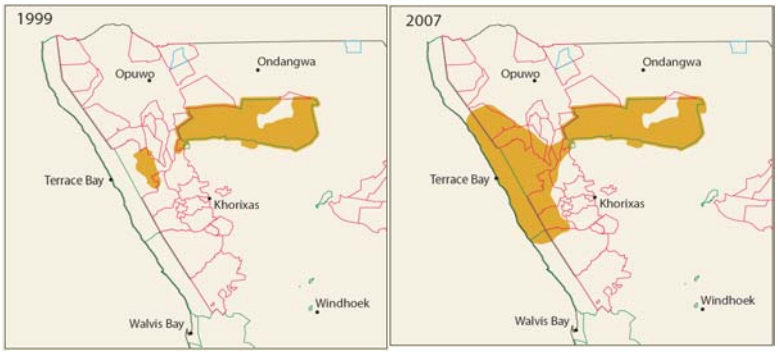
Workshop Proceedings

Environmental Information Services, Systems & Knowledge Management for Biodiversity & Protected Areas

14 August 2009

Windhoek



Distribution of lion populations in north-west Namibia

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Environmental Information Services, Systems & Knowledge Management for Biodiversity & Protected Areas in Namibia

Background

This event was jointly arranged by the Ministry of Environment & Tourism via its SPAN project and the Namibia Nature Foundation (NNF) via its NNF-NamPower partnership initiative.

The NNF-NamPower partnership is developing a national web-based Environmental Information System and Service. This system is now well advanced and has just come on line this week. This initiative is collaborating closely with a number of organisations with biological and spatial data bases, and aims to place as much readily accessible environmental information as possible in the public domain. The initiative also plans to liaise with potential users and provide orientation and training, to maximise the use and value of the information.

The SPAN project is keen to explore the biodiversity monitoring requirements for Namibia's Protected Area Network (PAN), to plan the development of a PAN Biodiversity Information and Knowledge Management System and to address the roll-out and training requirements around such a system.

There are a number of other initiatives involving components of environmental and broader developmental information systems, some in existence, some under development and some at the ideas stage.

This workshop provided an opportunity to bring together the NNF-NamPower and SPAN initiatives, to create a platform to discuss other information systems and services, and to explore how best we could all collaborate to optimize the value of the work being done and planned.

Workshop Objectives

The following Objectives were set for the workshop:

1) To share information on the existing/emerging Environmental/conservation Information and Knowledge Management systems;
2) To explore how we could collaborate to optimize the benefits to supporting organisations and users;
3) To determine the Information and Knowledge Management system needs for the management of the PAN for biodiversity conservation;
4) To identify gaps and develop an action plan for establishing a permanent Knowledge Management system for park management and biodiversity conservation;
5) To explore ways of making the Information System(s) and Services as accessible and usable as possible.

Agenda

Time	Subject	Speaker
08h00-08h30	Registration & tea/coffee	
08h30-08h45	Welcome & introductions	Ben Beytell Chris Brown (facilitator)
08h45-09h15	Environmental Info System	John Mendelsohn and Alice Jarvis
09h15-10h15 Tea 10h45-11h30	Presentation on other relevant systems, e.g. o National Botanical Research Institute o Forestry remote sensing centre o Biodiversity database o Con-Info o National Development Info System (National Planning Commission)	John Irish (Mike Scott) Priscilla Haindongo, NRSC, Forestry John Irish (Ann Scott) Greg Stuart-Hill and Tony Robertson Alex Verlinden and Nico Willemse
11h30-12h15	Plenary discussion with emphasis on future collaboration	Facilitator
12h15 – 12h45	MET PAN Information needs, Park and biodiversity objectives	Ben Beytell (Director: Parks and Wildlife)
12h45 – 13h00	Discussion	
13h00-14h00	Lunch (provided at venue)	
14h00-14h30	Information framework and monitoring	Chris Brown
14h30- 15h15	Break away working groups to consider info requirements and monitoring	National level PAN & Biodiversity needs (Gp 1) Park level – coastal parks (Gp 2) and inland parks (Gp 3)
15h15 – 15h30	Tea	
15h30-16h00	Report backs	Groups 1-3
16h00-16h30	Discussion with emphasis on next steps	Facilitator
16h30-16h50	Roll-out, orientation & training	Facilitator
16h50	Thanks & Closure	Midori Paxton (SPAN)

1. Welcome and Introductions

The Director of Parks and Wildlife Management, Mr. Ben Beytell, welcomed all present. He said it was high time an event of this nature took place to look at environmental information, consolidate it and determine how it could be applied in the future to support management of Namibia's Protected Areas and Biodiversity. The Ministry of Environment and Tourism (MET) was making progress in proclaiming various protected areas and the development of tourism and park management plans. The introduction of a local level monitoring system called the "Incident Book" in some parks assisted with the collection of data, while various other systems and databases existed. Mr Beytell added that he had a collection of files in his office dating back 30 years that were important but gathering dust.

