ENVIRONMENTAL PLANNING
& CLIMATE PROTECTION
DEPARTMENT

BIODIVERSITY | CLIMATE | PEOPLE

STATE OF BIODIVERSITY REPORT

2010/2011

BACKGROUND

In the 2003/2004 municipal year[1], the Environmental Planning and Climate Protection Department (EPCPD) initiated regular State of Environment (SOE) Reporting for the city of Durban. This is in line with the municipal Integrated Development Plans (IDP) which establishes sustainable development as a core goal for local government in Durban. In 2008/2009, the SOE report was replaced with the State of Biodiversity report, to realign the reporting process to reflect the biodiversity and ecosystem goods and services focus of the department. The intention of State of Biodiversity reporting is to present qualitative and quantitative data which describe the status of biodiversity in the eThekwini Municipal area (EMA) and to highlight key threats to this biodiversity. These reports are produced annually and this is the eThekwini Municipality's third State of Biodiversity report.

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FOOTNOTE 1: A municipal year starts on 01 July and ends on 30 June.

COP17/CMP7

190 nations. 30 000 people. The most significant issue in the world. Climate change. One great city – Durban.

From 28th November to 9th December 2011, an estimated 30 000 people will arrive in Durban for the 17th Conference of the Parties to the United Nations Framework Convention on Climate Change and the seventh conference of the parties to the Kyoto Protocol, more commonly known as COP17/CMP7. Over this period, more than 190 nations will negotiate the future of our planet as they seek to reach agreement on reductions in global greenhouse gas emissions, the key contributors to man-made climate change. For Durban, hosting this conference is both a great honour and a huge responsibility.

This is only the second time that the COP has been held on African soil, and so the event also provides Durban with the opportunity to profile its own climate work, and to demonstrate African responses to the specific impacts that climate change is likely to have on African cities.

COP17/CMP7
UNITED NATIONS
CLIMATE CHANGE CONFERENCE 2011
DURBAN, SOUTH AFRICA

What is climate change?

Climate change is a change in the average weather conditions occurring in a region over an extended period of time. This region can be as small as a town or as large as our planet.

Climate does vary naturally, but as humans we are having an increased effect because we burn fossil fuels, which contain Greenhouse Gases (GHGs). Examples of these GHGs include carbon dioxide (CO_2) and other gases such as methane (CH_4) generated through a variety of activities such as biomass burning and waste management.

Impacts of climate change include an increase in average temperatures, which would mean more intense heat waves for longer periods, possible increases in infestations of pests and diseases in temperate regions (e.g., malaria) and the loss of glaciers and ice-caps, due to melting. This latter effect will lead to sea-level rise, coastal erosion and decreased freshwater supply. In Durban, we are likely to see, among other impacts, an increase in the severity of local storm events, with increased run-off leading to a higher risk of flooding events.

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PROFILE OF DURBAN

Table 1: Key statistics describing Durban in 2010/2011

Municipal area	2 297 km^2 (1.4% of KwaZulu-Natal)
Population	~3, 6 million
Population growth (2000 - 2010)	0.98%
Total exports	R 40.1 billion
Total imports	R 60.9 billion
Largest sectors	Manufacturing, tourism, finance and transport
GVA [2]	R 176.1 billion
GDP [2]	R 196.7 billion

Durban has the largest and busiest port on Africa's east coast. Tourism is concentrated along Durban's coastline which boasts warm waters and sandy beaches. Durban's landscape ranges from rural to urbanised, resulting in complex environmental and governance challenges.

FOOTNOTE 2: The Gross Domestic Product (GDP) is the total value of all goods and services produced within the economy in a given period. Gross Value Added (GVA) is a measure of economic value and is used in the estimation of Gross Domestic Product (GDP). It measures the difference between the value of goods and services produced and the cost of raw materials and other inputs which are used in production.

Durban's mangroves

Mangroves are relatively short, dense and species poor and occur in the tidal zones of coastal lagoons and estuaries. SANBI has classified this vegetation type as "Critically Endangered".

Mangroves are important for a number of reasons. They act as buffers between the land and the sea, having a stabilising effect in the coastal zone, protecting the coast from storm events. These unique ecosystems are also breeding and nursery grounds for many commercially important marine species and play a pivotal role in nutrient cycling and detoxification of water. Mangroves occupy less than 0.1% of the EMA and can be found at three localities: Beachwood Mangroves Nature Reserve (uMngeni River Estuary), Bayhead Natural Heritage Site (Durban Bay) and the Isiphingo River estuary. There has been a substantial reduction in the extent of mangroves in Durban since the advent of colonisation and associated development. This is especially evident in Durban Bay where mangrove communities, which occupied 438 ha during the 1800's (largest mangroves swamp in KZN at that time), have been reduced to a mere 15 ha today. This amounts to a 97% reduction in extent.

THE NATURAL ENVIRONMENT

South Africa is the third most biodiverse country in the world [3], and Durban contains:

- Three of the countries nine terrestrial biomes;
- Eight broad vegetation types. These include: Eastern Valley Bushveld, KwaZulu-Natal Coastal Belt, KwaZulu-Natal Hinterland Thornveld, KwaZulu-Natal Sandstone Sourveld, Ngongoni Veld, Scarp Forest, Northern Coastal Forest and, Mangrove Forest;
- Over 2 000 plant species;
- 97 kilometres of coastline with a diversity of beach types and productive rocky shores;
- 17 river catchments and 16 estuaries;
- 4 000 kilometres of rivers; and
- An open space system of approximately 75 000 ha (2010/2011), representing almost 1/3 of Durban's total municipal area.

FOOTNOTE 3: The biodiversity of South Africa 2002: Indicators, trends and human impacts (2002). Endangered Wildlife Trust, Struik Publishers, Cape Town.

