Cape Town, South Africa

An urban Biodiversity Network

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Cape Town is home to over 3,000 flowering plant species in an area under 2,500 km². Despite its location in a global biodiversity hotspot, extreme development pressures threaten the city's habitats, flora and fauna. Responding to these threats and the need for rapid action, Cape Town has identified, prioritized and begun the implementation of a Biodiversity Network which protects critically important remnants of vegetation. These conservation measures establish ecological corridors which remain accessible to the citizens of Cape Town and visiting tourists.

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Abstract

In a robust effort to protect a global biodiversity hotspot, the City of Cape Town embarked on a comprehensive and systematic conservation planning exercise. After identifying critically important tracts of remnant indigenous vegetation within nationally and locally defined habitat units, conservation planning methodologies were used to define the best configuration for a Biodiversity Network (BioNet). In designing the BioNet, the special role of wetlands and watercourses was highlighted, as was the role of identified corridors in ensuring connectivity between remnant habitats. In Cape Town, the resulting network presently protects representative components of all remaining vegetation types within the municipal area. The BioNet has since been adopted by the city and is being integrated into planning policies and by-laws.

Cape Town: maintaining an urban biodiversity hotspot

Urban biodiversity is extremely important for cities. Local action for urban biodiversity is now an essential aspect of habitat protection and Local governments have an important role to play in sustainable urban biodiversity conservation, enhancement, utilization and management.

The urban area of the City of Cape Town surrounds Table Mountain National Park, (one of eight inscribed components of a UNESCO (Natural) World Heritage Site). Located in a 'Global Biodiversity Hotspot', the city's urban expansion threatens the patterns and processes of this exceptional landscape and biodiversity. Of 23 nationally recognized vegetation types in the city limits, 10 are considered 'Critically Endangered', four are 'Endangered' and four are 'Vulnerable'. Six of these 23 vegetation types are endemic to the city.

Decisive policy, legislation and implementation at national, provincial and local levels is critical to conserve and buffer the remaining vegetation within a manageable conservation network. Slowly, the various national, provincial and local authority departments - which are responsible for many relevant urban services including housing, planning, transport and environmental conservation are recognizing the need to defend this unique environment as part of Cape Town's, and South Africa's, natural and cultural heritage.

Population / Land area
~ 3.4 million (2007)/
2,461 km²

Municipal budget
ZAR 16. 87 billion/
US$ 2.25 billion

Cape Town joined ICLEI in 1994

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Fondation Charles Léopold Mayer pour le Progrès de l'Homme

This case study is part of a series of local sustainability case studies compiled as part of ICLEI's preperation for Rio+20.

Case Study

City context

South Africa, a signatory to the Convention on Biological Diversity, has undertaken a commitment to assess and conserve its exceptional biodiversity within well-planned conservation networks. Conservation at national, regional and local levels is based on habitat descriptions – using well-defined vegetation types as a basis for biodiversity. A landscape-level approach ensures that critical habitats such as watercourses and wetlands are included as conservation priorities.

Photo: © City of Cape Town

Cape Town waterfront.

Conservation planning at all levels is currently based on the National Spatial Biodiversity Assessment (NSBA), completed in 2004, which identifies all vegetation types and defines them according to a set criteria. These criteria include 'percentage habitat remaining' and 'percentage habitat formally conserved'. Iterative assessment of the NSBA findings has since resulted in the recent publication of a draft list of 'Threatened Ecosystems'.

Provinces and Municipalities in South Africa have adopted the NSBA, and detailed conservation plans for many regions and municipal areas (including Cape Town) have now been finalized. The BioNet is Cape Town's specific fine scale response and conservation plan to the NSBA.

The conservation of a Global Biodiversity Hotspot

Early stages. During 2002, the City of Cape Town initiated a study to assess the potential for a conservation network which would protect important habitat remnants within Cape Town's urban area. The initial study was revised several times as new information became available; ground-truthing of remnants was undertaken to identify and map remnants, and/or emerging national biodiversity policies, programmes or legislation affected the outcomes i.e. completion of the NSBA (2004) and National Vegetation Map (2006). After several iterations, the BioNet was finalized and approved in 2009.

Methodology. The City of Cape Town has adapted the NSBA findings to fit the vegetation types present within the city's urban edge, identifying manageable vegetation remnants and interlinking corridors using best-practice GIS-planning and conservation planning methodologies. Independent but related studies of the rivers and of the wetlands within the city further contributed to the initial terrestrial habitat study. In keeping with recognized conservation planning methodologies, criteria used for selecting remnants included remnant size, connectivity, habitat integrity, threat status, and irreplaceability.

Integration with local planning framework. Many of the city's service departments and branches which are reliant on spatial planning (for stormwater management, parks and recreation or development) have since incorporated the results of the BioNet into policy, planning and framework documents, informing the city's overall spatial and local development plans.

