

# BIODIVERSITY INFORMATION MANAGEMENT FORUM

9-12 JUNE 2008



## REPORT



## Contact Details

Knowledge and Information Management Department

Selwyn Willoughby

Kirstenbosch Research Centre  
Private Bag X7  
Claremont  
7735

Tel: 021 799 8695

E-mail: [willoughby@sanbi.org](mailto:willoughby@sanbi.org)

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## Forum Summary

The first Biodiversity Information Management Forum was held on the 10 & 11 June 2008, at the South African National Biodiversity Institute (SANBI), Pretoria.

The Forum was opened by the CEO of SANBI, Dr Tanya Abrahamse and the opening address was delivered by the Minister of Science & Technology, Mr Mosibudi Mangena.

The Forum was established last year, as an outcome of a workshop looking at harmonizing Biodiversity Information Management between partner organisations. The Forum was coordinated by SANBI to address relevant aspects of information management, dissemination and reporting, as stipulated in the National Biodiversity Act (Act 10 of 2004).

The main aims of the forum were to:

- coordinate biodiversity information management initiatives amongst partner organisations;
- establish and promote common standards, and practices;
- promote the free flow of data; and
- provide a platform for knowledge sharing.

In addition to the Forum, the South African Biodiversity Information Facility (SABIF) hosted two workshops in conjunction with the Global Biodiversity Information Facility. The workshops took place on 9 & 12 June 2008 at SANBI, Pretoria, and addressed “Biodiversity Information and GIS Standards” and the “Digitisation of Natural History Collections and Data Cleaning” respectively.



## Biodiversity Information Management Forum Final Programme

Venue: Education Centre, SANBI  
2 Cussonia Ave, Brummeria, Pretoria

**TUESDAY, 10 JUNE 2008**

<b>TIME</b>	
8h00	Registration
8h30	Welcome: Dr Tanya Abrahamse (SANBI)
8h45	Opening address: Minister of Science & Technology - Mr Mosibudi Mangena
9h05	Plenary address: Climate change and the need for quality information - Mr Barney Kgope (SANBI)
9h30	Break
9h40	Plenary Address: Mr Selwyn Willoughby (SANBI) - Overview of the Forum - Report back from the Nov 2007 Workshop & Forum objectives - Forum Terms of Reference
10h15	<b>Tea</b>
10h45	Explanation of the workshop process
11h00	Provincial Decision Making Systems: Parallel Session 1 Facilitator: Mr Reuben Roberts Note taker: Arne Purves
	Provincial Decision Making Systems: Parallel Session 2 Facilitator: Mr Selwyn Willoughby Note taker: Sediqa Khatieb
	Presentations by: Mr Ian Engelbrecht – (Gauteng Nature Conservation)
12h30	<b>Lunch</b>
13h30	Plenary: Report back from parallel session 1
14h00	Plenary: Report back from parallel session 2
14h30	Satellite Application Centre – Alex Fortescue (Satellite Application Centre)
15h00	Break & setting up of participants displays
15h30	An exhibition of participant's information systems, databases and posters. Networking opportunity. (Finger snacks will be served during the exhibition & networking session.)

<b>WEDNESDAY, 11 JUNE 2008</b>	
<b>TIME</b>	
8h30	Welcome and recap of day 1
	Research & data collection: Parallel Session 3 Chair: Ms Fatima Parker-Allie Note taker: Mr Arne Purves
8h40	The South African National Survey of Arachnida: a wealth of information Prof Ansie Dippenaar-Schoeman (ARC)
9h00	A parsimonious MS Access-based system for collections management and research Dr Mervyn Mansell (USDA-APHIS & University of Pretoria)
9h20	Lepidopterists' Society of Africa Dr Bennie Coetzer (Lepidopterists' Society of Africa)
9h40	Lajuma Research Centre Dr Ian Gaigher (Lajuma Research Centre)
10:00	Existing on-line Flora Database / Reptiles Database for Swaziland Ms Kate Braun (Independent)
10h20	<b>Tea</b>
	SABIF: Parallel Session 5 Chair: Ms Jessica Grobler Note taker: Smiso Bhengu
10h50	What does a grant application to SABIF mean? Ms Fatima Parker-Allie (SANBI)
11h10	A reckoning of reptiles Ms Marienne de Villiers (UCT)
11h20	Digitising and Geo-referencing plant specimens in the Southern Cape Herbarium Ms Yvette van Wijk (Southern Cape Herbarium)
11h40	Digitising the South African Diatom Collection. Creating a future for historic data. Dr Johan van der Molten (CSIR)
12h00	Open discussion
12h30	<b>Lunch</b>
13h30	Building biodiversity information management skills - Dr Glenda Raven (SANBI – C.A.P.E.)
14h45	<b>Tea</b>
15h00	Issues for the Forum to address - Mr Selwyn Willoughby
15h45	Forum wrap up & closing
16h00	Departure

Agenda's for Workshops are attached as Appendix 1 & 2

## Plenary Presentations

### **CLIMATE CHANGE AND THE NEED FOR QUALITY INFORMATION MR. BARNEY KGOPE SANBI**

This presentation discussed the IPCC (Intergovernmental Panel on Climate Change) Assessment Reports. These reports assess, in an open and transparent basis, the latest scientific, technical and socio-economic literature produced worldwide which is relevant to the understanding of the risk of human-induced climate change, its observed and projected impacts and options for adaptation and mitigation. The initial report (1990) showed little evidence of human influence on climate change. However more recent reports have gone as far as indicating that “most of the warming observed over the last 50 years is attributable to human activities”.

The presentation discussed the fourth assessment report (AR4) in more detail, showing the projected increases in temperature and changes in rainfall that could be expected in the next 100 years. This information was then related to the impact of climate change on plant and animal species. The Quiver tree and *Acacia Karroo* were used as examples of species whose growth has been monitored to assess the impacts of climate change. Lastly the presentation showed how this information has been used in policy decisions.

### **BIODIVERSITY INFORMATION MANAGEMENT FORUM 2008 - HARMONISING BIODIVERSITY INFORMATION MANAGEMENT MR. SELWYN WILLOUGHBY SANBI**

In this presentation Mr. Selwyn Willoughby gave an overview of the objectives of the Forum, which was established as a consequence of a workshop held in November 2007. The theme of the workshop was “Harmonising biodiversity information management” and its objectives were to identify challenges to effective biodiversity information management and to establish a mechanism through which these challenges could be addressed. The workshop in November 2007 was well attended with 65 participants from a range of organizations and different government departments. The outcomes of the workshop included:

1. SANBI & Gauteng Nature Conservation Department of Agriculture, Conservation & Environment investigating the implementation of a provincial biodiversity information management system.
2. SANBI assisting in building the human capacity in bioinformatics
3. SANBI, through the South African Biodiversity Information Facility (SABIF), leading the implementation of data standards.
4. DEAT, with support from all partners, continuing to represent the sector at the NSIF (on information policy matters).
5. **The establishment of a Biodiversity Information Management Forum to drive the harmonisation of biodiversity information management across partner organisations. SANBI coordinating the Forum.**

Selwyn also presented the Terms of Reference for the Forum - see attached (Appendix 3)

# Provincial Decision Making Systems: Parallel Session 1

**Facilitator: Reuben Roberts**

Mr. Ian Engelbrecht (GDACE) presented some initial considerations and scoping ideas for a country-wide coordinated Provincial Biodiversity Information System. Input was then sought from the provincial representatives in attendance regarding their experiences, resources and needs.

A number of Questions were posed following this presentation

What processes are the other provinces following?	In general there isn't an explicit process that authorities are following. Most people want to stick to their own system. It will be difficult to convince them to adopt a new process. A system that has been proven to work will have to be showcased. A single system approach is also very risky and it would be better to look at a system made up of various components.
Is there a baseline toolkit for all provinces?	A baseline toolkit that contains base GIS layers is required. A repository of all EIAs undertaken is also required. SANBI needs to provide more input e.g. to provide a species list of plants.
What's the difference between Environmental Impact Assessments (EIAs) and conservation plans?	EIAs lead to information generation. Conservation plans also use more sophisticated tools like CLUZ and Marxan. EIAs are practiced at a fine scale e.g. what is happening at a specific ERF where as conservation plans are created for entire municipalities. Conservation plans are static and revised on a 5 year cycle, whereas EIAs are conducted in an ongoing manner, and quick turn-around time is of the essence.

## **Action plan for provincial decision making systems**

- A focus group of provincial representatives will be established. Ian Engelbrecht agreed to lead the process.
- There seems to be a huge problem with capacity and most conservation plans are done by consultants. The focus group, with input from SANBI, should create a document that highlights the various tools to assist in the land-use decision-making process. The document should take into account various success stories.
- A meeting between the various focus group members should be held before the next forum.
- Focus group individuals will correspond via email, notice boards, etc.
- The completed document will be sent to the various provinces.
- The creation of the document needs to be a priority.
- Gauteng will keep interested parties up-to-date on their experience in implementing SPECIFY as a provincial biodiversity information management solution.