THE VALUE OF DURBAN'S NATURAL ENVIRONMENT

An ecosystem is a complex set of relationships among living resources, habitats and residents of an area. It includes living components such as plants, animals (including humans), and microorganisms (bacteria, fungi, etc.) as well as non-living components such as soil and water and the interactions between the living and non-living.

Ecosystem goods and services are the benefits provided by healthy ecosystems to all living organisms – including humans. There is growing recognition of the value of ecosystem goods and services to human well-being in terms of health, social, cultural and economic needs.

:

ECOSYSTEM GOODS

Food production: e.g., fish, crops and fruit

Waste treatment: removal and breakdown of excess nutrients in wetlands, detoxification of air pollution by vegetation

Water supply: supply and storage of water by rivers and wetlands

Disturbance regulation: flood control, drought recovery

Cultural: aesthetic, educational, spiritual and scientific use

AND SERVICES

IMPORTANCE OF STATE OF BIODIVERSITY REPORTING

An effective State of Biodiversity reporting programme which tracks trends over time is arguably one of the most valuable means of informing policy makers, the public and other stakeholders about the status of natural resources, and the sustainability of resource use patterns.

The current report collates information relevant to the 2010/2011 municipal financial year. The indicators were chosen based on how meaningful they are in characterising and monitoring biodiversity in Durban and the reliability of the available data. Most indicators are linked to D'MOSS which is used as a key planning tool, contributing to the attainment of provincial and national biodiversity targets.

The indicators that were chosen are based on their ability to provide information in a meaningful way to:

a) Assist policy makers in benchmarking biodiversity conservation efforts in the urban context; and

b) Evaluate progress in reducing the rate of biodiversity loss in urban ecosystems.

What is D'MOSS?

The Durban Metropolitan Open Space System (D'MOSS) incorporates areas of high biodiversity value linked together in a viable network of open spaces in the eThekwini Municipal area. D'MOSS is mapped by the EPCPD in consultation with relevant experts. It is not a zone, but rather a spatial control layer used as a trigger in the case of a development application, informing stakeholders of the potential environmental sensitivity of a site. The outcome of a detailed investigation of the site will depend on the nature and extent of the development and will be either:

a) No impacts are expected and the activity may proceed,

b) Significant impacts are expected and an environmental assessment prepared by a suitably qualified practitioner will be required along with mitigation measures, or

c) The activity is not supported because the impacts are significant and cannot be mitigated.

The value of D'MOSS comes from the ecosystem goods and services that are provided by the biodiversity contained in the different habitat types included in the system.

Incorporation of D'MOSS into Town Planning Schemes

For many years D'MOSS existed purely as a policy directive of Council. Due to uncertainty in some quarters on its status with respect to the existing zoning, it was decided to integrate D'MOSS into the respective planning schemes found throughout the eThekwini Municipality as a control area or overlay. This action would also immediately bring its existence to the attention of anyone inspecting a scheme map.

Following advertisement in the press on a number of occasions in 2009, the holding of a number of public meetings throughout the city, the serving of notices by post on some 18 000 land owners and careful analysis and consideration of all the comments received, D'MOSS was finally integrated into the respective eThekwini Municipality schemes following its formal adoption by Council on 9 December 2010.

D'MOSS is now depicted on the respective schemes as overlays over the zoning and in addition may be found as a green (switchable) layer on the Council's Geographic Information System (GIS).

The GIS is accessible from website:
http://citymaps.durban.gov.za/website/master/viewer.htm

5.1 Total area of D'MOSS

In 2010/2011 D'MOSS covered an area of ~74 500 ha, representing approximately 33% of the total municipal area. The D'MOSS spatial layer is a dynamic one, undergoing modifications and refinements as new information becomes available. This figure represents the adopted D'MOSS layer.

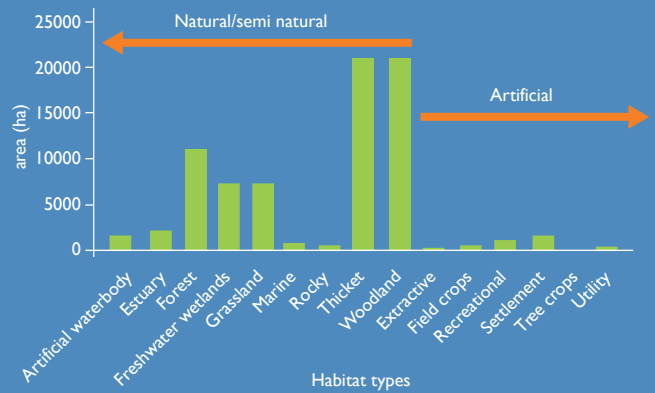


Figure 1: Summary of the different D'MOSS habitat types and their extent

Climate change impacts to sandy beaches along Durban's coastline

Beaches are the interface between the marine and terrestrial environment, interacting with both sea and land. Durban boasts 97 km of coastline, a key tourism drawcard to the City. However, beaches are more than fine picnic spots. They also harbour a unique biodiversity and provide critical and irreplaceable ecosystem goods and services such as storm protection, detoxification and biofiltration.

Rapid population growth and the associated demand for coastal infrastructure have resulted in the excavation of sandy beach and dune systems in favour of development.

Climate change and associated impacts such as sea-level rise and increase in the frequency and severity of storms further exacerbates this threat.

Beaches are forced into a coastal squeeze, impacted on by both the sea and land. When the beach face is lost, not only are coastal properties threatened but biotic communities resident on the beach disappear. This has negative consequences for ecosystem functioning.

Rezoning

- The rezoning of erven acquired by Council and nearby erven to Environmental Conservation Reserve (ECR) and Conservation Zone (CZ) was initiated in 2010 and is ongoing.
- The spilt zoning of several properties in the Kloof Waterfall Plateau for environmental protection was also initiated in 2010.

These initiatives aim to protect environmentally sensitive land to ensure that the ecosystem goods and services so provided by these natural systems are secured in the future.

