it is also botanically important. Nevertheless, it would not be realistic to declare virtually the entire Sperrgebiet up to and including the Huns mountains a single IPA.

In addition to the Sperrgebiet itself, three additional IPA areas were therefore proposed: 1) the Sperrgebiet corridor; 2) the Huib Hochplateau; and 3) the Ai-Ais/Huns complex. All have species of special interest, and the Huib plateau is threatened by grazing, the corridor by illegal collecting, and the Ai-Ais area by poor game management. The Fish River below Ai-Ais does not support endemic species, but the adjoining mountains do.

The Orange River valley should be protected, as there are mining and prospecting activities to the west of Onseepkans, and a scheme to dam the river some 70 km to the east of Noordoewer. To protect the important Lithops species to the north of the Orange River, it would be necessary to confer IPA status on more than just the river valley itself. Regarding the question of whether to extend the IPA up to Warmbad to the north, the decision was later taken to establish the Warmbad Plains as a separate IPA, as a single IPA extending from the Orange River all the way up to Warmbad could not be justified in terms of the criteria.

The Karas Mountains support a diversity of species, including species of special interest, which are threatened by grazing and collecting. An IPA in this area should be large enough to include the lower koppies in the vicinity. The mountain tops include remnants of Karoo and grassveld.

The Naukluft Mountains support one endemic in an important habitat that includes a wetland. It is threatened by grazing (zebras), and potentially by tourism and a water bottling concern. Consideration was given to extending the Naukluft IPA to include Tiras Mountain and Gamsberg, as this would raise the number of endemics to 10. In the event, however, Tiras Mountain and Gamsberg were identified as independent IPAs. In the case of Gamsberg, it is the mountain top itself

where a range-restricted endemic occurs that is important, rather than the escarpment.

Spencer Bay is the only area in the world where *Jensenobotrya lossowiana* occurs.

Regarding the application of the criteria, the concern was expressed that it is easy to fall into the trap of naming sites which hold personal appeal (one's "favourite camping spots") and then seeing to what extent the criteria might be deemed to apply. In terms of scientific methodology, however, the criteria should constitute the starting point, and should themselves, following a dispassionate countrywide analysis of species, habitats and threats, deliver a list of sites that most demonstrably qualify as IPAs.

### **15.2.3 North-west**

The format of identification and discussion of potential IPA sites in the north-west differed from the format that had thus far been followed. Fewer, but generally larger sites had initially been identified by the north-west sub-group, and the focus of discussion shifted to gaps that were not covered by these sites, and to issues pertaining to all areas, rather than only to the north-west.

The initially identified sites were Brandberg (including the Ugab catchment); the Hoanib catchment; and the Sesfontein/Warmquelle/Opuwa area, extending up to Epupa, the Kunene catchment, the Baynes and Zebra Mountains, and Otjihipa. In addition, two categories of "micro-site" were identified: inselbergs of less than 2 km<sup>2</sup>; and the springs and waterholes, which in spite of being of extremely limited geographical extent are nonetheless very important.

The most important gaps were deemed to be Spitzkoppe; the Welwitschia plains; the lichen fields inland from Wlotzskasbaken; the Messum Crater area; and the Kuiseb River, the nara fields and Rooibank.

The West Coast Recreation Area, extending from Swakopmund to the Ugab River, is highly problematical from a conservation perspective. There are virtually no controls on off-road SUV/4x4 activities, and years of abuse coupled with rising numbers of these vehicles are responsible for untold damage.

The original identification of north-west IPAs may have unnecessarily avoided smaller IPAs. While it is true that an excessive number of small IPAs should be avoided, where there are cogent arguments for specific small areas to be accorded IPA status, they should be recognised. It is in



any event easier to set up a management plan for a smaller IPA than for a larger one.

Some lichen fields currently enjoy a measure of protection, but legal status should be sought for lichen fields generally, as they are threatened by off-road driving activities and illegal collection.

It might be beneficial to begin with a more global view of IPAs, and initially identify large swathes of land that are important. Thereafter, more specific sites of particular importance could be identified within the larger area.

The proposed Orange River IPA, extending up to Warmbad, was deemed to be too large to be justified in terms of the criteria. (See above in this section, under “South”.) Ecological processes should also be recognised in IPA identification here and elsewhere. It is not known what the effect of damming the Orange River east of Noordoewer will be in terms of erosion and silt deposition if a section of river is effectively lost.