## Data Standards: Parallel Session 2

**Facilitator: Mr. Selwyn Willoughby**

### DATA STANDARDS OUTCOMES AND ACTION PLAN

Dr. Vishwas Chavan provided a brief overview on the need for standards and what the different data exchange standards are being implemented. Other aspects that were covered include globally unique identifiers, standard protocols, web services and tools and applications and the importance of Taxonomic Database Working Group (TDWG) was also highlighted.

The purpose of this presentation was to convey the outcomes of the Data Standards workshop held on 9 June 2008 and to look at how the standards could be taken forward.

At the workshop on the 9<sup>th</sup> June, a number of recommendations and an action plan for Bio-informatics standards were developed by a number of stakeholders involved in biodiversity information management.

Tasks	Actions
Who can be influenced to enforcing standards?	<ul style="list-style-type: none"> <li>• Who disburses funds?</li> <li>• In order to ensure that standards are implemented we could potentially liaise with the NRF, SABIF and ARC to indicate that these funding agencies use GBIF-SABIF data standards as criteria for funding.</li> <li>• Individuals applying for permits for data collection should also use GBIF promoted standards. Using standards should be a criteria applied by organizations when a permit is issued.</li> </ul>
Which standards should we adopt?	<ul style="list-style-type: none"> <li>• A number of standards were discussed</li> <li>• Taxon concept schema</li> <li>• Darwin core – for museum records</li> <li>• ABCD-site records, photos – used for observation records</li> <li>• Ecological MetaData Language</li> <li>• These are all GBIF promoted standards</li> <li>• There should be a Forum working group to investigate standard implementation</li> <li>• 2 working groups should be formed – Taxonomic working group and a occurrence data working group</li> <li>• Use tools and applications that comply with Standards</li> </ul>
Capacity building and outreach	<ul style="list-style-type: none"> <li>• We should have the buy-in from stakeholder community with regards to funding and implementation of training needs for the development of standards</li> <li>• There should be at least two training programmes in the next year – with SABIF taking the lead</li> <li>• Have regional trainings in collaboration with SABIF and regional organisations</li> <li>• Literature and guides or e-modules should go together with the course, and also be disseminate on the web.</li> </ul>

Sociology of standards implementation	<ul style="list-style-type: none"> <li>• Lack of awareness</li> <li>• Lack of technical expertise</li> <li>• Prior investment, standards change</li> <li>• Different purpose</li> <li>• Quick Studies to look at gaps in standards – this could be a working group</li> </ul>
How to create a list of authoritative taxon names	<ul style="list-style-type: none"> <li>• Plants – SANBI has taken the lead</li> <li>• Animals – a list needs to be derived but with the appointment of a relevant director of Zoology this issue is likely to be addressed.</li> <li>• Recommendation – SANBI to take the lead with participation of others – in co-ordinating the list of names.</li> <li>• This list of names will link into the Global Names Architecture which is implemented by GBIF</li> <li>• SATOL – SA Tree of Life – here there is also an urgency to look at the animal names</li> <li>• SANBI needs to disseminate SANBI data</li> <li>• Taxon Concept schema should be applied when developing checklists for both plants and animal names.</li> </ul>

### **Authoritative Taxon Names expanded from above:**

One of the outcomes of the Data Standards Workshop held in Pretoria on the 10<sup>th</sup> June 2008 was the strong need for an Authoritative Checklist of Taxon names. According to the Act, SANBI was identified as the Institute to take the lead in this process.

It was generally accepted that the plant names have been dealt with by systems such as PRECIS and “the Plants of Southern Africa”. The main area of concern was the lack of co-ordination with regards to species names from the zoological community. The imminent appointment of a Director of Zoology at SANBI was considered, as a catalyst towards the collation of a comprehensive catalogue of taxon names for the Animalia.

There was some discussion about participating institutions being able to contribute to the process of providing lists of names. Prof. Ansie Dippenaar indicated that she could provide the names for the Arachnids. Dr. Mervyn Mansel could also provide a list of names. A list for the Nematode data could also be provided by the ARC-PPRI. Dr. John Measy has indicated that such a list was being assembled for the reptiles. Thus, there was a general feeling that participating institutions would contribute where possible, but that SANBI would be best placed to drive the process of collating this list.

There was also a recommendation that the list should link into the Global Names Architecture (ECAT) which is implemented by GBIF.

Other projects that were discussed include the SATOL (SA Tree of Life) project. This programme is also focused on the compilation of taxonomic data with an urgency to look at the animal names. Currently there is an initiative to implement SATOL. It would be useful to engage with the SABI programme, which is also focused on taxonomic information and it may be useful to look for common linkages.

Following the discussion on the use and benefits of the application of biodiversity standards, it was recommended that a GBIF adopted standard should be applied when developing this “Authorative checklist of Taxon Names”. Taxon Concept schema was identified as one of the schema’s to apply.

**Questions posed following the action plan for data standards**

Question: How far does the PRECIS database comply with these standards?

Answer: PRECIS is a relational database and mapping it to standards will take 20 minutes at most. PRECIS is comprehensive and will comply with Darwin Core and Access to Biological Collections Data.

# STANDARDIZING GIS PROJECTIONS AND METADATA

Heather Terrapon (M.A. GIS)

SANBI  
Kirstenbosch research Centre  
Private Bag X7, Claremont, 7735  
terrapon@sanbi.org

## Abstract

GIS is widely used in many different disciplines, ranging from crime analysis to town planning, nature conservation and research. Two of the biggest barriers to the effective sharing of GIS data are projections and metadata. Projections correctly place locations or features on the earth's surface and allow users to accurately depict or measure the above. Metadata allows users to communicate the accuracy, locality, version and copyright information pertaining to a file.

The purpose of this presentation was to convey the outcomes of the Data Standards workshop held on 9 June 2008. The presentation introduced projections and communications that are popular in South Africa. The concept of metadata was also introduced and the different metadata standards in South Africa were referred to. Lastly the outcomes of the workshop were briefly discussed.

## Standardizing projections and metadata – Heather Terrapon

Heather Terrapon provided a brief overview on the need for standardizing projections and metadata. Key outcomes of the workshop held on the 9 June 2008 dealing with data standards were presented.

The following fields should be captured for each metadata sheet attached to each GIS layer:

Required	Important	Optional extras
Title	Abstract	Purpose & what is the intended use
Custodian & contact details	Creator	Checked by: (data quality)
Projection	Ownership & contact details	Language
Date valid	Keywords	Metadata creator
Keywords	Date created	Acknowledgement
Date of last update	Latest Version	Origin & references
	Update frequency	
	Distribution rights	
	Disclaimer	
	History (data model) of creation	
	Maintenance log (change, name, date, reason)	
	File format	
	Scale	
	Extent (Resolution)	
	Precision & vertical precision	
	Attribute description	

**Action plan for Metadata standards**

- Formulation of a metadata focus group consisting of: Aubrey Kekana, Amalia Stipinovich, Kirsten Oliver, Heather Terrapon, Lehan Fouche and Les Powrie.
- Development of a metadata template
- Creation of a metadata manual
- All users requesting data should insist on an accompanying metadata sheet

**Action plan for projection standards**

- Formulation of a projection focus group consisting of: Sediqa Khatieb, Kirsten Oliver, Nerina Kruger, Heather Terrapon and Les Powrie
- A hands-on training session on projections should be held
- The projection of a shape file should be stated on each metadata sheet
- Data should be stored and distributed in Geographic (either WGS84 or Hartebeesthoek)
- Projection file should be kept with the rest of the GIS files
- Formulation of a guideline document providing a step-by-step instructions on how to re-project data using ArcView and ArcMap, included in this document should be an example of various area calculations using different projections.

## SATELLITE APPLICATION CENTRE

Tammy Lotz  
[tlotz@csir.co.za](mailto:tlotz@csir.co.za) or 012 334 5237.

Ms. Tammy Lotz gave an overview on the various services provided by the Satellite Application Centre (SAC).

The primary functions relating to earth observation are for the CSIR to acquire, archive, process and distribute remotely-sensed data acquired from earth observation satellites. This process chain includes the development and implementation of value-adding applications as products and services to its stakeholders. The CSIR Satellite Applications Centre maintains and periodically refreshes a comprehensive archive of satellite remotely-sensed data over the southern African continent from 3° to 50° south (as far north as Bujumbura, Burundi, near the equator) to help ensure that fundamental geographic information is available for the benefit of regional and other African communities. The information supplied provides valuable input for a wide variety of decision-makers, impacting areas such as the agro-environment, food security, ocean resources, water management, disaster management and mitigation, housing development, utilities and infrastructure planning, mining safety and national safety and security. (Courtesy of [www.csir.co.za](http://www.csir.co.za))

### SAC make data freely available to government agencies

Dubbed the 'special project' of the incoming CEOS (committee on Earth observation satellites) chair, availability of CBERS images to African countries has been made possible through the willingness of partners in China through CRESDA and Brazil through INPE to waive fees for the downlink system as well as the access fee. This leaves the CSIR free to disseminate country coverage to all the African countries that fall within its footprint. These include Angola, Botswana, the Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. The CSIR's Alex Fortescue, who is part of the CEOS secretariat, explains the philosophy that underlies this decision, "As the incoming chair of CEOS, the CSIR is committed to the concept of data democracy for developing countries. It is our view that only by broadening data access and capacity to end users in developing countries, will the full potential of earth observation data be exploited successfully worldwide." (Courtesy of [www.csir.co.za](http://www.csir.co.za))

Discussion:

Will SAC convert data into JPEGs?