Follow-up NUCS project initiated

In 2010/2011, the EPCPD undertook two projects to follow-up on the status of NUCS (Non User Conservation Servitude) that were requested by the department. Firstly, land owners from whom a NUCS was requested but not registered were contacted and if possible, these owners were given advice on the NUCS registration process. Secondly, a portion of registered NUCS were selected and prioritised for follow-up site inspections. Twenty-four grassland sites were visited by the Biodiversity Impact Assessment staff of EPCPD to:

i. Ascertain whether the NUCS are being managed by the landowners and which would require further monitoring;

ii. Establish if structures have been erected within the NUCS without EPCPD approval; and

iii. Update the NUCS and D'MOSS shapefile.

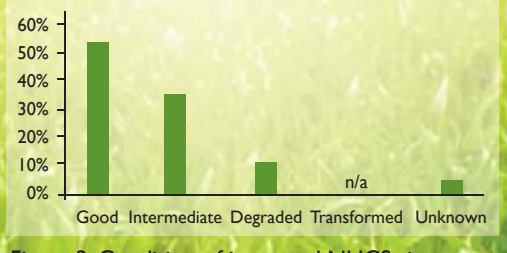


Figure 2: Condition of inspected NUCS sites

5.2 Percentage of D'MOSS that is protected and managed in Durban

Tools used by the EPCPD to secure and formally protect environmentally sensitive areas in the City include:

5.2.1. Non User Conservation Servitudes (NUCS): In some instances, the outcome of the development assessment process requires the registration of a conservation servitude over that portion of the application property that is within D'MOSS. The area affected by the servitude remains in the ownership of the land owner and can be used for purposes that do not compromise the integrity of the natural environment.

- In 2010/2011, there were 105 registered conservation servitudes in the city (covering an area of 171.7 ha)

Figure 2 shows the condition of the 24 grassland NUCS sites that were visited. Several recommendations were made following the inspections including the provision of a Management Support Guideline to land owners. Further NUCS inspections of other sites will be undertaken in 2011/2012.

5.2.2. Land Acquisition: In some restricted instances, threatened or important areas are protected through acquisition. This is achieved by either a) purchasing the property from the owner at an agreed upon value or b) property owners donating their land the City. In 2010/2011, 45.05 ha of land were acquired by the EPCPD for environmental conservation. This equated to a total spend of R 9.8 million.

5.2.3. Nature Reserve proclamation: Work is currently being undertaken on the proclamation of 11 municipal nature reserves in terms of the National Environmental Management: Protected Areas Act (2005). These are: Roosefontein, Burman Bush, Empisini, Marion Wood, New Germany, Paradise Valley, Pigeon Valley, Silverglen, Springside, Virginia Bush, and extensions of the Krantzkloof Nature Reserve. This exercise will give these nature reserves a higher conservation status, thus further protecting Durban's biodiversity assets.

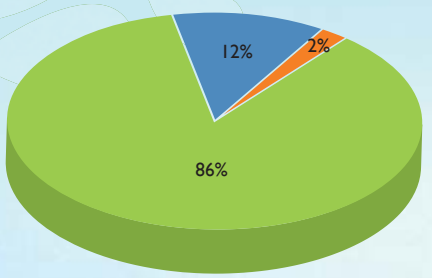


Figure 3: Percentage of D'MOSS that is managed

Zoned but not managed Managed Neither managed nor zoned

Managed areas include those under control of both the municipality (EPCPD or Natural Resources Division of the PLCD) and external agencies (e.g. eZemvelo KZN Wildlife and/or Msinsi Holdings.) Natural Resources Division of the PLCD [4].

FOOTNOTE 4: Parks, Leisure and Cemeteries Department.

