Developing products to support implementation of the Mpumalanga Biodiversity Sector Plan and Bioregional plans within Mpumalanga

26 June 2015

Mervyn Lotter
Scientific Services
MTPA
Overview

• Critical review of MBCP (2006) implementation success with reference to products
• Product development & implementation strategy
• Mpumalanga Biodiversity Sector Plan (MBSP) products
• Bioregional plan products
• Conclusion
Review of MBCP (2006) - products

• In 2011, Karine Payet et al. facilitated a workshop to review implementation of MBCP with broad range of users.

Positives
• The MBCP guidelines were a useful implementation tool.
• The Handbook was great & supported decision making.
• The MBCP was freely available & with relatively easily accessible GIS data through the CD & BGIS website.
• The data was available in digital format with a standalone GIS viewer.

Negatives
• The number of MBCP maps produced were insufficient (n=500).
• The land use guidelines could be improved.
For the MBSP, we focused on developing a range of products to provide the necessary contextual information, explain how the sector plan was developed, provide for the development of improved land-use guidelines, and the development of creative spatial tools across a range of media for use in implementation.
MBSP Implementation strategy (& product development)

• The only way for our plan to be implemented by other sectors is if it freely available, accessible and easily interpreted.
• Product development and ease of access have always been part of implementation strategy (MBCP 2006 & MBSP).
• MTPA have actively focused on product development and invested considerable resources into this process.
• Attractive and well written products would assist in awareness, understanding and uptake of products.
• Cabinet endorsement required consultation and availability of products.
MBSP Products

- Wall Map
- Documentation:
  - MBSP Handbook
  - MBSP Technical Report
- Digital Spatial Tools
  - MBSP GIS Viewer
  - MBSP web map application
  - GIS data and all products (electronic)
  - Mobile phone app (Mpumalanga Biodiversity Plan)
- Information Data DVD
COST
Design & 500 maps: R35,000
MBSP Handbook

- Handbook chapters
  - Introduction to the Mpumalanga Biodiversity Sector Plan
  - Biodiversity Profile of Mpumalanga
  - Spatial Assessment
  - Protected Areas
  - Land-Use Guidelines
  - Using CBA maps in Land-Use Planning and Decision-making
- Appendices - Other Useful Resources
  - Environmental legislation relevant to CBAs
  - Mpumalanga’s Vegetation Types
  - Protected Areas Summary for Mpumalanga
  - NFEPA guidelines for land-use practices that impact on water quality, freshwater habitat and biota
BOX 1.2 STRENGTHENING ECOSYSTEM RESILIENCE

Creating functional connectivity in landscapes is a key aspect of promoting ecosystem resilience (the ability of the ecosystem to absorb a certain amount of change, yet still remain functional). Ecosystem resilience can be maintained or built through an approach that focuses on intact areas, maintaining biodiversity priority areas in a natural or near-natural state, maximising connectivity between these areas and maximising the diversity of species and ecosystems. Resilient ecosystems are able to:

- Maintain the ecological and evolutionary processes that allow biodiversity to persist in these ecosystems;
- Better-withstand human-induced pressures (e.g., for example, too frequent fires);
- Adapt to the impacts of climate change, such as increased rainfall variability;
- Mitigate the effects of climate change by continuing to capture and store carbon;
- Deliver ecosystem services, such as the provision of clean water and flood attenuation.

1.2 The Purpose of a Biodiversity Sector Plan

The main purpose of a biodiversity sector plan is to ensure that the most recent and best quality spatial biodiversity information can be accessed and used to inform land-use and development planning, environmental assessments and authorisations, and natural resource management. A biodiversity sector plan achieves this by providing a map of biodiversity priority areas and ecological processes – these areas are called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). The maps are provided together with contextual information on biodiversity, and land-use guidelines (see Figure 2) that can be incorporated into the policies and decisions of a wide range of sectors.

A Biodiversity Sector Plan is based on a fine-scale systematic biodiversity plan (1:50 000 or finer), and has boundaries aligned with administrative boundaries (such as a municipality or group of municipalities). It is made up of the following components:

- A map of biodiversity priority areas (or separate maps for freshwater and terrestrial biodiversity priority areas) – note that this map is called a CBA map for short, even though the map includes several categories of biodiversity priority areas, including Critical Biodiversity Areas and Ecological Support Areas;
- A handbook that includes a biodiversity profile and land-use guidelines;
- GIS files;
- A technical report.