SAC is willing to do this but it's not very useful in this format.

To determine what datasets are archived and available freely, go to the CSIR website ([www.csir.co.za](http://www.csir.co.za)).

## Research and Data Collection: Parallel Session 3

Chaired by Fatima Parker-Allie

### THE SOUTH AFRICAN NATIONAL SURVEY OF ARACHNIDA (SANSA): A WEALTH OF INFORMATION

**Dippenaar-Schoeman, A.S.<sup>1,3</sup> & Haddad, C.R.<sup>2</sup>**

<sup>1</sup>ARC-Plant Protection Research Institute, Biosystematics Division, Private Bag X134, Queenswood 0121, South Africa; <sup>2</sup> Department of Zoology and Entomology, University of the Free State, P.O. Box 339, Bloemfontein 9300, South Africa; <sup>3</sup>Department of Zoology and Entomology, University of Pretoria, Pretoria 0002, South Africa.

#### Abstract:

South Africa has a rich arachnid fauna with about 5000 known species, which represent 6% of the global arachnid diversity. Currently 75% of the arachnids are endemic to South Africa. Although they constitute an abundant and successful group of invertebrates in South Africa, they are still poorly sampled with information scattered through the literature. To overcome this problem, the “South African National Survey of Arachnida” (SANSA) was initiated in 1997 in accordance with the country’s obligations to the Convention of Biological Diversity (CBD). SANSA is an umbrella project dedicated to unify and strengthen biodiversity research on arachnids in South Africa. The second phase of SANSA started in 2007 in partnership with the South African National Biodiversity Institute (SANBI). Currently 30 projects are running involving 11 institutions in South Africa. The information gathered is organized in a relational SANSA database containing information on all published records of South Africa arachnids, as well as material housed in the National Collection of Arachnida. With this wealth of information available, different thrusts focus on diversity within the different floral biomes, agro-ecosystems, conserved areas and provincial checklists. The information gathered is invaluable to determine the distribution, relative abundance and conservation importance of the focal taxa. To address the taxonomic impediment the African Arachnida Database was developed, an on-line information system providing taxonomic, behavioural and distribution data of each species richly illustrated with photographs and line drawings. Other information is made available to the public through the SANSA website, virtual museum and electronic newsletter.

## DATA COLLECTION IN AN AMATEUR ENVIRONMENT

**Dr Bennie Coetzer**

Lepidopterists' Society of Africa  
PO box 73250, Fariland, Johannesburg, 2030  
Email: [Bennie@neutedop.co.za](mailto:Bennie@neutedop.co.za)

### Abstract:

The presentation was about the Lepidopterists' Society of Africa's data collection efforts using Lepidops - a self developed database tool for amateurs. The talk briefly presented Lepidops and explained some of the limitations of such tools in an amateur environment. In particular the data fields captured was presented.

The talk also briefly addressed areas of collaboration that could be set up between the Lepsoc and the professional scientific community specifically in the area of data sharing.



## BIODIVERSITY RESEARCH AT THE LAJUMA RESEARCH CENTRE

**Ian Gaigher**

Lajuma Research Centre, P.O. Box 522, Louis Trichardt 0920  
015 5930352, 0833087027, Leopard@Lajuma.com

### Abstract:

The Lajuma Research Centre is situated west of Louis Trichardt on the southern slopes of the Soutpansberg Mountain Range. The area has a remarkable diversity of climatic zones extending from the bushveld plateau on the south of the mountain, up to the mist laden highest peak of the mountain range and down the north facing slopes with semi-desert conditions. Different types of savannah, semi-deciduous forest, ever green mist belt forest and grassland were represented.

The Centre provides research opportunities to students and volunteers and has established links with local and a number of prominent overseas universities. It is an affiliated site of the SAEON Ndlovu Node.

Although research is not specifically aimed at biodiversity assessment, a good biodiversity data base has been accumulated over the past ten years. This includes check lists and distribution/habitat data of plants, vertebrates and some invertebrate taxa such as spiders, scorpions, ants, dragonflies, butterflies, moths, harvestmen and sawflies. Research that has been done on vegetation dynamics, predator-prey interrelationships, mechanisms of species coexistence, endozoochory, microclimate variation, foraging ecology, etc. provides a basis for an understanding of biodiversity. Scientists and students are invited to participate in a long term assessment of the impact of climatic change on biodiversity.

## SWAZILAND'S REPTILES DATABASE

**Kate Braun**

Consultant, Mbabane, Swaziland, P O Box 174

### Abstract:

The Swaziland's Online Reptiles Database is a small system designed for online collaboration of interested parties, with a view to making available basic information on Swaziland's reptiles. The system is designed for multiple access levels, namely public, registered users and administrators, with different levels of information being available to each group. This system is still under development, with the initial structure being set up earlier this year, and currently is gradually being populated with information from various sources.

## Data management: Parallel session 4

**Chaired by: Yvonne Reynolds**

A NATIONAL INVENTORY OF BIODIVERSITY DATA: STATUS AND WAYS FORWARD

**Reuben Roberts**

SANBI

Kirstenbosch Research Centre,  
Private Bag X7, Claremont, 7735

**Abstract:**

This presentation provided an overview of data inventories and clarifies the attributes of good data inventories and described some of the purposes they can serve. Various national and organisational attempts to build biodiversity data inventories were mentioned, as well as the issues that can hinder these efforts. Finally, by reviewing international trends and technical developments, some solutions to these challenges were suggested. Attendees were invited to discuss the various options for future work in developing a common inventory of biodiversity data for South Africa.

## BIODIVERSITY MONITORING: HOW GOOD BIODIVERSITY DATA CAN LEAD TO A SOUND BASIS FOR DECISION-MAKING

**Jessica Grobler & Smiso Bhengu,**  
SANBI

### Abstract:

SANBI has a mandate under the National Environmental Management Biodiversity Act (NEMBA) to monitor and report on the status of the country's biodiversity with reference to threatened species and ecosystems, invasive alien species and GMOs. A framework for conducting this monitoring has been developed and specific statistics (indicators) have been identified. In the calculation of these indicators existing data sets need to be integrated and analysed to produce one national answer. This provides many challenges and highlights the need for well-managed, integrated biodiversity information in the country. Specific examples were mentioned of the calculation of the Number of threatened species, the number of invasive species and the area of natural habitat lost in the country. Many issues arose during these calculations including the compatibility of data formats and scales, the reliability of data sources, the availability of metadata, projections for spatial data and the accuracy of different data sets. Some suggestions were made on better systems for managing biodiversity data that eliminate many of these issues.

## Questions and Clarifications following the Data Management Session

Questions	Answers
<p><u>Creating a common data inventory – Reuben Roberts</u></p> <p>Q1. How is this different to the GBIF data sharing?</p>	<ul style="list-style-type: none"> <li>• More generic framework as GBIF is taxon/specimen.</li> </ul>
<p>Q2. Morpho-Metacat – is this a barrier as it is unfamiliar?</p>	<ul style="list-style-type: none"> <li>• Reuben indicated that he would give a demonstration. Metacat is an ‘out of the box’ solution</li> <li>• Sanparks are closely involved with the development of Morpho.</li> </ul>
<p><u>ICT in government – Sarel Naude</u></p> <p>Q1. What does Tusong mean?</p>	<ul style="list-style-type: none"> <li>• It is a one stop shop</li> </ul>
<p><u>Review of the IKS database in South Africa – Otsile Ntsoale</u></p> <p>Can DST provide policy framework to assist institutes in developing policies?</p>	<ul style="list-style-type: none"> <li>• DST want to create a community of practice with list server, willing to help.</li> </ul>

## SABIF: Parallel Session 5

Chaired by Jessica Grobler

WHAT DOES A GRANT APPLICATION TO SABIF MEAN?

**Fatima Parker-Allie**

SANBI

Kirstenbosch Research Centre,  
Private Bag X7, Claremont, 7735

[Parker@sanbi.org](mailto:Parker@sanbi.org)

**Abstract:**

The South African Biodiversity Information Facility (SABIF) is the South African Node of the Global Biodiversity Information Facility (GBIF) established by the Department of Science and Technology (DST) in collaboration with the National Research Foundation, Council for Scientific and Industrial Research as well as members of the scientific community. DST is responsible for funding the activities of SABIF and SANBI is responsible for developing and implementing SABIF's work programme.

This talk provided an overview of the South African Biodiversity Information Facility. It also highlighted one of the SABIF work-streams, which is to contribute to the overall objective of promoting digitisation and dissemination of biodiversity data and elaborated on the annual call for funding proposals for digitisation.