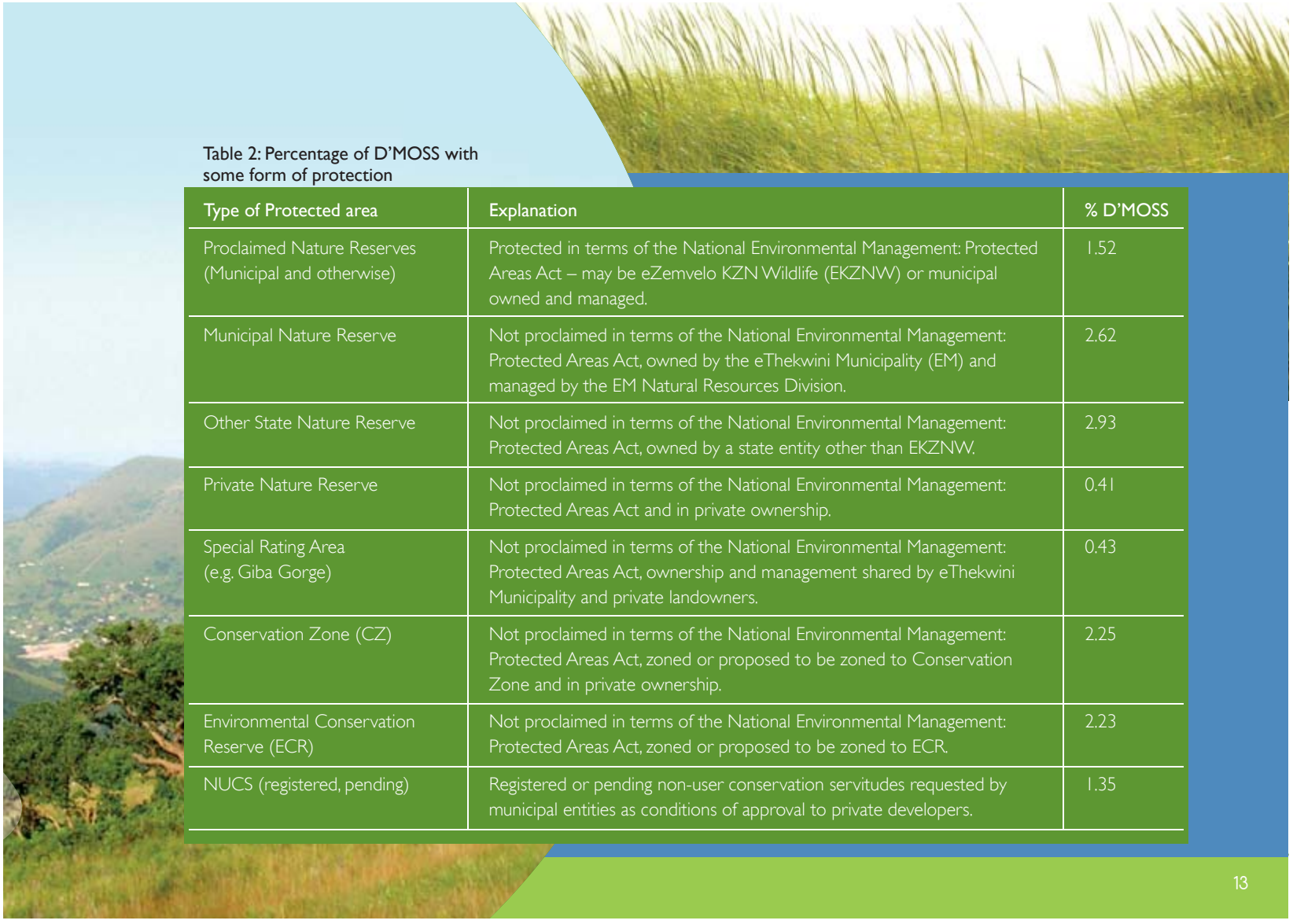


Table 2: Percentage of D'MOSS with some form of protection

Type of Protected area	Explanation	% D'MOSS
Proclaimed Nature Reserves (Municipal and otherwise)	Protected in terms of the National Environmental Management: Protected Areas Act – may be eZemvelo KZN Wildlife (EKZNW) or municipal owned and managed.	1.52
Municipal Nature Reserve	Not proclaimed in terms of the National Environmental Management: Protected Areas Act, owned by the eThekwini Municipality (EM) and managed by the EM Natural Resources Division.	2.62
Other State Nature Reserve	Not proclaimed in terms of the National Environmental Management: Protected Areas Act, owned by a state entity other than EKZNW.	2.93
Private Nature Reserve	Not proclaimed in terms of the National Environmental Management: Protected Areas Act and in private ownership.	0.41
Special Rating Area (e.g. Giba Gorge)	Not proclaimed in terms of the National Environmental Management: Protected Areas Act, ownership and management shared by eThekwini Municipality and private landowners.	0.43
Conservation Zone (CZ)	Not proclaimed in terms of the National Environmental Management: Protected Areas Act, zoned or proposed to be zoned to Conservation Zone and in private ownership.	2.25
Environmental Conservation Reserve (ECR)	Not proclaimed in terms of the National Environmental Management: Protected Areas Act, zoned or proposed to be zoned to ECR.	2.23
NUCS (registered, pending)	Registered or pending non-user conservation servitudes requested by municipal entities as conditions of approval to private developers.	1.35

5.3. Species abundance

In terms of representing urban biodiversity three taxonomic groups are commonly surveyed i.e. plants, birds and butterflies. In Durban, reliable, quantitative data sets for most groups of organisms are difficult to obtain because of the lack of long term monitoring initiatives. For the purposes of this report only data collected consistently and quantitatively are utilised.

Cape Cormorant

FOOTNOTE 5: Information provided by David Allan (Curator of Birds, Durban Natural Science Museum)

Waterbirds of Durban Bay [5]

The monthly waterbird counts carried out in Durban Bay by the Durban Natural Science Museum, in conjunction with the South African Navy and BirdLife Port Natal, continued unabated throughout 2010-11. This was the twelfth year of monthly coverage of the Bay, rendering these counts one of the longest-running monitoring efforts of its kind in South Africa.

Interesting highlights during the past year included particularly high numbers of Cape Cormorants recorded in May 2011. During that month, 33 individuals were counted in the Bay. Numbers of this winter visitor, corresponding with the annual sardine run, rarely reach double figures.

Two Bar-tailed Godwits, a long-distance summer migrant from the northern hemisphere, were counted in both November and December 2010. This species has become particularly rare and erratic in its occurrence in the Bay in recent decades.

Perhaps most exciting, an immature Greater Frigate bird was found in the Bay during the January, February and March 2011 counts. This species is an extremely rare vagrant to South African waters from the tropical oceans of the Mozambique Channel to the north.

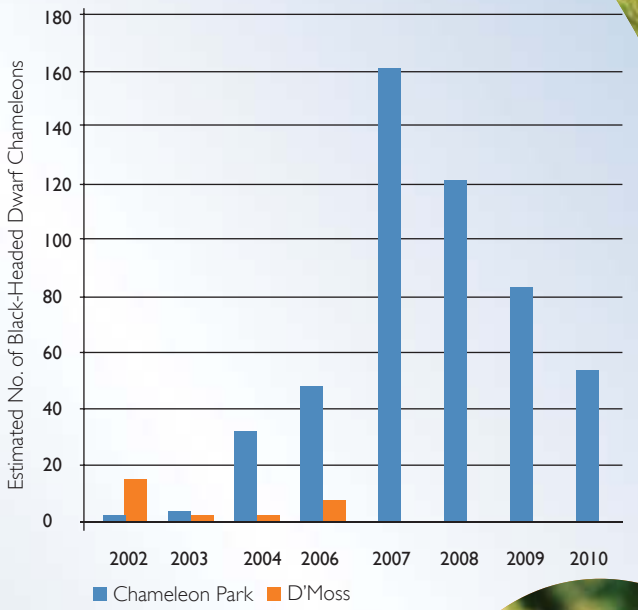


Figure 4: Results of the monitoring of the Black-headed Dwarf Chameleon subpopulation at Chameleon Park and the adjacent D'MOSS corridor over 9 years.