The BioNet will continue to be revised and updated as new and improved information becomes available, or scientific methodologies improve. For example, a re-analysis of the network will be undertaken to establish if it can better plan for the impacts of climate change. It is unlikely that the selection of remnant habitat sites will change significantly, as for many habitat types there are no alternative choices for meeting conservation targets. However, this analysis can aid the practical implementation of the Network.

The city's **Biodiversity Strategy** (2002) was recently replaced by a 'Local Biodiversity Strategic Action Plan', which has a target to secure 60% of the City's Biodiversity Network by 2014. The BioNet must "effectively conserve and protect an adequately representative sample of all the unique biodiversity in Cape Town for the benefit of current and future generations". Furthermore, the goal of this strategic objective is to ensure, that appropriate, effective and efficient management plans and policies are developed and implemented in each of the Primary Biodiversity (Conservation Areas and Biodiversity Nodes).

The promotion, establishment and management of open space is a critical component in the success and functioning of the BioNet. This includes the role of mixed-use areas, corridors and links, which complete and connect the BioNet. In addition, the goal is to initiate a process whereby appropriate local indigenous vegetation is used for horticultural purposes, providing a habitat for local flora and fauna.

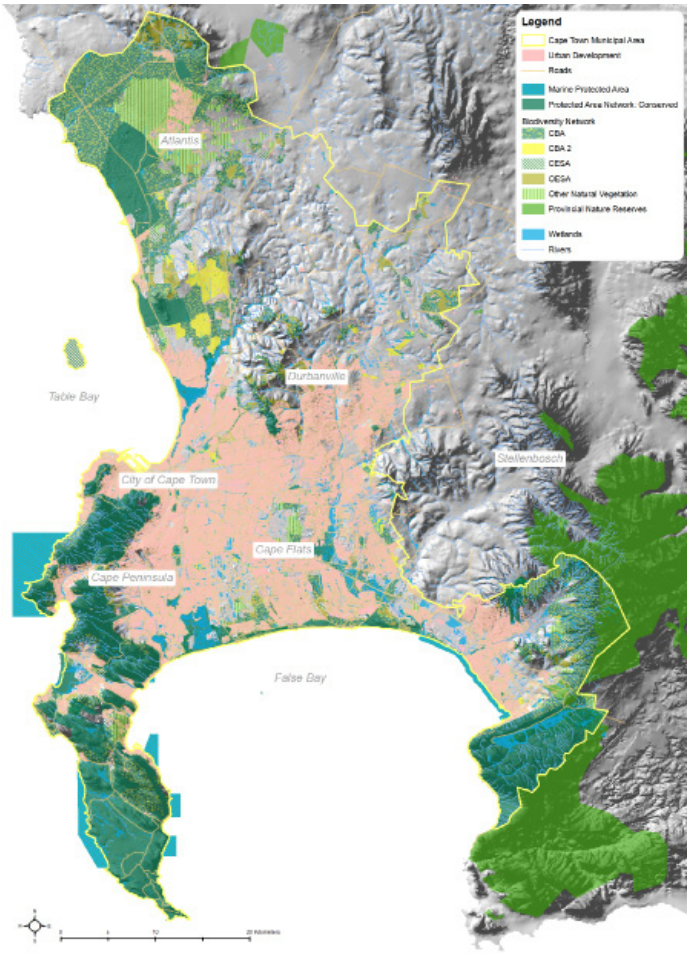

Photo: © City of Cape Town

The City of Cape Town's BioNet showing core protected areas and connecting corridors.

Results

Climate adaptation strategies are now fully cemented into the municipality's planning and institutional framework. This ensures that concerns regarding risk and issues relating to resilience building are fully assessed and subsequently addressed through the implementation of various policy initiatives.

The BioNet of the City of Cape Town provides the basis for a significant contribution to the conservation of a global biodiversity hotspot. Given the global significance of the local biodiversity, the long-term protection of vegetation remnants and the high biodiversity protected by these remnants is crucial at a global as well as regional scale. The implementation of the BioNet will secure for future generations a unique set of habitats represented nowhere else on the planet.

The process has resulted in the best possible configuration for a network to conserve the threatened habitats of the City of Cape Town and represents the most efficient selection of areas to meet conservation targets set for each of the 23 vegetation types as well as associated wetlands and rivers within the city's administrative boundary.

The project has promoted the mainstreaming of habitat preservation into broader city planning framework. The resulting BioNet is being integrated into

the Spatial Development Framework for the City of Cape Town, thus ensuring that land uses are directly informed by prioritized critical biodiversity areas and ecological support areas.

Communication, education, participation and awareness continue to support implementation. Many internal and external stakeholders have been educated through awareness raising etc. This has boosted their sensitivity and understanding in the merits of implementating the BioNet.