## A RECKONING OF REPTILES

**Marianne de Villiers**

Southern African Reptile Conservation Assessment,  
Department of Zoology, University of Cape Town, Rondebosch 7701  
marianne.devilliers@uct.ac.za

### **Abstract:**

South Africa, Lesotho and Swaziland together have an exceptional reptile biodiversity. Despite this, reptile distribution data are non-integrated, patchy and largely inaccessible, and conservation priorities are thus uncertain. Reptiles also have a poor public image. The Southern African Reptile Conservation Assessment (SARCA, 2005-2009) aims to coordinate professional effort to address these issues by:

Compiling a central database of reptile distribution records. SABIF (and previously NRF) funding has allowed SARCA to employ a full-time data technician to aid with the digitization of data. SARCA uses the MySQL database, which is fully portable to most other modern databases. Darwin Core database standards are adhered to. SARCA only digitizes records with a minimum spatial resolution of a quarter-degree grid square. The database currently stands at 116,926 records of which 15,849 were captured with SABIF funding.

Encouraging public awareness and participation, through a website ([www.reptiles.sanbi.org](http://www.reptiles.sanbi.org)), a list-server and through the media. The website houses SARCA's Virtual Museum (now standing at over 4,600 records), whereby members of the public can submit photos of reptiles and accompanying data to the project. All species identifications are confirmed by expert herpetologists. Real-time distribution maps can be viewed online.

Producing an Atlas and Red Data Book. Information is being compiled via an online Assessment Database. The Atlas will contain species accounts and distribution maps for over 400 taxa. Twenty-two herpetological experts from South Africa, Swaziland and the USA are responsible for the species accounts.

Major challenges to SARCA's data digitization include record duplication (the same records entered from more than one source), the time-consuming correction of "inherited" data errors, dealing with taxonomic uncertainties, data sharing issues, and a shortage of capacity and funding.

## DIGITISING & GEO-REFERENCING PLANT SPECIMENS IN THE SOUTHERN CAPE HERBARIUM

**Ms. Yvette van Wijk**  
Southern Cape Herbarium

### Abstract

The Southern Cape Herbarium is a small and independent herbarium situated in George, an area severely threatened by explosive development especially, but not only, along the coast. The talk included the history of the collections and further comment on why it is important that collections get digitized and how SABIF has facilitated this. There is a great need for readily available and open-source data to be made easily and conveniently available for use by a wide range of possible end-users. Ongoing projects include the digitisation of large amount of observational data and also image data. The talk will touch on projects we are busy with at the moment and how SABIF is assisting us to successfully achieve our goals.



THE SOUTH AFRICAN DIATOM COLLECTION  
A FUTURE FOR HISTORIC DATA

**Johan S. van der Molen**

CSIR - Natural Resources and the Environment, Durban, South Africa  
jvdmolen@csir.co.za

**Abstract:**

Diatoms are an important group of micro algae occurring in marine, estuarine and freshwater habitats as phytoplankton and phytobenthos. The species composition at any given time and place is indicative of the prevailing environmental conditions in that habitat. This, in combination with the relative simplicity of sample collection, processing, analysis and curating, has led to a wealth of taxonomic and autecological information the world over. South Africa has a long legacy of diatom research, most of which was conducted at the CSIR. Unfortunately this research diminished during the late 1980's. Fortunately the research materials have all been saved as part of a Diatom Collection that is currently housed at CSIR in Durban. A large part of the collection is properly catalogued, albeit in paper form. A first step to start utilising this potential resource of historic environmental data, is to transfer the catalogue into an electronic database and make this available through the internet. The South African National Biodiversity Institute (SANBI) is funding part of this initiative. The collection contains research materials mainly collected and analysed by B.J. Chalnoky, R.E.M. Archibald and F.R. Schoeman, and consists of an estimated 20,000 microscope slides, 8,000 sample bottles, photographs (light microscope, scanning and transmission electron microscope) and drawings of type specimens, species counts, 5,500 reprints and 350 books on diatom research. The catalogue is due to come online at the beginning of 2009. An actively curated diatom collection will help drive the initiatives to develop water quality monitoring tools based on diatoms. Training and skills development in diatom identification could also be facilitated. The CSIR will focus further on diatom research aimed at coastal areas, estuaries, aqua culture and climate change. Collaboration and student participation is encouraged.

## Questions and Clarifications following the SABIF session

Questions	Answers
<p><u>What does a grant application to SABIF mean?</u> <u>Fatima Parker-Allie, SANBI</u></p> <p>Q1. Organisations such as ARC have a large amount of data that is being continually updated. What is the best mechanism to provide this to SABIF? What assistance can SABIF give us in providing this data?</p>	<ul style="list-style-type: none"> <li>If you have a large amount of continually updated data the best is to become a SABIF node. SANBI can provide assistance in putting the technical infrastructure in place for you to be a SABIF node.</li> </ul>
<p><b>Comment:</b></p> <p><b>Vishwas Chavan:</b> SABIF is the only GBIF node that gives 100% grants for data digitization and this is unique to South Africa. GBIF also gives grants for digitizing but they only give 20% of the total cost with the rest being covered by the organisation involved in the digitizing. This could be a good lesson to other GBIF nodes elsewhere.</p>	
<p><u>A reckoning of reptiles - Marianne de Villiers, UCT</u></p> <p>Q1. SARCA is collecting data on Swaziland but the Swazi authorities do not have access to this data, can we please get access?</p>	<ul style="list-style-type: none"> <li>We have some issues about data sharing as the data is owned by many different organisations. We do not yet have permission to share all the data but would be happy to share all data that we can that is collected during the project or via the virtual museum.</li> </ul>
<p><b>Comment 1– Vishwas Chavan:</b> The problem raised by Marianne of having duplicate data records can be solved by assigning LSID's (Life Science Identifiers) to each record.</p> <p><b>Comment 2:</b> GUID's (Globally Unique Identifiers) has been used in SARCA but there is still have a problem of the same record being picked up from two sources (e.g. museum specimen and publication) with different GUID's.</p>	
<p><u>Digitizing and Geo-referencing plant specimens in the Southern Cape Herbarium -Yvette van Wjik, SCH</u></p> <p>Yvette indicated during her presentation that they had a need for training on digitizing specimens. She indicated that the GBIF node in Spain seemed to have lots of training available.</p>	

**Comment 1 - Vishwas Chavan:** SABIF could co-ordinate training and GBIF would support and assist them.

**Comment 2** -SABIF is planning to do this starting later this year.

**Comment 3** - Southern Cape Herbarium is having problems with PRECIS, they give PRECIS data but they do not have access to PRECIS data.

## Available Resources and Tools: Parallel Session 6

**Chair: Mr. Reuben Roberts**

THE BGIS WEBSITE

**Martin Cocks (M.Sc. Botany)**  
SANBI & IOISA  
Kirstenbosch Research Centre,  
Private Bag X7, Claremont, 7735  
[Cocks@sanbi.org](mailto:Cocks@sanbi.org)

**Abstract:**

The website of SANBI's Biodiversity GIS Unit is central to its core business, which is to provide easy access to spatial biodiversity information thereby facilitating its use in biodiversity planning and decision-making across the South African landscape. This talk showed the type of information which is available on the website and how this can be viewed and interrogated using an online GIS mapping system. It will also demonstrate the specialised tools available on the website which can help governmental decision makers, EIS practitioners or the general public access the biodiversity planning information relevant to their municipality down to the level of cadastral units.

## SANBI'S GIS TOOLS FOR PLANT DISTRIBUTIONS AND PLACE NAMES

**Les Powrie**

Kirstenbosch Research Centre,  
Private Bag X7, Claremont, 7735  
Powrie@sanbi.org

### Abstract:

Two tools were prepared for use during the preparation of the book 'The vegetation of South Africa, Lesotho and Swaziland. *Strelitzia* 19' (Mucina & Rutherford 2006) to tap a valuable source of information about plant species distributions and South African place names. These two tools for use in ArcView 3.x GIS (Geographical information System) have been further developed as they have continued to prove of great value to various users.

The first tool is used to visualise plant distributions from various databases. First is PRECIS with approximately 800 000 records. To this was added Protea Atlas Project for the Proteaceae (265 000 high-precision records within 500 m), ACKDAT (some 300 000 species locality records within 1.5 km accuracy recorded by John P.H. Acocks in his field work leading to the development of his Veld Types of South Africa), National Vegetation Database (plot data from vegetation surveys) and Threatened Species database held by SANBI. A database table is also available for adding the user's own distribution records.

Often place names mentioned on specimens were not consistent with the given geographical co-ordinates, or geographical co-ordinates were not given although locality information suggested that co-ordinates could be determined. Place names were checked using a second tool created for visualising gazetteer information using GIS. This includes nearly 400 000 records from various sources of place names with varying degrees of accuracy. These include places shown on national topographical maps, information from Municipal Demarcation Board, Jack Skead's Zoo-historical Gazetteer for southern Africa, railway stations, information from the South African Geographical Names System (the official source of names maintained by Department of Arts and Culture <http://sagns.dac.gov.za/>), centres of built-up areas, magisterial districts, farms and conservation or protected areas, and lastly the PRECIS Gazetteer with precision centred on a 1:50 000 map sheet.

These 'data mining' and integration processes greatly improved the accuracy and quality of information in the descriptions of vegetation types and species lists for vegetation types, and work in the SANBI Herbaria, CREW project, and locating places mentioned on herbarium labels in order to give spatial co-ordinates for specimens, and other uses where named places needed to be located.