No mention has been made of seaweeds and marine plants in the IPA process. This is an issue that needs to be flagged for future evaluation.

The identified IPAs in the north-west seem to be more specific than in other parts, and correspond to a “next layer” of identification. It might be preferable to have more general categories at this stage, for example, the “north-western gravel plains”.

An IPA gap identified elsewhere is the Auob-Olifants-Nossob system. (Recorded as Auob-Olifants Rivers – see 15.3 below.) Here the encroachment of *Prosopis* species is a major threat.

A National Habitat Classification List would be a useful tool, but how and when it would be compiled, and by whom, are questions that remain to be answered.

### **15.3 Provisional list of Namibian IPAs**

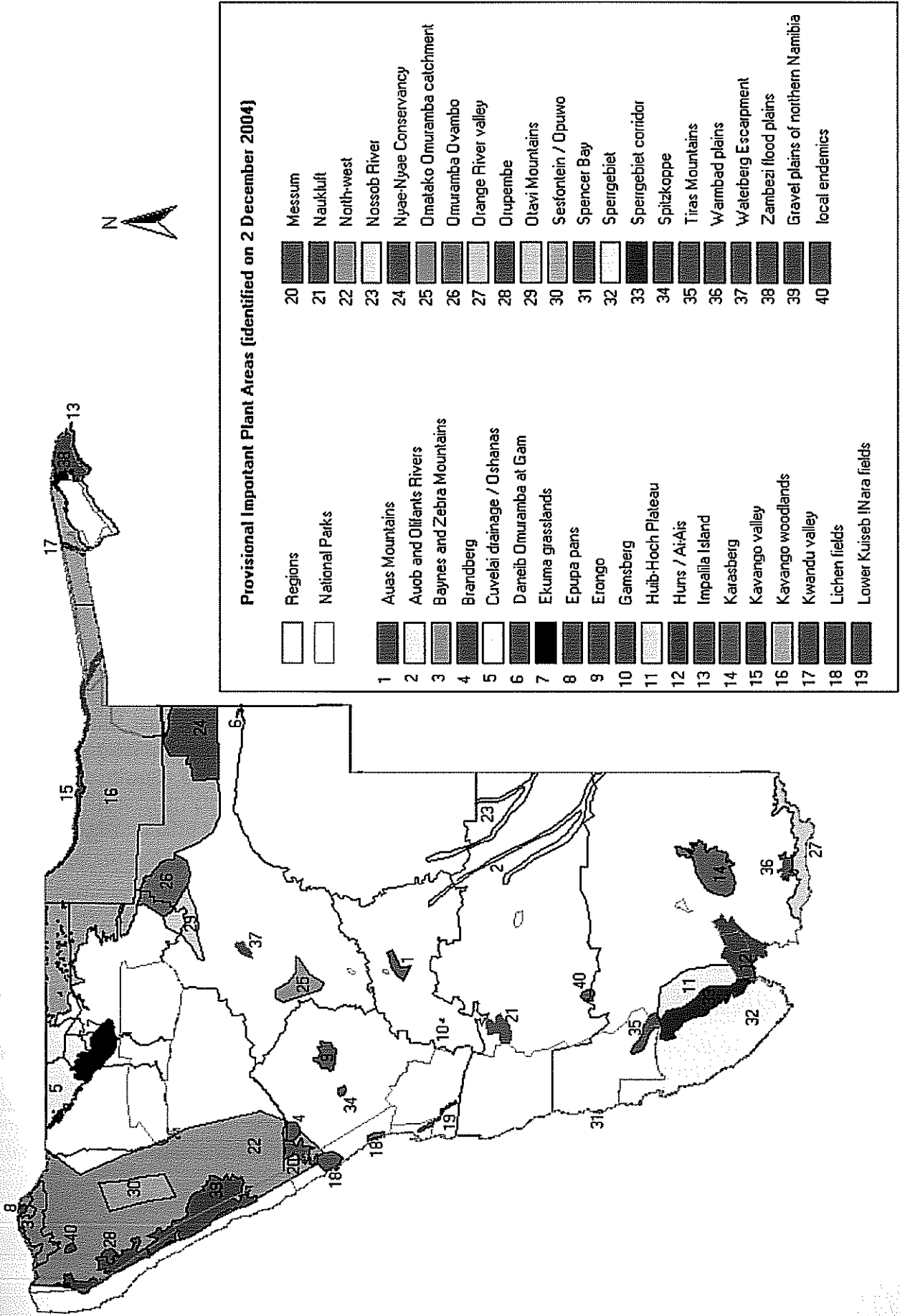
The sites listed below were recorded on an ArcView map (see Figure 1 below) as being the provisionally selected Namibian IPA sites.