Black-headed Dwarf Chameleon

5.3.2. Black-headed Dwarf Chameleon [6]

Bradypodium melanocephalum is a regionally endemic chameleon and its range is restricted to the coastal belt of KZN. The two vegetation types inhabited by this chameleon are North Coast Grassland and South Coast Grassland, both of which are classified as Critically Endangered. In 2002, Ezemvelo KZN Wildlife initiated the monitoring of this species at two localities in Durban i.e. Chameleon Park and a plot of land within D'MOSS next to the Edwin Swales Business Park.

The results from the past nine years of monitoring show an alarming decline in Black-headed Dwarf Chameleon populations in the surveyed areas, well below the desired target levels. Some of the key management actions to conserve this important species include:

- Managing the D'MOSS strip and Chameleon Park appropriately to increase the available chameleon habitat.
- Increase the protection status of the Chameleon Park from Public Open Space to Environmental Conservation Zone/Reserve.
- Continue monitoring the Chameleon Park sub-population.

FOOTNOTE 6: Data and graphs provided by Adrian Armstrong (Ezemvelo KwaZulu-Natal Wildlife).

5.4. Threats to Biodiversity in Durban

Some of the major threats to biodiversity include:

- Transformation of natural areas (habitat destruction, degradation and fragmentation);
- Introductions of alien invasive species;
- Over-exploitation (harvesting, sandmining);
- Pollution and diseases; and
- Human induced climate change.

Due to the lack of quantitative data relating to many of these threats, this report will only focus on transformation, invasive alien species and climate change.

As more information becomes available, these will be included.

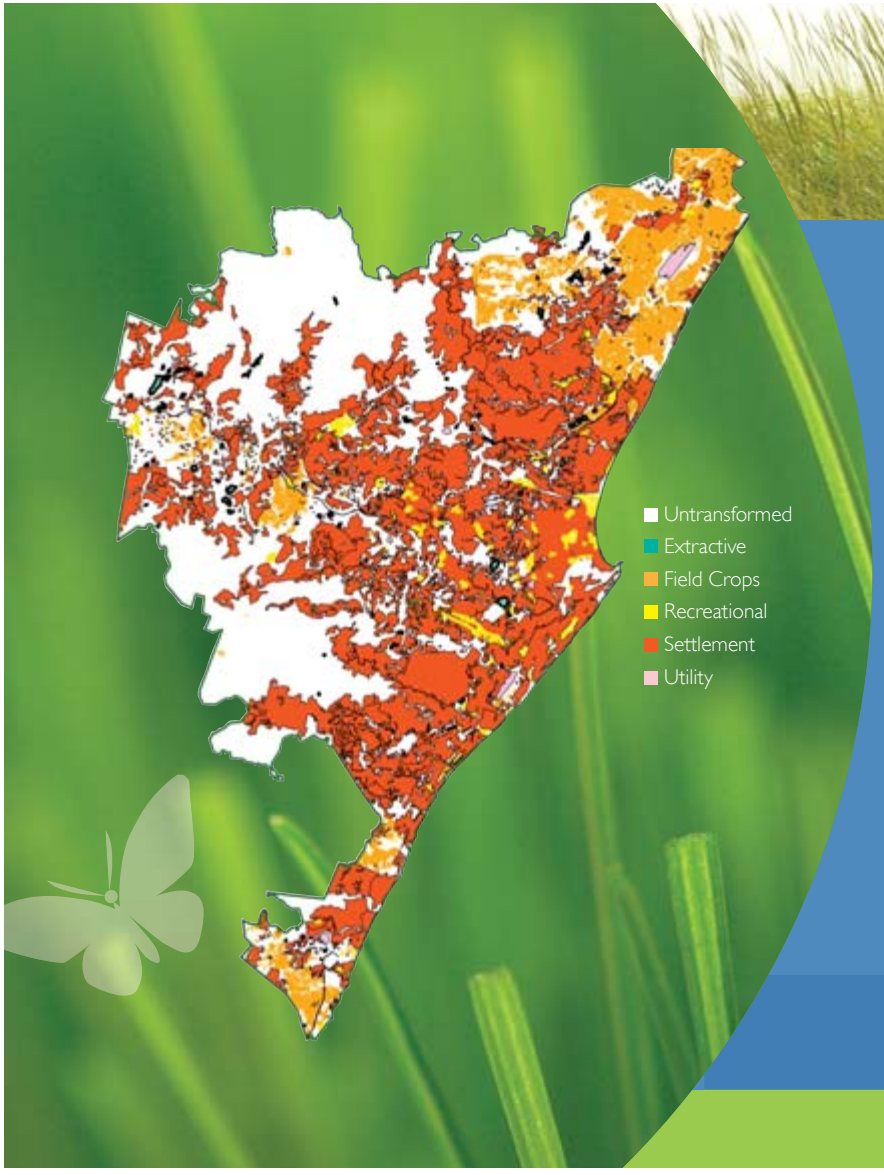
Epipremnum aureum

New emerging weed in Durban

Epipremnum aureum is a climber species native to southeast Asia and New Guinea that invades tropical areas. It is an epiphyte growing up to 20 m in length with stems of up to 4 cm in diameter, climbing by means of aerial roots which hook over tree branches. The leathery leaves are green with yellow or white marks, giving it the common name Silver Vine. In nurseries it may be called *Scindapsus aureus* or ***Rhaphidophora aurea***; these were used in old taxonomic classification.

This vine can become a highly invasive species when introduced into tropical countries where it is not native. The plant produces trailing stems that can develop into new plants wherever they touch the ground. In Durban, this species has been planted in gardens and plants for many years but it has now been recognised as a potential invader. Areas of the south coast are particularly at risk of invasion. Currently, it is known to have invaded areas of Sri Lanka and Florida and having no natural enemies, it has been found to completely overgrow the forest floor as well as the trunks of trees, causing severe ecological disruption.