## DATA CLEANING AND IMPORTATION INTO SPECIFY: THE EXPERIENCE OF THE ALBANY MUSEUM

**Willem Coetzer<sup>1</sup> and Helen Barber-James<sup>2</sup>**

1 - South African Institute for Aquatic Biodiversity (SAIAB), Somerset Street, Grahamstown, 6140. E-mail [w.coetzer@ru.ac.za](mailto:w.coetzer@ru.ac.za).

2 – Albany Museum, Somerset Street, Grahamstown, 6140. E-mail [h.james@ru.ac.za](mailto:h.james@ru.ac.za)

### Abstract:

In November 2005 a data-cleaning collaboration between the South African Institute for Aquatic Biodiversity and the Albany Museum was initiated. The aim was to import two collection databases of the Albany Museum, namely freshwater fishes and freshwater invertebrates, which had been managed using PC File and DBaseIII Plus respectively, into Specify Biodiversity Collections Management Software ('Specify', Kansas University Natural History Museum, [www.specifysoftware.org](http://www.specifysoftware.org)).

Many biodiversity datasets require cleaning to a greater or lesser degree because older database management systems often lacked the strict data quality control that we take for granted in newer applications (such as Specify). A common result is that the taxon name field (to take just one important field, for example) becomes populated with incorrectly spelled names. But in the case of the freshwater invertebrates database, the data quality problem was compounded by the fact that there was no structure, or taxonomic tree, in the taxonomic fields. The taxonomic information in the freshwater fishes database was not structured either, but because the database contained fewer records, a smaller range of higher-level taxa and fewer spelling errors, it was less onerous to clean these data. Overall, there were fewer errors in the freshwater fishes database than in the freshwater invertebrates database. Another major field in which much time was spent cleaning records was the agent field (i.e. collector name or determiner name). A common agent table, cleaned and corrected, was created for both databases.

Data were imported into a Microsoft Access database containing forms that allowed workers at the Albany Museum to clean data as efficiently as possible (e.g. correcting one instance of an incorrectly spelled name caused all instances of the same incorrect spelling to be corrected globally). Nevertheless, the data-cleaning project continued from about the beginning of 2006 to April 2008 because data cleaning was not an everyday activity.

When as much cleaning as was feasible had been done, the Microsoft Access database containing the cleaned data was sent to Kansas University Natural History Museum for importation into Specify (a free service offered by the Specify team). The freshwater fishes Specify database file was installed at the Albany Museum at the end of 2006. In April 2008, this database was sent to Kansas University so that the cleaned freshwater invertebrates data could be imported into a separate 'catalogue' in the same database, now known as the Albany Museum Specify database.

For a museum with limited information management capacity, the advantage of having multiple, separate catalogues (one for each discrete collection) in a single database is that database maintenance, and form and report design are simplified, data quality is improved because data are imported into the same fields where possible, and data accessibility is improved.

## Questions and Clarifications following the Available resources and tools session

Questions	Answers
<p><u>Biodiversity GIS website – Martin Cocks</u></p> <p>Q1. What happens to uploaded data?</p>	<ul style="list-style-type: none"> <li>When data is uploaded a link is created and emailed to the user. The data will be saved on the server for three months. If the user accesses the link within that the three month period then the link will be refreshed and saved for another three months from the date of access.</li> </ul>
<p>Q2. How accurate is the species list?</p>	<ul style="list-style-type: none"> <li>Threatened and rare plant species are removed from the list. The list gives you an idea of the type of plants might occur within a quarter degree area.</li> </ul>
<p>Q3. Can shapefiles be downloaded?</p>	<ul style="list-style-type: none"> <li>Yes, simply click on the project tab found on the home page of the website. A list of South African provinces will be listed on the project page. Projects have been classified according to which province they have information for. On each project overview page there is a download section. Users requiring detailed instructions on how to download data should email the bgis team at <a href="mailto:bgishelp@sanbi.org">bgishelp@sanbi.org</a>.</li> </ul>
<p><u>Integrated data for species distribution and places names – Les Powrie</u></p> <p>Q1. Will this go into SIBIS ?</p>	<ul style="list-style-type: none"> <li>It is public data and we should do everything we can to make it available</li> </ul>
<p>Q2. How do you integrate it?</p>	<ul style="list-style-type: none"> <li>The PRECIS table was updated the minute a union query of the different species distribution tables were performed. The gazetteer was made into one table.</li> </ul>
<p><u>Data cleaning and importation into Specify – Willem Coetzee</u></p> <p>Q1. What is the cost of Specify?</p>	<ul style="list-style-type: none"> <li>Specify is free and can be downed from the internet at <a href="http://www.specifysoftware.org">www.specifysoftware.org</a></li> </ul>
<p>Q2. Is it open source software?</p>	<ul style="list-style-type: none"> <li>No but version 6 will be open source.</li> </ul>
<p>Q3. Can it be used for Zoological purpose?</p>	<ul style="list-style-type: none"> <li>There has been no reported case in South Africa where this has occurred.</li> </ul>

**The following abstracts were not available:**

A parsimonious Ms Access-based system for collections management and research – Mervyn Mansell (USDA-APHIS & University of Pretoria):

Metadata management & workflows – Avinash Chuntharpursat (SAEON)

ICT in government – Sarel Naude (SITA Pty Ltd)

Review of the IKS database in South Africa- Otsile Ntsoale (DST)

MapInfo ProViewer as a decision support system for managing biodiversity – Chris Berens (Independent)



## Building biodiversity information management skills

### Dr Glenda Raven

In this presentation Glenda Raven explored some of the actions to be implemented by key stakeholders in order to address the issue of capacity development in the biodiversity information management arena. Some of the key challenges and opportunities were looked at in order to grow capacity in this sector.

Discussions groups were formed and members were requested to look at the following

1. What are the Key Challenges in your context?
2. What opportunities are there in your context?
3. Develop some actions that can be implemented in
  - the short term (2 years)
  - the medium term (5 years)
  - the longer term (10 years)
4. Brief report back from groups
5. Start thinking around the strategy and action plan for developing capacity for the field

The following are the outcomes from the groups:

Group 1
<b>Key challenges</b> <ul style="list-style-type: none"><li>• Lack of money, time and skilled people</li><li>• Professionals/practitioners need to dilute their time to do training</li><li>• Lack of job opportunities</li><li>• Poor marketing</li><li>• Poor remuneration in the biodiversity sector</li><li>• Maybe the concept of interns is distorted – medical interns have great responsibilities and much expected of them – maybe give them responsibility and supervise them, not just a time for them to receive yet more theoretical training</li><li>• Change in sector – theory and skills of 30 years may no longer be relevant</li><li>• Shortage of professionals</li><li>• Wasted skills</li><li>• Gap between what students are taught – ‘what do you need to know’, rather than ‘what do you need to do’?</li><li>• Linear progression through the system</li><li>• Biodiversity may not have a ‘cool image’ that is appealing to young folk</li><li>• Training institutions may not be developing students in as wide an arena as they ought to do, e.g. send to Kruger Park rather than in the local area.</li><li>• Competition between departments and/or private sector</li><li>• Changes in content/approach/name of sector</li><li>• Poor career guidance for undergraduates, scholars</li><li>• Bursaries insufficient</li></ul>
<b>Opportunities</b> <ul style="list-style-type: none"><li>• Internship programmes</li><li>• Developing/involving science</li></ul>

**Actions**

- Bursaries for post graduates ? years
- Involvement of professionals in career development 2 years
- Infiltrate field trips to get students to contribute to research work 2 years
- SANBI should have active career guidance activities 2 years
- Existing tools, or tools that we develop (e.g. GIS) may be used in courses for training students 2 years
- Someone from SANBI come to a conference where a lot of higher education educators are training so that the trainers come to know what is required in the curriculum. Sector representatives to engage with academics e.g. conferences 2 years
- Marketing strategy 2-5 years
- Developing/involving science 2-5 years
- "Applied" degrees 2-5 years
- Formalized involvement of sector with learning institutions 2-10 years
- Sector needs to become more familiar with existing curricula and collaborate with educators 2-10 years

**Group 2****Key challenges**

- No funding
- Technical skills
- Passion
- Taxonomists salaries
- Number of job opportunities limited
- No room for advancement, career pathing has its limitations
- The levels within the scientific field in government
- Succession planning and continuity in positions within organizations

**What opportunities are there in the BIM sector?**

- Look for people or opportunities within the organisation
- Place people in positions where they are most suited. You need the organisation to be flexible
- Allow people to pursue the projects they are interested in during working hours
- Mentorship and job shadowing
- Bursaries for scarce skills
- Formal recognition and marketing as a scarce skill
- Sectoral approach
- Intervene at tertiary level

**Actions**

- Inventory of skills. What do we have? What do we need?
- Bursary scheme and training
- Interest groups should be targeted, involve other organizations and do a skills inventory as well
- Make sure field guides are available at the school level e.g. in libraries
- Develop project materials for teachers to increase interest in science or biodiversity informatics

## Consolidation of workshop recommendations & actions

**Proposal:** A number of workshops were proposed:

1. Morpho Metadata Workshop
2. Specify Workshop
3. Open Source GIS software Workshop
4. GIS projections workshop
5. Data Standards Workshop
6. GIS On screen digitization and data standards workshop
7. Cross-sectoral data issues workshop

**Recommendation:** The proposals for the GIS projections workshop as well as the Data standards workshop were accepted and dates will be set.