A Biodiversity Sector Plan can be used to guide conservation action (such as identifying priority sites for expansion of protected areas, or to feed spatial biodiversity priorities into planning and decision-making in a wide range of cross-sectoral planning processes and instruments such as provincial and municipal integrated development plans and spatial development frameworks, land-use management schemes, environmental management frameworks and environmental management plans.

It is possible to publish a biodiversity sector plan in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004, as amended), and published plans are known as "bioregional plans" (see Box 1.3).
Using CBA maps in EIAs
(MBSP Handbook extract)

**COST**
Writing and compilation: ? (WWF / Grasslands program)
Layout, design: R45,000
Printing of 1000 copies: R146,000

---

Step 1: Prepare for the site visit
Step 2: Conduct the site visit
Step 3: Assess impacts on biodiversity
   (a) When no significant impact is found
   (b) When significant impacts cannot be avoided
Step 4: Identify opportunities to conserve biodiversity
Step 5: Include biodiversity considerations in written recommendations (EIA report)
MBSP GIS viewer
(desktop or mobile)

- Develop a free GIS viewer for areas without internet.
- Easy to use with no installation requirements.
- Run on most computers (from XP to Windows 8)
- Also available for Android and Apple phones as a .cmf file.

COST
CarryMap software: R2,400 (US$200)
MBSP Web Map Application

- Web map application
COST
Zero cost but we do have access to hosted server
GIS data and products (electronic)

- GIS shapefiles (need GIS)
- MBSP GIS Viewer
  - Carrymap files for mobile phones)
- Documentation & wall map (pdf)
- Hosted on BGIS [http://bgis.sanbi.org/mbsp/project.asp](http://bgis.sanbi.org/mbsp/project.asp) (THANK YOU!!)
Google Play store:

*Mpumalanga Biodiversity Plan*

- Mobile app developed for Android smart phones.
- Search for “Mpumalanga Biodiversity Plan”
- Version 1 released in 2013, Version 2 expected within next month.
Development cost: R44,000
Information Data DVD

Mpumalanga Biodiversity Sector Plan Information DVD and GIS Viewer

Choose one of the following options:

- Install MBSP GIS viewer application on computer
  - Shortcut will be added to your desktop
  - Installation folder C: \ MBSP

- Run MBSP GIS viewer from disk

- Install MBSP Documentation on Computer
  - Shortcuts will be added to your desktop.

- Copy GIS RAW Data to Computer
  - Installation folder c: \ MBSP\GISData

- Copy GIS mobile to local disk for mobile use
  - Files will be copied to MBSP folder to be transferred to mobile device.

Citation:

Scientific Services
Mpumalanga Tourism & Parks Agency
Private bag X11338
Nelspruit
1200

www.mpumalanga.com
Gert Sibande Bioregional Plan

- Bioregional plans are informed by the Biodiversity Sector Plan.
- The GSBP is our 1st bioregional plan and we have received good support from DM.
- District really enthusiastic to have their own wall map and documentation that focuses on their district.
- MTPA decided to develop two district-specific products in addition to those that are available.
  - Gert Sibande Bioregional Plan Wallmap
Gert Sibande Bioregional Plan
Wallmap
User Guide to the Gert Sibande BP

- User friendly interpretation of the MBSP Handbook and bioregional plan document focused on assisting **with the use of the bioregional plan (and reviewing development applications)**, particularly at the municipal level.
- Drafted by a non-scientist with focus on creating a short, attractive document that is easy to read.
- Contents
  - Biodiversity of Gert Sibande District Municipality
  - The Gert Sibande Bioregional Plan
  - Critical Biodiversity Area (CBA) Maps and Land-Use Guidelines
  - Tools For Using the Gert Sibande Bioregional Plan and the Mpumalanga Biodiversity Sector Plan
  - How to Use the Gert Sibande Biodiversity Plan and Critical Biodiversity Area Maps
4.3 Freshwater CBA Map

Development of the freshwater CBA map used the National Freshwater Ecosystems Priority Areas (NFEDA) project data. The freshwater CBA map shows three categories of CBA (CBA Aquatic Species, CBA Rivers and Wetlands) and five sub-categories of ESA (Water, Wetland Clusters, Important Sub-catchments, Strategic Water Source Areas, Other Natural Areas and Modified Areas).

Critical Biodiversity Areas (CBAs)

- All areas required to meet biodiversity pattern and process targets: CBAs are areas of high biodiversity value that should be maintained in a natural or near-natural state.

ECOLOGICAL SUPPORT AREAS (ESAs)

- Areas that are not essential for meeting targets, but that play an important role in supporting the functioning of CBAs and delivering important ecosystem services.