SANBI's Early Detection and Rapid Response Unit advise that this invader should be eradicated before it becomes a serious problem.



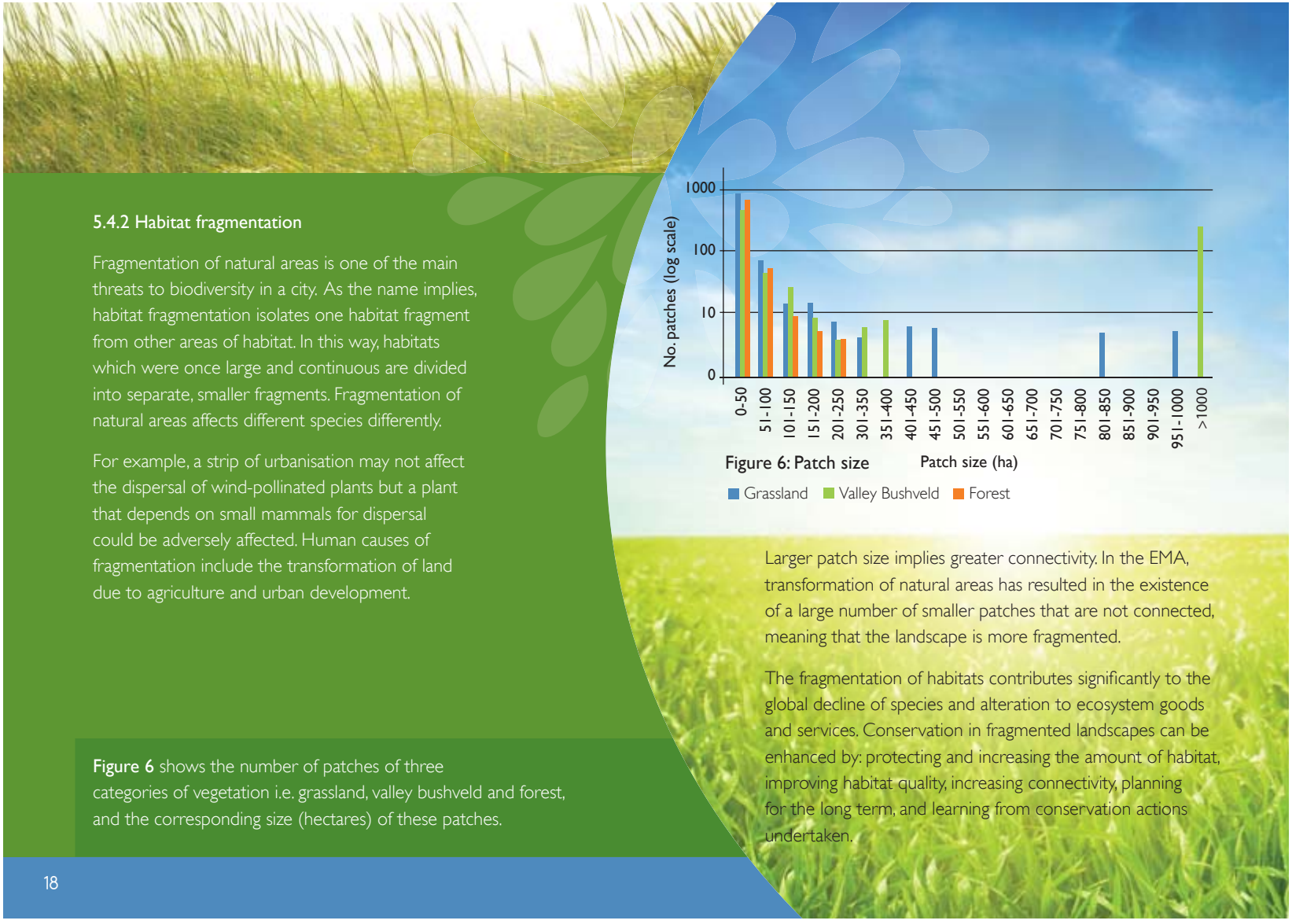
5.4.1. How much land has been transformed?

Transformed areas in the city are those areas that have been altered dramatically from their natural state by human activities. This is one of the single greatest threats to biodiversity as it implies habitat loss, habitat destruction and fragmentation of natural areas. Transformation reduces the ability of ecosystems to deliver goods and services.

Table 3. Categories of transformation in the EMA

Categories	ha
Extractive	967.85
Field crops	21 674.80
Recreational	2 237.78
Settlement	96 009.03
Utility	1 796.25
Total	**122 685.70**

Figure 5: In 2010/2011 53% (122 685.7 ha) of the EMA was classified as transformed.



5.4.2 Habitat fragmentation

Fragmentation of natural areas is one of the main threats to biodiversity in a city. As the name implies, habitat fragmentation isolates one habitat fragment from other areas of habitat. In this way, habitats which were once large and continuous are divided into separate, smaller fragments. Fragmentation of natural areas affects different species differently.

For example, a strip of urbanisation may not affect the dispersal of wind-pollinated plants but a plant that depends on small mammals for dispersal could be adversely affected. Human causes of fragmentation include the transformation of land due to agriculture and urban development.

Figure 6: Patch size

Figure 6 shows the number of patches of three categories of vegetation i.e. grassland, valley bushveld and forest, and the corresponding size (hectares) of these patches.

Larger patch size implies greater connectivity. In the EMA, transformation of natural areas has resulted in the existence of a large number of smaller patches that are not connected, meaning that the landscape is more fragmented.

The fragmentation of habitats contributes significantly to the global decline of species and alteration to ecosystem goods and services. Conservation in fragmented landscapes can be enhanced by: protecting and increasing the amount of habitat, improving habitat quality, increasing connectivity, planning for the long term, and learning from conservation actions undertaken.