**Recommendation:** Forum to take place once a year

**Resolution:** Accepted

**Proposal:** The Forum needs to expand its scope with reference to institutions and geographically.

**Recommendations:** More regional collaborations should take place. Invitations should be sent to SADC country participants and to universities and museums both nationally and regionally.

**Resolution:** Accepted

**Proposal:** A mailing list and Discussion Forum to be developed.

**Recommendation:** A list of initiatives to be developed

**Resolution:** Unconfirmed – to pick up at the next forum

**Proposal:** A group would be needed to drive the programme for the next Forum, with Mr. Selwyn Willoughby leading the process

**Recommendations:** Willem Coetzee (SAIAB)

Ian Engelbreth – Gauteng Dept of Agriculture, Conservation and Environment

Arne Purves (Cape Nature)

Andrew Turner (Cape Nature)

Aubrey Kekana (SANPARKS)

**Resolution:** Above members volunteered and this was accepted.

**Proposal:** List of national biodiversity data inventory needs to be developed

**Recommendation:** SANBI needs to contribute and a national survey to be conducted.

**Resolution:** This would be useful and should be done as a managed network of organizations.

**Proposal:** Links to be added to Infoforum website

**Recommendation:** Members to submit links to the site administrator

**Resolution:** Accepted

**Proposal:** Biodiversity Information Management manual/guidebook to be developed

**Recommendation:** Selwyn to take lead

**Resolution:** Accepted

**Proposal:** A number of **themes** were identified for the next forum. These include:

1. Remote Sensing in Biodiversity and Information Management
2. Capacity or Skills development in Biodiversity Information Management.
3. Technical GIS practices and guidelines

**Resolution:** The theme – ‘Capacity and Skills Development’ was identified for the next Forum to be held in Cape Town, in June 2009.

Other issues raised include:

1. There are few GIS jobs especially in the biodiversity field. Capacity building of new recruits would be a good idea.
2. Free and Open Source Software for Geospatial Conference (FOSS 4) Workshop is very expensive

## Synopsis of actions to be taken before the next Forum

Task	Action
<p><b>Provincial Decision Making Systems</b></p> <ul style="list-style-type: none"> <li>➤ A focus group of provincial representatives will be established.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Ian Engelbrecht agreed to lead the process.</li> <li>➤ Focus group to correspond via email, notice boards, etc.</li> <li>➤ A workshop to take place in Dec.</li> </ul>
<p><b>Data Standards</b></p> <ul style="list-style-type: none"> <li>➤ 2 working groups should be formed – Taxonomic working group and an occurrence data working group.</li> <li>➤ Standards workshop to take place.</li> <li>➤ It was identified that there is a strong need for an authoritative checklist of Taxon names.</li> </ul>	<ul style="list-style-type: none"> <li>➤ SABIF to lead the process.</li> <li>➤ Fatima to coordinate the data standards workshop which will take place in Dec/Jan.</li> <li>➤ SANBI identified to lead the process.</li> <li>➤ Participating institutes to contribute to the process.</li> </ul>
<p><b>Standardizing GIS Projections and Metadata</b></p> <ul style="list-style-type: none"> <li>➤ Formulation of a metadata focus group.</li> <li>➤ Formulation of a projection focus group.</li> <li>➤ GIS projections workshop to take place.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Focus group identified and includes: Heather Terrapon, Aubrey Kekana, Amalia Stipinovich, Kirsten Oliver, Lehan Fouche and Les Powrie.</li> <li>➤ Focus group consisting of: Heather Terrapon Sediqa Khatieb, Kirsten Oliver, Nerina Kruger, and Les Powrie.</li> <li>➤ Heather Terrapon to lead this workshop which will take place in Dec/Jan.</li> </ul>
<p><b>Data Management</b></p> <ul style="list-style-type: none"> <li>➤ Demonstration of Morpho-Metacat.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Reuben Roberts to give a demonstration-pending interest – to be taken up at next forum.</li> </ul>
<p><b>Building biodiversity information management skills</b></p> <ul style="list-style-type: none"> <li>➤ Short term education action to be implemented.</li> <li>➤ Someone from SANBI to attend a conference where a lot of higher education educators are training so that the trainers come to know what is required in the curriculum.</li> </ul> <p><b>Developing Capacity</b></p> <ul style="list-style-type: none"> <li>➤ Inventory of skills. What do we have? What do we need?</li> <li>➤ Bursary scheme and training</li> <li>➤ Interest groups should be targeted, involve other organizations and do a skills inventory as well</li> <li>➤ Make sure field guides are available at the school level e.g. in libraries.</li> </ul> <p>Develop project materials for teachers to increase interest in science or biodiversity informatics.</p>	<ul style="list-style-type: none"> <li>➤ SANBI to have active career guidance activities.</li> <li>➤ Sector representatives to engage with academics e.g. conferences.</li> <li>➤ To be taken up at the next forum.</li> <li>➤ <b>All capacity related recommendations will be made available to the Steering Committee members of the SANBI Human Capital Development Programme.</b></li> </ul>

<p><b>Digitisation of Natural History Collections and Data Cleaning</b></p> <p>➤ Formulation of a working group to look at the digitization of Natural History Collections. This group could look at conducting a gap analysis. Look at what biodiversity data has been captured and what still needs to be digitized.</p>	<p>➤ SABIF (Fatima Parker-Allie) responsible for establishment of the group, which will comprise approximately 10 people.</p>



**BIODIVERSITY INFORMATION MANAGEMENT FORUM**  
South African National Biodiversity Institute, Pretoria



**Biodiversity Data Standards Workshop**  
Monday, 9 June 2008

Venue: Auditorium, Biodiversity Building

**Biodiversity Informatics Standards** **09:00 to 12:45**

The morning session will provide a broad introduction to biodiversity informatics standards, particularly as used in the GBIF network. Addressing the issue of why standards are necessary and beneficial, it will cover several aspects including the main data exchange formats and protocols, globally unique identifiers, available tools and applications, web services, and the GBIF data portal.

**GIS Data Standards** **13:45 to 16:30**

The afternoon session will discuss the data standards that can be applied to GIS data. The discussion will focus on metadata standards for GIS and the different types of projections used in South Africa and the settings that can be set for these projections.

<i>Time</i>	<i>Topics</i>
8h30 – 09h00	Registration
09h00 – 09h15	Welcome and Purpose
09h15 – 10h15	Introduction to GBIF (Mission, history, organisation, work programmes) Interoperability and requirement for standards (why we need standards; general concepts; databases; data types) Data exchange standards (including Darwin Core, Access to Biological Collections Data, Natural Collections Descriptions, Taxon Concept Schema, Species Profile Model, Ecological Metadata Language) Globally Unique Identifiers (including URLs and Persistent URLs, the Handle System, Digital Object Identifiers, Life Science Identifiers) TDWG LSID Ontologies (moving from document centric schemas to object-based ontologies)
10h15 – 10h45	Discussion
10:45 – 11:15	Coffee break
11h15 – 12h15	Protocol standards (including DiGIR, TAPIR, BioCASE wrapper) Tools and applications (including “wrapper” software (DiGIR, BioCASE, TAPIR), taxonomic checklist software (Checklist Provider Toolkit), and Natural History collections metadata (NCD toolkit, NCD Drupal Editor) Web services (GBIF REST-style web services, OGC Web Services) The GBIF data portal

<i>Time</i>	<i>Topics</i>
	(viewed from a data provider's perspective: submission, indexing process, feedback)
12h15 – 12h45	Discussion
12h45 - 13h45	Lunch
13h45 – 14h30	GIS Metadata. What metadata should form part of every GIS related file?
14h30 – 15h00	Coffee break
15h00 – 16h15	Map Projections. What map projection guidelines that can be proposed for all South African GIS data?
16h15 – 16h30	Wrap up and resolutions to take to the Forum





BIODIVERSITY INFORMATION MANAGEMENT FORUM  
South African National Biodiversity Institute, Pretoria

Appendix 2



Digitisation of Natural History Collections and Data  
Cleaning Workshop  
Thursday, 12<sup>th</sup> June 2008  
Venue: Auditorium, Biodiversity Building

