Expanding protected areas beyond their terrestrial comfort zone:

Identifying & conserving important freshwater areas using systematic conservation planning and stakeholder driven design

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Advances in systematic approaches

Freshwater biodiversity surrogates
- Turak et al. 2007 Hydrobiologia
- Ausseil et al. 2010 Freshwater Biol.

Sub-catchment delineation with river-tree networks
HydroSHEDs – Lehner et al. 2008 ArcHydro

Decision support tools for connectivity
- Linke et al. 2007 Freshwater Biol.
- Moilanen et al. 2008 Freshwater Biol.
- Hermoso et al. Diversity & Distrib.

Present day ecological integrity and persistence
- Hermoso et al. 2011 Aquatic Conserv.
- Turak et al. 2011 Freshwater Biol.
- Nel et al. 2011 Freshwater Biol.

Hierarchical protection strategy
- Abell et al. 2007 Biological conserv.

Cooperation strategies
- Roux et al. 2011 Ecol & Society
Hierarchical protection strategy

Abell et al. 2007

Why important?

• ‘Locking away’ whole catchments not necessary
• Allows for multiple uses within a catchment
• Operationalises conservation areas for freshwaters

Level of protection

- Freshwater focal area
- Critical management zone
- Catchment management zone
Cooperation strategies

Why important?

- Freshwater biodiversity is hopelessly under-represented in protected areas.
- The persistence of freshwater biodiversity in connected systems usually requires the cooperation of multiple actors.
- Identifying NB areas can be a very powerful tool for promoting cooperation.
A decade of work in SA: Promoting cooperation through shared freshwater conservation areas

- 2005: Cross-sector policy process between national govt departments

- Conservation vision linked to 5 policy objectives:
  - Set quantitative conservation objectives
  - Plan for representation
  - Plan for persistence
  - Establish a portfolio of freshwater conservation areas
  - Enable effective implementation

- Policy objectives based on systematic conservation planning principles
AIMS:

1. To identify Freshwater Ecosystem Priority Areas
2. To develop an institutional basis to enable effective implementation
Co-developed stakeholder goals →
quantitative objectives

- **Plan for representation**
  - River, wetland and estuary ecosystem types
  - Threatened fish
  - Free-flowing rivers

- **Plan for persistence**
  - Fish migration corridors
  - Wetland clusters
  - Select connected systems

- **Align with existing initiatives**
  - Protected areas
  - Priority estuaries
From planning software to relevant maps

Ecosystem management guidelines
A FEPA map for every catchment

- Which rivers, wetlands and estuaries should remain healthy
- A nationally consistent information source
Political endorsement & media coverage

E.g. of media releases

**Pressure on land poses threat to river ecosystems**

Less rain in African river basins to put foodstocks at risk

**Maps show rivers and wetlands that should be cherished**

New freshwater atlas shows ecosystem priority areas

**Keep our rivers flowing freely**

Water is our most precious resource, but like all things, it is not everlasting.

**Atlas helps chart course of SA's water management**

JOHANNESBURG: Over half of South Africa's river and wetlands ecosystems are threatened, Deputy Water and Environmental Affairs Minister Rejoice Mabudafhasi said yesterday.

"Deterioration in the health of ecosystems negatively impacts on their ability to continue providing these beneficial ecosystem services," she said in a speech for the launch of the Atlas of Freshwater Ecosystem Priority Areas, in Pretoria.

"There is no doubt that South Africa's freshwater ecosystems are under increasing pressure," said Mabudafhasi.

The atlas would provide the first comprehensive assessment of areas in the country that were most important for sustaining the health and continued functioning of freshwater ecosystems.

She said ecosystems, like municipal services, played an essential role in supporting development and economic infrastructure, generated jobs and eradicated poverty, she said.

The maps had been developed for each of the 19 water management areas in South Africa.

They helped to make informed choices and trade-offs based on an understanding of where South Africa's valuable freshwater ecosystems were located.

They also provided information on how to incorporate freshwater ecosystem goals into integrated planning and decision-making processes.

The maps were available to planners and decision-makers through training and web-based tools on the SA National Biodiversity Institute's Biodiversity, GIS website.

Mabudafhasi said training would start this week in Cape Town, followed by Pretoria and KwaZulu-Natal.

A training course was planned for the Eastern Cape next year.
Widespread dissemination, training and ongoing support for users

- FEPA maps and underpinning data
- Implementation Manual
- Ecosystem management guidelines

http://bgis.sanbi.org
Data DVD
Diversity of uses: national & local
Conclusions

• Systematic conservation planning principles and tools can apply to aquatic settings
• They provide a scientifically credible way of identifying conservation areas
• Resulting maps can be very powerful ways of forging cooperation if paired with a social process
• Credibility, relevance and legitimacy
  • The three principles for moving knowledge to action
Thank you!