Table 4. Breakdown of EPCPD Invasive alien plant (IAP) control

	Working for Ecosystems	Working on Fire
Total area of IAP control	218 ha - 100 ha of initial and follow-up control at Roosefontein Nature Reserve	114 ha (initial) 564 ha (follow-up) 38 ha burning
Training courses	6	12
Training person days	480	1254
Total jobs created	124 (36% youth, 67% female)	52 (37% female 63% male)
Total person days	7068	14042

5.4.3 Invasive alien species

Invasive alien species are plants, animals, pathogens and other organisms that are not indigenous to an ecosystem, and which are capable of spreading naturally (often rapidly) into natural or semi-natural habitats. They can cause economic or environmental harm or can adversely affect human health. In particular, they impact adversely upon biodiversity, causing the decline or elimination of indigenous species through competition, predation, or transmission of pathogens, and the disruption of local ecosystems and ecosystem functions.

In the 2010/2011 municipal financial year, the EPCPD had a budget of approximately R 6.33 million allocated to invasive species control in Durban. Two teams, Working on Fire (WoF) and Working for Ecosystems (WfE) were appointed to carry out this task. Both WoF and WfE are sustainable development programmes that aim to alleviate poverty and develop skills by employing people to manage aspects of the environment such as the burning of grasslands and invasive alien species control. Both programmes also have a strong education and training component.

Table 5: Natural Resourses Division (NRD) budget allocation for alien invasive control and the corresponding area TOTAL: R 1.66 MILLION

Name of reserve / open space	Budget 2010/2011	Name of reserve / open space	Budget 2010/2011
Alfred Park	R 8 840.00	Van Riebeeck Park	R 22 000.00
Beacon Park	R 20 000.00	Westmead and Motola	R 10 000.00
Caversham Glen MOSS	-	Westville Trail	R 16 724.00
Burman Bush	R 160 000.00	Wright Place	R 10 000.00
Collard Park	R 20 000.00	Springside	R 63 000.00
Dorothy Place	R 10 000.00	Toti Bird Santuary	R 50 000.00
Ilanda Wilds	R 50 000.00	Empisini Nat Reserve	R 10 000.00
Irvenia Park	R 15 000.00	New Germany Nat Reserve	R 58 045.00
Kennard Mountainrise	R 15 000.00	Virginia	R 130 000.00
Kingfisher Creek	-	Denville	R 20 000.00
Marion Wood	R 12 000.00	Hawaan Forest (Pipeline)	R 220 500.00
Palmiet	R 300 900.00	Avon Place	R 7 242.00
Paradise Valley	R 12 000.00	Turn Bridge	R 7 840.00
Pigeon Valley	R 80 000.00	Essex	-
Queen Elizabeth	R 10 000.00	Kwa Dabeka	-
Roosefontein	-	Woodside	R 2 160.00
Silverglen	R 46 000.00	Spy Hill	R 1 900.00
Silverglen Nursery	R 15 000.00	Janine Place	R 3 303.00
Umbilo MOSS (Pinetown)	-	Padfield Park	R 6 245.00
Nagina	R 50 000.00	Palmer Bird Sanctuary	R 12 870.00
Treasure Beach entire	R 17 000.00	Padfield Road	-
Umbilo	R 20 000.00	Klaarwater	R 150 000.00

Emerging weeds targeted in 2010/2011

(Clockwise from the right)

Diplocyclos palmatus (Kloof scarp)

Acacia saligna (Roosefontein)

Campuloclinium macrocephalum (Roosefontein)

Triplaris americana (Cato Manor)

Ailanthus altissima (Hillcrest)

Table 6: Tree planting by the Parks, Leisure and Cemetries Department

Area/reserve/open space where planting took place	Trees planted	Indigenous Species	Alien Species
Schools	297	297	0
District 1 (north, Umhlanga)	371	371	0
District 2 (north west, Phoenix)	70	70	0
District 3 (north central, Redhill)	473	473	0
District 4 (outer west, Hillcrest)	311	311	0
District 5 (south, Amanzimtoti)	149	149	0
District 6 (south central, Isipingo)	40	40	0
District 7 (central, Morningside)	154	154	0
District 8 (south west, Chatsworth)	-	-	-
District 9 (inner west, Pinetown)	-	-	-
District 10 (central east, Point)	134	134	0

5.4.4 Climate change

In Durban, the following changes have been projected to occur:

- Increases in temperature of 1.5-2.5°C by 2045-2065 and 3-5°C by 2081-2100.
- Rainfall in Durban is projected to increase in the future. The distribution and variability of this rainfall will change; with rainfall events becoming more erratic.
- The sea level along the Durban coastline is rising at present by 2.7cm every decade. Projections indicate that this rate is likely to accelerate in the future.
- Due to these changes in temperature and rainfall, the bio-climatic envelopes (distributions of plants and animals based on climatic variables) in which the fauna and flora of Durban exist could shift, thus meaning that conditions in their current ranges may become unsuitable. This places additional pressure on Durban's biodiversity.

DURBAN ceba
Official voluntary offset programme for COP17/CMP7
COMMUNITY ECOSYSTEM BASED ADAPTATION
Africanising Adaptation

The Durban CEBA Initiative

The eThekwini Municipality and the Wildlands Conservation Trust will be profiling a new community climate protection model, the Durban CEBA Initiative at COP17/CMP7. CEBA stands for "Community Ecosystem Based Adaptation" and focuses on the link between communities and the ecosystems that sustain their welfare and livelihoods especially in the face of human-induced climate change. The Durban CEBA Initiative involves impoverished and vulnerable communities restoring their natural ecosystems, creating greener and cleaner neighbourhoods less dependent on costly utilities and services. In this way, CEBA provides a mechanism to uplift communities, addresses issues of climate change adaptation and mitigation, restores natural ecosystems and promotes Durban's green economy. As a catalyst project, a natural habitat restoration project has been initiated in the uMbilo catchment, west of Durban, ahead of COP17/CMP7. This project involves the removal of alien plants, planting of indigenous trees, and the restoration of the associated riverine, wetland and grassland communities.