- 1) Auas Mountains
- 2) Auob and Olifants Rivers
- 3) Baynes and Zebra Mountains
- 4) Brandberg
- 5) Cuvelai Drainage / Oshanas
- 6) Daneib Omuramba At Gam
- 7) Ekuma Grasslands
- 8) Epupa Pans

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- 9) Erongo
- 10) Gamsberg
- 11) Huib Hochplateau
- 12) Hunsberge/Ai-Ais
- 13) Impalila Island
- 14) Kavango Woodlands
- 15) Karasberg
- 16) Kavango River Valley
- 17) Kwando River Valley
- 18) Lichen Fields
- 19) Lower Kuiseb Nara Fields
- 20) Messum
- 21) Naukluft
- 22) Northern Gravel Plains
- 23) North-West
- 24) Nossob
- 25) Nyae-Nyae Conservancy
- 26) Omuramba Owambo
- 27) Omutako Omuramba Catchment
- 28) Orange River Valley
- 29) Orupembe
- 30) Otavi Mountains
- 31) Sesfontein/Opuwa
- 32) Spencer Bay
- 33) Sperrgebiet
- 34) Sperrgebiet Corridor
- 35) Spitzkoppe
- 36) Tiras Mountains
- 37) Warmbad Plains
- 38) Waterberg Escarpment
- 39) Zambezi Floodplains

**Figure 1: Provisional Important Plant Areas (identified on 2 December, 2004)**



## **Day 2, Session 2**

### **16 Discussion of the way forward**

The identification of provisional IPAs completed in the morning session was only the first step in the process. It would be premature at this point to attempt to prioritise these IPAs – this is a process that should take place later, once thorough analysis of the large areas involved has taken place.

In Namibia, the method chosen for prioritisation is that a working group will be selected, and will work with inputs from the rest of the stakeholder group, and from other sources. The MET has worked on site prioritisations in different contexts using a computer programme. Criteria could be allocated to each site and assigned values to deliver a prioritised list. The Namibian working group members could also wait for the South African process to commence, and share ideas with their South African counterparts. People and Plants International have experience in and knowledge of similar processes, and could share information on various options.

Clarity is required regarding what implementation will entail. It could take several years for data regarding the proposed sites to be gathered. Alternatively, a final decision regarding the IPA sites could be taken in the near future, with implementation actions to follow soon thereafter.

As SABONET is coming to an end, funding for IPAs must be sought from other sources. Such funding may have to be internal to each country. The GEF could be approached, as they have supported SABONET, which has been a particularly successful project. The fact that the GEF supported the development of the GSPC in 2002 might provide a gap for further GEF-sourced funding, despite the termination of SABONET. This could perhaps take place through the mediation of NBRI/MET. Under the PDF A heading, project formulation funding of up to US\$ 25 000 could be sought, while under PDF B, the maximum amount that could be sought for implementation is US\$ 250 000.

If a PDF B application is made, it should be for:

- 1) refinement of the outputs of the current workshop by means of on-site surveys, and consequent prioritisation;
- 2) investigation of actual gaps in the network of IPAs;
- 3) integration of IPAs with related projects (e.g. conservancies);
- 4) identification of what strategies can be set in motion for management plans, financing, and legislative and policy framework development; and
- 5) raising public awareness and achieving stakeholder buy-in.

GEF funding requires co-financing by the recipient country. This can be in the form of in-kind funding (e.g. the services of state employees).

A southern African mapping proposal has been put in to the Darwin Initiative. Although there was no prior consultation with Namibian stakeholders, if successful, it will feed into the southern African IPA initiative and include the SABONET countries.

## **17 Selection of an IPA Working Group**

Appropriate institutions from which to draw members for the working group would be NBRI, and several directorates from MET. The group members should be able to meet easily, and it is therefore expedient that they all be based in Windhoek. Other members can be co-opted as required from institutions such as the University of Namibia and the Polytechnic of Namibia. Gillian Maggs-Kölling of NBRI agreed to drive the process. The first meeting of the IPA Working Group should be held in the second half of January or early in February 2005.