Data and information was essential, especially to equip staff for managing various challenges such as mining in Protected Areas, uncoordinated tourism development, development and implementation of management plans, concessions, environmental impact assessments, etc. He would like to see information easily accessible in a central place so it could readily be tapped into when needed.

The Strengthening the Protected Area (SPAN) Project coordinator, Ms Midori Paxton, added her welcome to the meeting. She expressed her hope that this workshop will lead to the formulation of a biodiversity indicator and monitoring system, as well as to the development of a park performance monitoring system.

The facilitator, Dr Chris Brown (CB) outlined the programme for the day and the objectives of the meeting.

Participants were then asked to introduce themselves. The list of participants is provided in Annex 1.

CB sketched the partnership between NamPower and Namibia Nature Foundation (NNF). He said the institutions had worked together on projects involving power lines through sensitive areas such as Lake Oponono which had major implications for birds. The partnership was formed when it was decided to make information collated available to all and to put it in the public domain, linking into as many datasets as possible. It was strongly believed that an Environmental Information System should not be linked to any one institution, but is a service to all.

2. Environmental Information System

Dr John Mendelsohn gave an introductory presentation, emphasising some of the key principles and experiences around environmental information management and database systems (Annex 2).

Ms Alice Jarvis then gave an overview of the NamPower-NNF Environmental Information System & Service, which is now on line at www.nnf.org.na/EIS. She demonstrated the use of the system on line, and explained its various functions (Annex 3).

Comments:

- Responding to comments on whether the system will be similar to a Wikipedia application, AJ stated that the system would be able to download and share information but commenting was not possible at this state.

- GSH stated that there was a move towards freeware such as Google Earth and Wikipedia.

- There was a feeling that various organisations should refrain from placing their logos too prominently on pages, but could use the national coat of arms instead and credit elsewhere as being sponsored by a particular project, donor or company.

- A suggestion was made to add links to other countries' sites, particularly regarding trans-boundary initiatives and conservation projects. AJ asked participants to send on details of links they would like to have added.

- A brief discussion ensued regarding the long-term sustainability of the site.

3. Presentations on other Relevant Systems

a. Introducing NamIP - the Namibian Indigenous Plants Database
Dr. John Irish, Gobabeb – presented by Mike Scott
(Annex 4)
www.nbri.org.na/NamIP/index.php

b. Forestry remote sensing centre (NRSC)
Ms. Priscilla Haindongo
(Annex 5)

In responding to a query, PH stated that the NRSC provided maps on request free of charge, adding that many maps were available on the Forestry website.

c. Introducing NaBiD - the Namibia Biodiversity Database
Dr. John Irish, Gobabeb – Presented by Ann Scott
(Annex 6)
www.biodiversity.org.na

Discussions centred on the fact that more and more people are placing information in the public domain, the interest shown in the site by US marketing companies and the fact that such statistics are available. AJ commented that it was possible to determine which state browsers were situated in and which site they had previously visited.

d. ConInfo
Dr. Greg Stuart-Hill and Mr Tony Robertson (Annexes 7 & 8)

e. National Planning Commission:
Mr. Uazukuani Uazukuani, GIS Data Analyst

- UU gave a short presentation on the Central Bureau of Statistics (CBS), which is responsible for the collection and dissemination of statistical data, including demographic, economic and agricultural statistics. They also collect data from other ministries, to be integrated in a multi-sectoral database, NAMSTAT. Some of these datasets have a geospatial component, while others are purely statistical (most can, however, be linked to existing GIS data, e.g. a map of constituencies).

- The new approach for surveys (NHIES, 2009) and the census in 2011 will make extensive use of geospatial information: the primary sampling units, known as enumeration areas, are currently captured from orthophotos, as well as the coordinates of each individual dwelling unit. The field survey will be done using GPS-equipped portable computers. Using this dwelling frame approach will allow for a much better analysis of the results. Previously, all analysis was done on aggregated data.

- CBS will develop in-house capacity to process, analyse and disseminate these results in cartographic and GIS supported ways.

- A New Statistical Act is being drafted and finalised, which will improve the policy of data sharing between ministries and other stakeholders.