<i>Time</i>	<i>Topics</i>
8h30 – 09h00	Registration
09h00 – 09h15	Welcome and Purpose
09h15 – 10h15	<p><b>How to initiate collection digitization?</b></p> <ul style="list-style-type: none"> <li>• Why should we digitize collection?</li> <li>• Pre-planning before you begin digitization (Business case and Action Plan)</li> <li>• The Data Model</li> <li>• Deciding on database solution and packages</li> </ul>
10h15 – 11h00	<p>Interactive Exercise and Discussions</p> <ul style="list-style-type: none"> <li>• Prepare Business case and Action plan for undertaking digitisation of a collection</li> <li>• 15 minutes for filling the performa for business case and action plan</li> <li>• Discussions</li> </ul>
11h00 – 11h30	Coffee Break
11h30 – 12h30	<p><b>Principles of Data Quality</b></p> <ul style="list-style-type: none"> <li>• Definitions and Principles</li> <li>• Taxonomic and Nomenclature data</li> <li>• Spatial data</li> <li>• Collection and Collector Data</li> <li>• Descriptive Data</li> <li>• Data Quality principles during Information Management chain</li> </ul> <p><b>Data Cleaning methods</b></p> <ul style="list-style-type: none"> <li>• Need for Data Cleaning</li> <li>• Principles of Data Cleaning</li> <li>• Cleaning methods during data capture to data dissemination</li> <li>• Tools for data cleaning</li> </ul>
12h30 – 13h30	<b>LUNCH</b>
13h30 – 14h30	<p><b>Geo-referencing the specimen occurrence data</b></p> <ul style="list-style-type: none"> <li>• Collecting and recording data in the field</li> <li>• Beginning the geo-referencing</li> <li>• Geo-referencing legacy data</li> <li>• Tools for geo-referencing</li> </ul> <p><b>How to generalize sensitive data?</b></p> <ul style="list-style-type: none"> <li>• How to determine the sensitivity?</li> <li>• Generalising taxonomic and spatial data?</li> <li>• How to document the sensitivity?</li> <li>•</li> </ul>
14h30 – 15h00	<b>Coffee Break</b>

15h00 – 16h30	<p><b>Brainstorming on “National Blue Print on Mobilising Natural History Collections Data”</b></p> <ul style="list-style-type: none"> <li>• Introduction to “Global Strategy and Action Plan for Mobilising Natural History Collections Data”</li> <li>• Discussions on <ul style="list-style-type: none"> <li>○ Why we need Blue Print?</li> <li>○ Modus operandi and timeline for National Blue Print?</li> <li>○ What can we achieve with National Blue Print?</li> </ul> </li> </ul>
16h30 – 17h00	<b>Wrap-up and What’s Next?</b>

## **Digitisation of Natural History Collections and Data Cleaning**

**Facilitator: Dr. Vishwas Chavan (GBIF) & Prof. Michelle Hammer (UKZN)**

This workshop was a means of developing capacity within South Africa and regionally, through SABIF's international collaboration with the Global Biodiversity Information Facility. This workshop was aimed at database managers, data capturers and data practitioners with the intention of helping collections and database personnel to acquire training and share best practices in the tasks and operations of digitization and data cleaning.

Stakeholders were taken through the process of initiating the digitization of institutional collections.

Some aspects covered here include:

- Why should collections be digitized?
- Identifying digitization goals
- What are the current limitations and resources

Dr. Vishwas Chavan then asked the participants to prepare a business case and action plan for undertaking the digitization of collections. Dr. Chavan discussed some of the strategic elements which would need to form part of such a document.

**The business case would include the following objectives:**

- What is to be gained from the project
- Is the project feasible
- Choosing a database solution
- Characteristics of a good database
- Does the database have the right focus and features that are required by a specific institution or project

**The Action plan would include the following kinds of considerations:**

- Does the solution match your goals, limitations and resources?
- Will the solution take into account future requirements?
- How much staff will be needed?
- Is training for staff required and how much?
- How long will the project take to implement?
- What furniture and equipment will need to be bought?
- What will your workflow be?
- What happens when the project is has ended?
- Will your solution provide the appropriate level of data quality?
- What is the back-up strategy

This type of business case would provide one with a valuable tool to put forward to management to release funding for digitization of collections.

**The National Blue Print for the Mobilization of Natural History Collections (NHC's)**

During the last session on Thursday, an action plan for the digitization of collections in the country was considered. Prof. Michelle Hammer facilitated this process. Prof. Hammer has extensive experience with museum collections data and led this process from a South African perspective.

One of the initial considerations was to take stock of the past 10 years and consider what exercises were undertaken in evaluating the status of the digitization of NHC's.

Large efforts were undertaken at several museums. There is the SABI state of nature report. This document is available on the SABIF website – [www.sabif.ac.za](http://www.sabif.ac.za), however there seems to be little knowledge of the current status.

Several questions were posed, these include:

- National/Provincial departments that manage institutes – were previous audits done?
- Do we need a new survey? What past surveys were done? SABI state of nature
- Use existing information, circulate for verification.

Perhaps a Gap Analysis is a good solution

- The purpose of this Gap analysis would be to discuss barriers.
- This could be done with a small working group initially, and could then be rolled out to the bigger community. Group could then synthesize and look at priorities.
- This working group could circulate the inventory and organize a workshop.
- Discuss barriers and priorities ie. What has been digitized and what still needs to be.
- SABIF (Fatima) responsible for establishment of the group, 10 people

Representative institutions and persons were nominated:

- National Herbarium – Dr. Koos Roux or Marinda Koekemoer
- Fungi – Riana Jacobs
- ARC national collections
- Museums – Willem & Sherman/DAC
- LepSoc – Bennie Coetzer or Herman
- Herbarium group – over 100 small herbaria, e.g. universities, nature reserves - Koos Roux, Yvette
- DST, SABIF
- Sanparks and conservation agencies – has lots of observational data
- Museums – Arts and Culture
- Orphan groups?
- Solly Nkoane TSP

SABIF will drive the process and put faces to the names of organisations.

The group will need to develop a program to look at what information is out there and what needs to be captured. This could be presented at the next Forum.



## Appendix 3.

### Biodiversity Information Management Forum

#### Accepted Terms of Reference

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The Biodiversity Information Management Forum was established as an outcome of a workshop held on 6 & 7 November 2007. The purpose of the workshop was identify how best to harmonize biodiversity information initiatives among the various role-players.

The purpose of the Biodiversity Information Management Forum is to allow role-players involved in biodiversity information management to share and synthesise valuable lessons from relevant and related projects across South Africa.

A range of other forums deal with the challenges of biodiversity planning, implementation. These include the Bioregional Programmes forum, the Stewardship forum, the Protected Areas forum, and the Mainstreaming Biodiversity in Land-use Planning and Decision-making forum.

The Biodiversity Information Management forum is intended primarily for those involved in the aspects of biodiversity information management and the production of biodiversity information products. This includes people from conservation agencies, provincial environmental and conservation departments, conservation NGOs, universities and research institutes (national and international), as well as independent biodiversity consultants working on related projects.

**The objectives of the Biodiversity Information Management Forum are to:**

- Share lessons learnt from various biodiversity & related information management initiatives.
- Introduce aspects of advanced biodiversity information management thinking.
- Build networks for better communication among the various biodiversity information projects and agencies in the country.
- Develop capacity in the biodiversity information management sector through sharing of experiences and exposure to innovations.
- Provide case studies that highlight challenges and success stories in building & maintaining information systems.
- Contribute to guidelines and standards for harmonizing biodiversity information management.
- Provide assistance and advice on possible funding options.

- Investigate training needs and motivate for biodiversity information management training in, for example, tertiary institutions.

**Logistics of the Forum:**

- The Forum will be held annually, possibly in different regions of South Africa.
- SANBI's Knowledge and Information Management section will coordinate the Forum, together with volunteers from the respective region.
- Each Forum will focus on specific issues or themes. These will be identified by the participants of the previous year's Forum, and by the organising team.
- A proceedings document will be produced after each Forum.
- Participants will have to cover their own costs. Efforts will be made to ensure that these are kept as low as possible.
- Subject to availability of funds SANBI may, on request, provide financial assistance to students wanting to attend the Forum. Students will be required to write a motivation explaining the relevance of the Forum to their work.
- Subject to availability of funds SANBI may provide financial assistance to participants invited to lead specific sessions at the Forum.