## **18 Day 2 closing remarks**

**Phoebe Barnard (GISP, SANBI)**

Criteria A and C were accepted unchanged, while Criterion B was altered to be applicable in a southern African context:

### **Criterion B**

The site contains one or more of the following:

- B1: a botanically rich habitat
- B2: species of special interest\*
- B3: representative of a unique or special habitat type

\*Species of special interest include: restricted range spp.; endemics; evolutionarily important / taxonomically unique species; species of special scientific interest; species of utilisation importance

The provisionally identified IPAs and the final consolidated list were reviewed (see Section 15.3 above.)

### **North-east**

- Auas Mountains
- Omatako Catchment
- Waterberg Escarpment

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- Otavi Mountain Range
- Omuramba Owambo
- Daneib Omuramba
- Nyae Nyae Pan (and others?)
- Kavango River Valley
- Kavango Woodland
- Floodplains east of Katima
- Impalila Island
- Kwando River Valley
- Oshana System
- Ekuma Plains

**South** (consolidated)

- Sperrgebiet (inselbergs and plains?)
- Sperrgebiet corridor
- Orange River
- Warmbad-Eendorn area
- Naukluft

**North-west** (consolidated)

- Baynes (and Zebra ?) Mountains and Otjihipa
- Brandberg and Northern Gravel Washes
- Orupembe and Sanitatas
- Sesfontein, Warmquelle and Opuwo
- Additional micro-sites for inselbergs, springs (to be mapped)

Regarding the south, an issue that arose was how IPAs within the Sperrgebiet would be managed, when there is a national park management plan in place. IPAs will help restrict mining from top priority areas in the national park, and it should be possible to harmonise the IPA management plan with the national park management plan (including the Sperrgebiet Interest Group's process led by A. Burke).

Collecting away from mines, along roads in the Sperrgebiet (e.g. at Schakalsberge) is still occurring, and specimens fetch more than US\$ 200 on the open market.

A gap analysis revealed that Gamsberg; the Auob, Nossob and Olifants Rivers; and the Erongos had not been captured. Single restricted-range species sites, e.g. *Jensenobotrya lossowiana* at Spencer Bay and *Gazania thermalis* at Helmeringhausen and Gross Barmen also require IPA status. Seaweeds of importance along the coast (rocky outcrops) should be evaluated. There are also gaps in our knowledge of threats. A National Habitat Classification List would be useful, but how, when and by whom would it be compiled? There are still data gaps in protected areas.

Some final reflections on the workshop that the IPA Working Group might wish to take up: Firstly, IPA identification can be driven by expert opinion, or by criterion- and data-driven selection. Arguments can be made for both points of view, but so long as in plenary session the IPAs identified in these ways are consolidated with due consideration for the respective methods of selection, the process can be deemed to be accountable. The IPA Working Group might want to revisit this issue in its subsequent evaluation of the identified IPAs. Secondly, in proceeding from the “first cut” to the “second cut” in identifying IPAs, is one at risk of perpetrating self-censorship? Thirdly, have we reached a reasonable consensus? And fourthly, is the gap analysis complete, or does it need to be sent out for review?

### **Closing**

Sonja Loots, who organised the workshop on behalf of the NBRI, noted that the IPA initiative attempts to address Targets of the GSPC in a novel way. This accounts for the wide range of professionals who found time to contribute. Thanks are due to all of them, and in particular to Tony Cunningham, Phoebe Barnard, Pauline Lindeque and the MET staff, Gillian Maggs-Kölling, Herta Kolberg and UNAM and Polytechnic staff.

## Annexes

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## **Annex B Provisional IPA criteria**

### **Criterion A (threatened species)**

The site holds significant populations of one or more species or infraspecific taxa that are of conservation concern.

- A1: Site contains globally threatened species or infraspecific taxa
- A2: Site contains regionally threatened species or infraspecific taxa
- A3: Site contains nationally threatened species or infraspecific taxa
- A4: Site contains restricted-range species (eg. narrow endemics) or infraspecific taxa

#### **Threshold**

- Sites known, thought or inferred to contain 5% or more of the national population or the 5 'best sites', whichever is most appropriate.
- If there are less than 10 sites in the country or between 5-10 large populations of a species, then up to 10 sites can be selected.