- Versatile Environmental Consulting (VERSACON) was appointed by Lux-Development Project to support the Central Bureau of Statistics with the development of a National Spatial Data Infrastructure (NSDI) Policy for Namibia.

Discussions

Regarding the sustainability of the project beyond Lux Development funding, it was stated that this was addressed from the initial project design. All staff are employed within the GRN structure and are paid by GRN, so there would be no loss of skills when donor funding ends. The project has contributed to the purchase of equipment and software and this will be a challenge to replace and maintain beyond project closure.

Dr Brown summarised the morning session as follows:

- Need to be service oriented
- Demand driven
- Understand the needs of clients
- Keep it simple
- Need for sustainable systems / services
- Need for constant updating and ability to keep topical
- Need for open access / free / usable information

4. Plenary discussion and recommendations on environmental information systems and services

The facilitator explained that the session aimed to identify bottlenecks, strengthen systems to enhance efficiency and service delivery, make information more useful, and identify what we should do to serve the needs of both our clients and service providers.

It was mentioned in a presentation that there were 2 500 datasets on the EIS; it was explained that a dataset is one zip file of one map and there is a lot more information available. Information that had been loaded into the NamPower – NNF EIS database had been selected from most useful to less useful, with a focus on birds for the present NamPower priority needs.

A Metadata – in fact, more accurately, a Directory - is needed to help people navigate to and through different information systems to meet their needs. Should also establish links between the different information Systems.

Recommendations

- It was unanimously agreed that a Environmental Information Working Group be established with some resources to bring the key practitioners in different organisations together, to establish a functioning network, to establish a collaborative and operational framework to efficiently and effectively develop the necessary environmental information and knowledge management

systems and services needed by stakeholders, in the interests of Namibia's sustainable development agenda.

- It was suggested that a hardcopy **directory** or guide be prepared on the different environmental information systems, and what data / info they contain, and that this be updated and circulated at regular intervals.

- Namibia should not 'reinvent the wheel' here as several international examples of this approach already exist, and we should take these as examples.

- It was suggested that Wikipedia should be used for certain purposes, such as good practice guides, operating procedures, etc., which would allow users to comment on and update information. If Wikipedia is not used, an alternative interactive component should be explored.

- There was a discussion on how to build in some search and analysis procedures for frequently needed information. This will be explored during phase II of the EIS project.

- The participants strongly endorsed the notion that outreach initiatives to current and potential users / stakeholders be explored in more innovative ways, to help people overcome barriers to using these environmental information systems and services. This included providing training and support to MET and other GRN staff, to NGOs and CBOs, and particularly to UNAM and Polytechnic lecturers and students, who would significantly benefit from access to this sort of information for preparing course materials and for doing projects. These students would carry this experience and familiarity with working on environmental information systems into the workplace and hopefully help orientate their colleagues. It was also stressed that the job descriptions are written in a way that requires people to use information.

- Concern was raised about an overlap of databases with the same set of data on several databases. AJ replied that there were links to datasets, and key words function as a portal to other sites.

- Another concern was that information concentrated in datasets on environmental information systems is fine for the scientific community but not really accessible to most managers, decision-makers and politicians. A more friendly and accessible interface and way of presenting information – telling the story – is needed for such stakeholders.

- The target user groups thus need to be defined and their needs carefully understood.

- Need to clearly define what we mean by "environmental" information – does this include social and economic information? Is there a clear boundary to

"environmental" information? Clearly "environmental" is far broader than "ecological", but the EIS cannot contain everything. It was agreed that the EIS should focus on most central and common perceptions of "environmental" and then have links where possible to other information sources, e.g. human demographics.

- ConInfo had thought of having different buttons for separate user groups e.g. park managers, decision-makers, with different protocols for each. This was further discussed, with some feeling it would be time consuming to maintain, too restrictive or unsustainable, Information brokerage was discussed, along with the idea of establishing a 'help desk' to either guide people on how they could access the systems by responding to enquiries, or even by extracting information and preparing maps and reports for managers and key decision-makers.

- It was agreed that information disaggregated at region or other geographic levels (e.g. constituencies, parks, conservancies) would be very useful.

- It was highlighted that the ConInfo system had kept going and expanding for more than 10 years under the management and guidance of the NACSO Natural Resources Management Working Group (NRMWG), who championed the system and were not reliant on a single project, but build the system into consecutive projects and funding sources. The lesson here is that the championing is done by a multi-sectoral multi-agency group of dynamic people who see the benefit in this system and who are prepared to work together to champion the system.