Appendix 4: List of Participants

Title	Firstname	Surname	Organisation	Email	9June	10June	11June	12June
Ms	Adriana	Jacobs	ARC	jacobsr@arc.agric.za	Yes	Yes	Yes	Yes
Ms	Amalia	Stipinovich	City of Cape Town	Amalia.Stipinovich@capetown.gov.za	No	Yes	Yes	Yes
Mr	Andile Churchill	Mkwalo	Department of Water Affairs and Forestry	mkwaloc@dwaf.gov.za	No	Yes	Yes	No
Mr	Andrew	Turner	Cape Nature	aaturner@capenature.co.za	Yes	Yes	Yes	Yes
Ms	Anna	Mampye	Department of Agriculture, Conservation and Environment	Amampye@nwpg.gov.za	No	Yes	Yes	Yes
Prof	Ansie	Dippenaar-Schoeman	Agricultural Research Council	DippenaarA@arc.agric.za	Yes	Yes	Yes	Yes
Mr	Arne	Purves	Cape Nature	apurves@capenature.co.za	Yes	Yes	Yes	Yes
Mr	Aubrey	Kekana	SANParks	AubreyK@sanparks.org	No	Yes	Yes	Yes
Mr	Avinash	Chuntharpursat	South African Environmental Observation Network (SAEON)	avinash@saeon.ac.za	No	Yes	Yes	Yes
Ms	Awot Kiflu	Gebregziabher	Bolus Herbarium, University of Cape Town	Awot.Gebregziabher@uct.ac.za	No	No	No	Yes
Dr	Bennie	Coetzer	Lepidopterists' Society of Africa	bennie@neutedop.co.za	No	Yes	Yes	Yes
Ms	Brenda	Daly	Endangered Wildlife Trust	brendad@ewt.org.za	Yes	Yes	Yes	Yes
Ms	Carol	Van Wijk	DST	Carol.vanwyk@dst.gov.za	Yes	Yes	Yes	Yes
Mr	Chris	Berens	INDEPENDENT	cjberens@gmail.com	No	Yes	Yes	No
Mr	Craig	Beech	Peace Parks Foundation	cbeech@ppf.org.za	No	Yes	Yes	No
Mr	Deon	Marais	DEAT	dmarais@deat.gov.za	Yes	Yes	Yes	No
Mrs	Domitilla	Raimondo	Threatened Speices Programme - SANBI	raimondo@sanbi.org	No	Yes	Yes	No
Mr	Edward	Thwala	Mpumalanga Tourism and Parks Agency	edward@mtpa.co.za	Yes	Yes	Yes	Yes
Mr	Edward	Mabogo	Limpopo Department of Economic Development, Environment and Tourism	mabogoDE@ledet.gov.za	No	Yes	Yes	No
Dr	Elna	Van der Linder	Arc – National Collection of Fungi	VDLindeE@arc.agric.za	No	No	No	Yes
Ms	Elsabe	Swart	DTEC	eswart@half.ncape.gov.za	Yes	Yes	Yes	No
Ms	Fatima	Parker-Allie	SANBI	Parker@sanbi.org	Yes	Yes	Yes	Yes
Mr	George	Owusu - Afriyie	Aburi Botanic Gardens	georgeoa@idngh.com	Yes	Yes	Yes	Yes
Ms	Heather	Terrapon	SANBI	terrapon@sanbi.org	Yes	Yes	No	No
Mr	Hezron	Makundi	COSTECH (TanBIF)	hmakundi@gmail.com	Yes	Yes	Yes	Yes
Ms	Hulda	Gideon	COSTECH (TanBIF)	hgideon@costech.or.tz	Yes	Yes	Yes	Yes
Dr	Ian	Gaigher	Lajuma Research Centre	leopard@lajuma.com	No	Yes	Yes	No

Title	Firstname	Surname	Organisation	Email	9June	10June	11June	12June
Mr	Ian	Engelbrecht	Gauteng Dept of Agriculture, Conservation and Environment	ian.engelbrecht@gauteng.gov.za	Yes	Yes	Yes	Yes
Ms	Ilva	Rogers	SANBI	RogersI@sanbi.org	No	No	No	Yes
Mr	Imraan	Patel	DST	Imraan.Patel@dst.gov.za	No	Yes	No	No
Mr	Ismail	Ebrahim	SANBI	ebrahim@sanbi.org	Yes	Yes	Yes	Yes
Dr	Janine	Kelly	Agricultural Research Council, PPRI, Biosystematics	Kellyj@arc.agric.za	Yes	Yes	Yes	Yes
Mr	Janine	Victor	SANBI	victor@sanbi.org	No	Yes	Yes	No
Ms	Jennifer	Manganye	SANBI	manganye@sanbi.org	No	Yes	Yes	No
Ms	Jessica	Grobler	SANBI	grobler@sanbi.org	Yes	Yes	Yes	No
Mr	Johan	van de Molen	CSIR	JvdMolen@csir.co.za	No	No	Yes	Yes
Dr	John	Measy	SANBI	Measy@sanbi.org	Yes	Yes	Yes	Yes
Ms	Judith	Kruger	SANParks	judithk@sanparks.org	No	Yes	Yes	No
Ms	Kate	Braun	Independent	kbraun@africaonline.co.sz	Yes	Yes	Yes	Yes
Mr	Kgoale	Mphahlele	DST	kgoale.mphahlele@dst.gov.za	No	Yes	Yes	No
Ms	Kirsten	Oliver	Endangered Wildlife Trust - SACWG	kirsteno@ewt.org.za	Yes	Yes	Yes	Yes
Ms	Kristal	Maze	SANBI	maze@sanbi.org	No	Yes	No	No
Mrs	Leanne	Hart-Richards	Department of Environmental Affairs and Tourism	lhart@deat.gov.za	No	Yes	Yes	No
Mr	Lehan	Fouche	Dept of Environmental Affairs and Development Planning	Lfouche@pgwc.gov.za	No	Yes	Yes	No
Mr	Les	Powrie	SANBI	powrie@sanbi.org	Yes	Yes	Yes	Yes
Ms	Lianda	Lotter	Agricultural Research Council, Plant Protection Research Institute	LotterL@arc.agric.za	No	Yes	Yes	No
Mrs	Lize	von Staden	SANBI	Agenbag@sanbi.org	Yes	Yes	Yes	Yes
Dr	Loraine	van den Berg	DOA-GADI		No	Yes	No	No
Mr	Lulama	Fanayo	Easten Cape Parks	lulama.fanayo@ecparks.co.za	Yes	Yes	Yes	Yes
Mr	Mack	Magodiello	North West Parks and Tourism Board	mmagodiello@nwptb.co.za	No	Yes	Yes	No
Ms	Mafetsi	Moseki	Gauteng Office of the Premier					
Mr	Marc	Leroy	Limpopo Dept of Economic Development, Environment and Tourism	leroymr@ledet.gov.za	Yes	Yes	Yes	Yes
Dr	Marienne	de Villiers	SARCA	Marienne.DeVilliers@uct.ac.za	No	No	Yes	No
Dr	Mariette	Marais	ARC-PPRI (national; Collection of Nematodes)	MaraisM@arc.agric.za	Yes	No	No	Yes
Dr	Marisa	Coetzee	Department of Agriculture - GADI	MarisaC@nda.agric.za	No	Yes	Yes	No
Mr	Martin	Cocks	International Ocean Institute Southern Africa	mcocks@uwc.ac.za	Yes	Yes	Yes	No
Dr	Mervyn	Mansell	USDA-APHIS & University of Pretoria	mervyn.w.mansell@aphis.usda.gov	Yes	Yes	Yes	Yes



Title	Firstname	Surname	Organisation	Email	9June	10June	11June	12June
Prof	Michelle	Hammer	UKZN	HammerM@ukzn.ac.za	No	Yes	Yes	Yes
Mr	Mike	Wallace	Dept. Agric. WCape		No	Yes	No	No
Minister	Mosibudi	Mangena	DST		No	Yes	No	No
Ms	Namhla	Mbona	SANBI	Mbona@sanbi.org	No	Yes	No	No
Mrs	Nerina	Kruger	South African National Parks	nerinab@sanparks.org	No	Yes	Yes	No
Dr	Otsile	Ntsoane	DST	otsile.ntsoane@dst.gov.za	Yes	Yes	Yes	Yes
Ms	Pieta	Compaan	GDAE	Pieta.Compaan@gauteng.gov.za	No	Yes	Yes	No
Mr	Pieter	Nel	NW Parks Tourism Board	Hpnel@mweb.co.za	No	Yes	Yes	Yes
Mr	Ray	Schaller	North West DACE	rschaller@nwpg.gov.za	Yes	Yes	Yes	No
Mr	Reuben	Roberts	SANBI	roberts@sanbi.org	Yes	Yes	Yes	Yes
Mr	Sarel	Naude	SITA Pty Ltd	sarel.naude@sita.co.za	Yes	Yes	Yes	Yes
Ms	Sediqa	Khatieb	SANBI	khatieb@sanbi.org	Yes	Yes	Yes	Yes
Mr	Selwyn	Willoughby	SANBI	willoughby@sanbi.org	Yes	Yes	Yes	Yes
Mr	Sherwyn C.	Mack	SAIAB	s.mack@ru.ac.za	No	Yes	Yes	Yes
Ms	Sindy	Boqo	DWAF	Boqos@dwaf.gov.za	No	Yes	No	No
Mr	Smiso	Bhengu	SANBI	bhengu@sanbi.org	Yes	Yes	Yes	No
Mr	Solly	Nkoana	Threatened Species Programme	nkoanas@sanbi.org	No	Yes	Yes	No
Mr	Stefan	Steenekamp	Peace Parks Foundation	ssteenekamp@ppf.org.za	No	Yes	Yes	No
Dr	Tanya	Abrahamse	SANBI	Abrahamse@sanbi.org	No	Yes	No	No
Ms	Tina	Mokoena	Gauteng Office of the Premier		Yes	Yes	Yes	Yes
Mr	Tom	Vorster	DWAF	vorstert@dwaf.gov.za	No	Yes	Yes	No
Mr	Tosin	Olatokunbo	Tai Solarin University of Education	tostok77@yahoo.com	No	Yes	Yes	No
Dr	Vishwas	CHAVAN	Global Biodiversity Information Facility	vchavan@gbif.org	Yes	Yes	Yes	Yes
Mr	Willem	Coetzer	South African Institute for Aquatic Biodiversity	w.coetzer@ru.ac.za	No	Yes	Yes	Yes
Mrs	Yvette	Van Wijk	Southern Cape Herbarium	yvwijk@mweb.co.za	Yes	Yes	Yes	Yes
Ms	Yvonne	Reynolds	SANBI	Reynolds@sanbi.org	Yes	Yes	Yes	Yes
Ms	Zuziwe	Jonas	South African National Biodiversity Institute	jonas@sanbi.org	No	Yes	Yes	No