#### **Principles**

- Countries must be able to defend their choice of IPAs and therefore must refer to peer-reviewed documentation.
  - A1: Species must be listed as threatened on IUCN global red lists (CR, EN, VU of the new IUCN criteria or EX/E, E,V of the original IUCN criteria)<sup>1</sup>
  - A2: At present no regional red lists are available for southern Africa.
  - A3: Species must be listed as threatened on recognised or published national red lists (CR, EN, VU of the new IUCN criteria or EX/E, E,V of the original IUCN criteria)<sup>2</sup>
  - A4: Species must be listed as restricted-range species/narrow endemic in any recognised list or publication. This can include potentially threatened species i.e. orange lists.
- Species are considered as range-restricted/narrow endemics if the extent of occurrence is <20 000 km<sup>2</sup> or the area of occupancy is <2 000 km<sup>2</sup>. If the area of occupancy is smaller then please indicate the approximate size.

<sup>1</sup> Published lists include:

Oldfield, S., Lusty, C. & MacKinven, A. 1998. *The world list of threatened trees*. World Conservation Press, Cambridge, United Kingdom.

Walter, K.S. & Gillett, H.J. (eds.) 1998. *The 1997 IUCN Red list of threatened plants*. IUCN, Gland, Switzerland.

<sup>2</sup> Examples of lists include (additional peer-reviewed lists can also be used):

Hilton-Taylor, C. 1996a. The Red Data List for southern African plants. *Strelitzia* 4. National Botanical Institute, Pretoria. (Botswana, Lesotho, Namibia, South Africa, Swaziland).

Golding, J.S. (ed) 2002. South African Plant Red Data Lists. *SABONET Report Series* No. 14. Pretoria, South Africa. (Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa (incomplete), Swaziland, Zambia, Zimbabwe)

Loots, S. (in prep.). A Red Data Book of Namibian plants. *SABONET Report Series*. SABONET, Pretoria. (Namibia).

### **Criterion B (botanical diversity)**

Site contains a high number of species and/or species of special interest that represent all vegetation types.
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#### **Threshold**

- Up to 10% of the national resource (area) or the 5 'best sites', whichever is most appropriate.
- In exceptional cases, for example where there are between 5 and 10 exceptionally rich sites for a particular vegetation type, up to 10 sites can be selected for each vegetation type.

#### **Principles**

- Species of special interest include:
  - Restricted-range species
  - Endemics
  - Evolutionary important species / taxonomic unique species
  - Species of scientific interest
  - Species of utilization importance

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- Topographic diversity can be used as a surrogate for habitat diversity, refugia for climate change, speciation zones, species movement and species diversity if insufficient data is available to selected an area.
- The best available national vegetation map should be used but sites selected should be important in a regional context not only a national context.
- Where a centre of endemism<sup>1</sup> or a centre of plant diversity<sup>2</sup> occurs within a broad vegetation type or phytochorion, an additional IPA can be identified.
- Complementarity should be considered when selecting sites i.e. identify sites that have the greatest number of different species within each vegetation type, rather than sites that contain the same range of species.

<sup>1</sup> Van Wyk, A.E. & Smith, G.F. 2001. *Regions of floristic endemism in southern Africa. A review with emphasis on succulents*. Umdaus Press, Pretoria.

<sup>2</sup> IUCN Centres of Plant Diversity (Davis, S.D., Haywood, V.H. & Hamilton, A.C. (eds.). 1994. *Centres of plant diversity. A guide and strategy for their conservation*. Volume 1. Europe, Africa, South West Asia and the Middle East. IUCN Publications Unit, Cambridge, United Kingdom.).

### Criterion C (threatened habitats)

Site contains one or more threatened habitat types

C1: Regionally threatened habitats

C2: Nationally threatened habitats

### Threshold

- Sites known, thought or inferred to contain 5% or more of the national resource (area) of a threatened habitat or the 5 'best' sites, whichever is more appropriate (if there are only between 5-10 sites of a particular habitat or there are between 5-10 exceptional sites then up to 10 sites can be selected).

### **Principles**

- There is no need for priority threatened habitats as per European habitat directive
- There is no regionally threatened habitat list at present for southern Africa.
- South Africa is the only country that has a nationally threatened habitat list.
- For identification of sites using category C1, a regional vegetation map must be used.
- A peer-reviewed regionally threatened habitats list should be used for identification of sites at a regional level.
- For identification of sites using category C2, use the best available national vegetation map.
- Nationally threatened habitat lists should be developed by experts within each country. The degree of threat to the habitat and the need for protection should be taken into account.
- Additional microhabitats/special habitats (gallery forests, quartz fields) that are not mapped on general vegetation maps may be included.
- The suggested cut-off for nationally threatened habitats is <30% remaining habitat.
- Degradation (together with other extractive uses, for example logging) should be incorporated.