5. MET PAN Information needs, Park and Biodiversity objectives

Ben Beytell, Director: Parks and Wildlife Management
(Annex 9)

6. Information framework and monitoring

Dr Chris Brown, Director, NNF
(Annex 10)

7. Report back from break away working groups to consider info requirements and monitoring

Groups were divided into:

- Inland Parks
- Coastal Parks
- National PAN and biodiversity

7(a) Inland Parks

'A' Priorities to be available in environmental information system

- Park Management Plans
- Work Plans
- Administrative forms
- Legislation and policy; public service manuals and legislation, treasury instructions, labour act, finance laws
- E-service (GRN notifications – each park should subscribe)
- Cites listed species
- IUCN red data species
- Park species checklists
- Prospecting and Mining concessions and terms of their agreements
- Tourism concessions and terms of agreement
- Other concessions, e.g. Joint Venture (JV) and hunting, and terms of agreement
- Personnel database
- Revenue - Concessions
  - Park entry fees
  - Lodges
- Economic value of species

'B' Priorities

- MET strategic plans
- Law enforcement manuals
- GPTF info e.g. from ivory auction
- Human population data (e.g. around parks)
- Neighbouring land uses
- Research – Electronic data should be made available
  Park researchers needed
  Visiting researchers should make data available
  Share research
- Detained vegetation distribution pattern Maps
- Links to neighbouring countries (Parks authorities/ Environment ministries)

Important information/data not currently collected by incident book monitoring system

- Diseases e.g. foot and mouth
- Detailed info on mortalities
- More info on carrying capacity of parks
- Trends of mammal growth rates
- Hydrology: Boreholes - strength

- depth
- when drilled
- drilling company
- quality of groundwater

- Fire scar data
- EPL database
- Veld conditions (vague)
- Overlook some species e.g. devils claw, pangolins, mopane worms

7(b) Coastal Parks

Issues

- Mining
- Invasive aliens – Plants and domestic animals
- Illegal activities - Off road driving
  Poaching
  Succulents
  Fishing
- Wildlife populations and mortalities
- Tourism numbers Permits
  Flights
  Income
- Water provision and floods
- Invertebrate and animal indicators
- Sea level changes, coastline
- Level of park/public collaboration
- Accountability and discipline – staff performance

Information needs

A. Overview of park integrity
   - Areas for 'wilderness' use (sensitivity rating)
   - Areas being 'lost' - monitor track densities
     - mining areas
     - tourism development areas
   - Areas being restored
   - Illegal activities – poaching, fishing, littering, plant collection, low-level flights

B. Performance monitoring
   - patrol efforts
   - staff administration
   - implementation of management plans

- research priorities
- relationships with other ministries

C. Mortalities
   - marine
   - terrestrial, large mammals
   - populations of individual species, e.g. Damara Terns, Lapped-faced Vultures, Welwitschias, lichen fields, wetland birds, baseline studies, once off
   - invasive aliens in rivers, e.g. *Datura*, castor oil and *Prosopis*

D. Visitor numbers
   - revenue
   - visitor satisfaction
   - park/neighbour relationships

7(c) National PAN and biodiversity

Identify needs:
Get buy-in from audience, national-level decision-makers (GRN)

Categories

Current state	**pressures**
Baseline data	Monitoring data
Need broad categories **E.g. intact** **modified**	What frequency What precision Level of disaggregation Trends of current thresholds for integration
Need interpretation of data/info, e.g. Protected species **How to package/present** **Measure of degree of effectiveness and gaps** **Management effectiveness**	Achieving objectives or not Measurable objectives
Need for interventions **E.g. how much anti-poaching needed**	
Effects of tourism • **Physical** • **Economic** • **Positive/negative**	
Other forms of utilisation	

Land-use options and benefits
Economic data

Large-scale data
- **climate**

Trans-boundary implications

HWC data
- **benefits of wildlife to off-set**

Key species data
- **exotic species**

Human resources data
- **employment**
- **skills needs for capacity building**

NR utilisation
- **forestry**
- **hunting**
- **tourism**
- **plant products**
- **re-introductions**

Running costs/ needs

Parks and neighbours
- **benefits and collaboration**

Partnerships

Intervention of stakeholders, Pas etc

Infrastructure for Management

Baseline

Broad inventory of biodiversity
Is all biodiversity protected? (Measure of effectiveness)

Land-use/ resource utilisation
- Costs: Pollution, degradation, causes, drivers
- Benefits: Economics, potential costs projection

Management
- Needs for intervention
- Capacity, infrastructure partnerships
- Transboundary partnerships,
- Effectiveness
- Cost
- Global trends

Interpretation of information

- How is it packaged?
- Up-to-date info
- Background/awareness package
- Highlight major progress/constraints