Other Natural Areas

- Areas that have not been identified as a priority in the current systematic biodiversity plan but retain most of their natural character and perform a range of biodiversity and ecological infrastructural functions.

Modified Areas

- Areas with significant or complete loss of natural habitat and ecological function have taken place due to activities such as ploughing, hardening of surfaces, open-cast mining, cultivation, and so on.

4.4 Land-use Guidelines

Proclaiming protected areas such as nature reserves is an effective and secure way of protecting some biodiversity, but there is not enough land available to properly protect biodiversity and ecological processes in this way. Therefore, in addition to protected areas, maintaining biodiversity and ecological processes needs integrated management of large areas of land. To secure the globally important biodiversity of the CSSI, it is necessary to work both within and beyond the boundaries of protected areas to maintain the integrity of ecosystems across broader landscapes, and for all who live and work in these landscapes to play a part in managing them sustainably. This is the essence of the ‘landscape approach’ to biodiversity management and conservation, in which protected areas are embedded in a matrix of land-uses that strives for biodiversity compatibility, and in which biodiversity management objectives are integrated into the plans, decisions, and practices of a wide range of land and natural resource users. It is this thinking that underpins the CSSI, and these goals that the land-use guidelines aim to achieve.
Spatial Development Frameworks (SDFs)

An SDF shows the desired pattern of land-use in the municipality and provides strategic guidance on the location of these land-uses (including land that should be set aside primarily for the conservation of biodiversity). The SDF divides the landscape into spatial planning categories and an important task is aligning the spatial planning categories of the SDF with those used in bioregional plans (the CBA maps). SDFs can be determined at four scales in Mpumalanga: provincial, district, regional, municipal, and precinct (local) scale, and the inclusion of bioregional plans must be considered at all scales.

In terms of incorporating bioregional plans within SDFs, the opportunity for doing so is:
- Within the biophysical description of the SDF.
- Discussing key issues and opportunities as they relate to biodiversity, tourism and ecological infrastructure.
- Within the final vision statement for the SDF to address the loss of biodiversity and ecosystem services and to mitigate impacts on climate change and biodiversity.
- Within the required spatial strategies of protection (what needs protection to achieve vision and spatial concept) and new spatial strategies (what new development is required to achieve vision and spatial concept).
- Within the implementation framework with its policies and land-use guidelines.

In addition, CBA maps of bioregional plans can also inform several other components of an SDF, such as:
- Strategic Environmental Assessments
- Demarcation of the Urban Edges
- Urban Open Space Systems

**LAND USES**
- Mining, tourism, economic development, agriculture etc.

**BIODIVERSITY OBJECTIVES**

**SCENARIOS**

**HABITAT LOSS AND FRAGMENTATION**

**SUCCESST ALTERNATIVE SCENARIOS**

**LAND USE OBJECTIVES**

**Biodiversity Assessment**
- NSP Terrestrial assessment - maps
- NSP Freshwater assessment - maps

**Threatened ecosystems**
- National list of threatened terrestrial ecosystems for South Africa (2011). The first national list of threatened terrestrial ecosystems for South Africa was gazetted on 9 December 2011 (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, IC 9809, CA901, 9 December 2011).

**Sections in the list comprise**
- Listing threatened or protected ecosystems
- Principles for identifying threatened or protected ecosystems
- Criteria for identifying threatened terrestrial ecosystems
- Implications of listing threatened ecosystems

**Department of Water and Sanitation (DWSD)**
- Present Ecological State
- Ecological Importance
- Ecological Sensitivity

**Protected Areas Expansion Strategy (PASEP)**
- Presence of species of conservation concern. One of the fundamental goals of the NSP and CISP is to conserve species. The PASEP can provide information on the site in question and in surrounding areas. These data need to be considered when conducting studies.
Conclusion

• Positive feedback received from DMR and municipalities supports MTPA's investment into a range of products.
• NB to invest in multiple products (i.e. disconnected GIS viewer, web applications, mobile applications, Handbooks, etc.).
• As biodiversity planners, we may have a specific set of skills. Advise employing the services of a graphics designer to “package” our outputs.
• Important to create attractive “nice to have products”.
• It is also really useful to have writing support from someone very knowledgeable or authoritative on biodiversity issues.
• Web and mobile applications are becoming more popular and easy to use. If possible, do try and create web maps. BGIS are planning to support provinces in this regard.
• Negative Investment into product development does not easily allow for rapid review of systematic biodiversity plans (may lead to product confusion).
THANK YOU

mervyn.lotter@gmail.com

http://conservation3.arcgisonline.com/Apps/MBSP/