Partnerships with the external stakeholders have resulted in high-level integration and cross-institutional support including provincial and national agencies, and funding agencies.

Water quality. The benefits to the city include improved water quality through conservation of watercourses and wetlands, and their buffer areas.

Economic benefits. As tourism, especially eco-tourism accounts for a substantial percentage of the city's (and region's) revenue the BioNet provides numerous opportunities for the creation of local based tourism and recreation enterprises including bird-watching and botanical tours.

The Biodiversity Network ensures long-term improved access to natural open space for the purposes of environmental education, recreation, etc. Cape Town is a highly income-segregated city and access to well-managed, natural open space is not evenly spread across all income-groups. The configuration of the BioNet will thus improve access to mutli-purpose natural areas throughout the city. Vibrant open green spaces are a valuable part of urban wellbeing, especially with regard to recreational and leisure.

The program addresses the most challenging aspect of conservation: Stewardship on privately-owned land. It is broadly recognized that it is not feasible for the city to acquire all prioritized components of the BioNet. It has therefore initiated a stewardship program to encourage private land owners to manage their land in ways that support the maintenance of biodiversity. This program seeks to acquire long-term commitments by private land owners to the conservation of these globally significant areas.

Lessons learned

Integrated long-term planning for biodiversity within the broader city planning framework is essential. Separation of different local government departments and functions, which impact upon the environment provides a significant challenge to biodiversity planning and management. Strong communication between all departments and stakeholders is thus a critical component of crafting a plan that is broadly supported within the city administration.

Political endorsement and a receptive political and institutional environment is crucial. Given the competing needs for both municipal resources and land, communication with and support of local politicians is perhaps the most important ingredient in the recipe for successful implementation of the BioNet. It is equally important to be able to articulate the value of biodiversity areas (ecosystem services such as tourism, water quality management, pollution control and their capacity to provide for ecosystem-based adaptation in the context of climate change). This knowledge needs to be mainstreamed into the political spectrum.

Constant revision and updating of the BioNet is required. While there is always a risk to changing an accepted plan or to re-engage with political process for its approval, it is important to ensure BioNet is regularly updated. This is needed due to changes to the remnant layer and the fact that GIS and conservation planning methodologies are constantly improving. Furthermore, any re-analysis should be supported by ground-truthing to ensure the validity of the data as the city's urban form is rapidly changing. Increasing in-house institutional capacity in the specialized biodiversity conservation planning domain is essential to support, for example data maintenance, however, partnership with other conservation agencies as well as research institutions can significantly enable and support a scientifically defensible analysis and result.

Conservation proposals must be practical and socially defensible. While public open space can increase the value of adjacent properties, in low-income areas, these areas, particularly sites that have not undergone landscape gardening, can be seen as a threat or as unsafe. Thus the conservation of such areas must be undertaken in a manner that addressed such concerns directly.

Management of all conservation areas must be adequately funded. A plan on paper or on a Geographical Information System (GIS) database will not result in the conservation of threatened habitats. Creativity and resourcefulness are necessary to enable conservation management on the ground. Beyond grant funding, various mechanisms, including private sector support, need to be explored to enable improved management on the ground.

Replication

The City of Cape Town's systematic biodiversity conservation planning approach and methodology may offer replication opportunities for other cities which fall within global biodiversity hotspots. Biodiversity networks, connectivity and reconnection of landscape fragments are not new concepts, although the use of a biologically defined open-space system within an urban context is relatively new. Metropolitan open space is more usually centered on human recreational needs, rather than on biodiversity conservation.

Photo:© Patricia Holmes

Hout Bay, Cape Town.

Adequate and reliable spatial data are required to inform such a project. These data types include conservation status, or 'conservation-worthiness' of terrestrial and aquatic remnant habitats, at an appropriate spatial scale.

Furthermore, political will and local authority willingness to undertake a lengthy assessment and planning process is crucial. Good information allows valid decision-making and reduces financial and time inefficiency.

Cape Town is a unique case, located in a 'conservation-worthy' region. Justification for action in other cities may differ, for example the need to include improve ments in water quality in city river systems through the conservation and transformation of waterways and the buffering of terrestrial systems.

Budget & finances

The BioNet project has received funds from the Table Mountain Fund which is administered by World Wildlife Fund (WFF) South Africa. However, the most significant funding has come from internal city sources. The project is also being undertaken in partnership with 'CapeNature', the provincial conservation agency, the CAPE West Coast Biosphere Reserve and South African National Parks (which is also the management agency for the Table Mountain National Park).

Initiated by the city, the project has grown slowly, expanding within budget limits of the various departments and line functions.The environmental protection budget for the city during 2009/10 was ZAR 38.6 million/US$ 5 million. The precise amount for planning and managing the BioNet is not available since this has been covered largely by departmental operational costs. However, considering the economic benefits of the BioNet, it is a worthwhile investment.

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