8. Discussion with emphasis on next steps

CB displayed various booklets with examples of indicators. The aim of the workshop, he summarised, was to make a start at identifying information needs at park level and at national PAN and biodiversity level – to be demand led – and to use this information to start the process of selecting appropriate indicators for long-term monitoring. This process goes hand-in-hand with exploring data availability. It is also linked to the "story" that needs to be told and understood. Therefore, understanding target audiences is very important – who is the information for? And how will they want to receive it and use it? Selected indicators will then be developed, tested and discussed with stakeholders. Once everyone is comfortable with the indicators, they will be codified, and the data will be compiled and managed in an information system. Thereafter various reports and outputs such as the "State of the Protected Area Network and National Biodiversity" can be produced.

Key points from plenary discussion:

- Establish a working group / network of people to cooperate and collaborate on environmental information systems and to facilitate their long-term development.

  ACTION: John Mendelsohn was nominated to initiate this process by calling the first meeting. The relevant recommendations from this workshop should form the Agenda of the first meeting of the working Group

- Set up an information directory service and meta-database to guide people to data and information sources – in both hard and electronic form. This should be set up by one of the projects (EIS?) and then updated by the Working Group.

- Link information collection and monitoring systems to park management activities so park managers have to use them, mainstream into tasks and build into job descriptions. They should make work easier, not more difficult.

- Appoint a consultant for the further development of the PAN & biodiversity information and knowledge management system, to use the guidance

provided by this workshop and to work closely with MET and other stakeholders to:
(a) develop a draft zero set of possible indicators at park and national levels,
(b) assess these indicators against existing monitoring and indicator systems (e.g. as established via the Incident Book) and information availability,
(c) develop and test the indicators and circulate to stakeholders for review,
(d) codify the selected indicators,
(e) work with relevant information systems developers and managers to agree on the best system(s) to manage and administer the data and information, and
(f) produce a report using the indicators, with the intention that the information will be included into the first "State of Park and National Biodiversity Report".
Finally, a thorough training programme should be developed, with the trainer going from park to park and regional office to regional office, to ensure that relevant MET staff are fully familiar and comfortable in their use of the system(s).

- Look at a co-funding mechanism to rapidly develop a PAN and biodiversity info and monitoring system. Funds would be available from various sources, such as through SPAN, NamPower/NNF, possibly NACOMA and via the BICSAfrica project.

- Recruit people to MET's monitoring / information section and build the capacity of this section.

- Make use of local and international guidance and experiences in the development of protocols, approaches and procedures for establishing monitoring indicators for the PAN and biodiversity in Namibia and for ways of presenting the information.

- Databases should each carefully document their sources and details of the information they contain.

- An interactive component is needed, along with keywords on entry page, for search engine optimisation

- Avoid duplication and enhance consistency – links to data sets elsewhere

Target user groups:

- Decision-makers and politicians
- Managers (land and natural resources)

- EIA practitioners
- Marketing (tourism industry)
- Educators, students, researchers
- General public

How to make information accessible:

- Collated info should be focussed and linked to target user needs – it should tell a story.

- A help desk should be established. Consider such a "desk" (could be a virtual desk) working at two levels:

  (i) to assist people to access info via an e-mail enquiry system, and
  (ii) to actually extract information and prepare it as a report for decision-makers and politicians that are not able to access the information themselves.

- Disaggregate info/data to regions and smaller appropriate geographic areas, such as constituencies, parks, conservancies, community forests.

- Look at longer-term institutionalisation of environmental information systems in GRN, but be careful not to make control of and access to data and info exclusively controlled by GRN.

How to improve uptake:

- Replace current DPWM reporting with new system which requires information generated from the Incident Book System (don't try and run duplicate systems after new system is phased in).

- Provide incentives, make life easier. Insist on implementation of systems.

- Many park level staff members don't know how to enter, analyse and interpret of data. Training is urgently needed.

- Put environmental info system and monitoring on agenda at quarterly planning meetings.

- Outreach and training programmes to equip people to effectively use the system(s)

- Establish baseline information for each park (SPAN to coordinate?)

- Regular page in Sandpaper recognising people who are using data and are tuned in

- Link information and data back to park managers and their good management

- Provide ongoing training and follow-up

CB thanked all for their participation. Each participant was then asked to comment on the proceedings of the day.

MP thanked all the participants for providing their time and expertise and thanked Dr Chris Brown for his excellent and inspiring facilitation.

Meeting ended at 17h15

Annex 1

Attendance List

	Name	Institution	Position	Contact No.	e-mail
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