For more information and to contribute to this initiative, please visit: **www.durbanceba.org**

Greening the 2010 FIFA World Cup [7]

Durban was selected as one of the nine cities in South Africa to host the 2010 Soccer World Cup (SWC). The residual carbon footprint of hosting the 2010 SWC was estimated at 307,208 tonnes CO^2 and Durban was the only Host City that set the target of having a "climate neutral" World Cup, giving rise to the Greening Durban 2010 programme.

The core focus areas:

1) Energy efficiency and renewable energy
2) Conservation of water resources
3) Sustainable management of waste
4) Environmentally efficient transportation systems
5) Biodiversity conservation

Cross-cutting focus areas of the programme were:

1) Climate protection
2) Communication
3) Monitoring and evaluation

The key strategic outcomes of the Greening 2010 programme were as follows:

1) Reduction of the carbon footprint of the stadium through green building design and more efficient systems and fittings.

2) Establishment of local renewable energy and socially beneficial carbon sequestration projects that will generate carbon credits e.g., Buffelsdraai Community Reforestation Project.

3) Establishment of transportation systems within Durban that promote non-motorised traffic and public transport usage to access events venues e.g. improved pedestrian and cycling networks.

4) Major events venues in Durban governed by Environmental Management Systems that address resource use efficiency, pollution prevention, sustainable management of waste and protection of ecosystems and human health.

5) The establishment of a system of dual waste streaming from events, maximising waste volumes recycled.

FOOTNOTE 7: N. Diederichs Mander and D. Roberts (2010). Summary review of the eThekwini Municipality's 2010 FIFA World Cup Event Greening Programme. An EPCPD Publication.

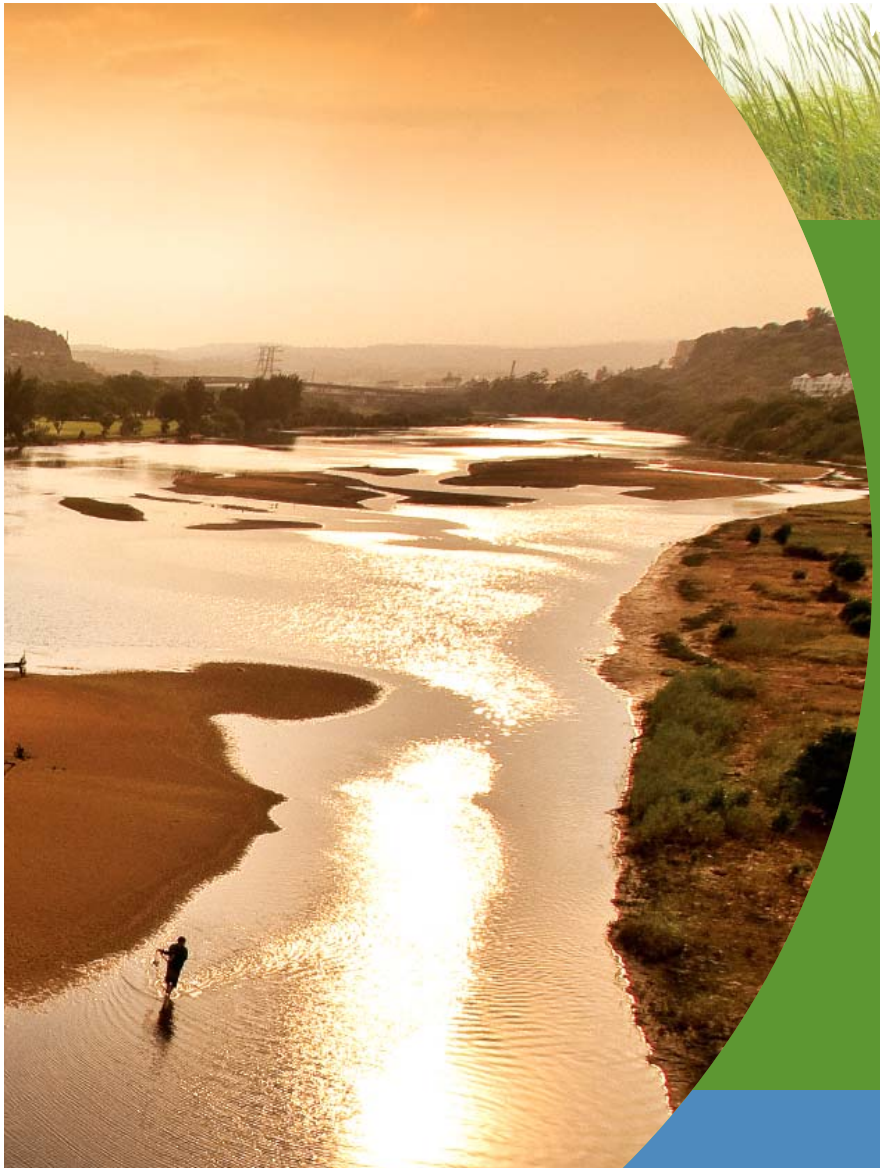
Table 7. Summary of the State of Biodiversity Indicators

Shortlisted indicators	2008/2009	2009/2010	2010/2011	Additional information/comment
1. Total area of D'MOSS	74703 ha	74711 ha	74495.32	This is D'MOSS that has been adopted and incorporated into Town Planning Schemes.
2. D'MOSS with some form of protection	NUCS: 55.11 ha	NUCS: 67.7 ha	NUCS: 171.7 ha	This value represents a running total.
	Land acquisition: 4.33 ha	Land acquisition: 18.08 ha	Land acquisition: 45.05 ha	Ptn 2 of Erf 151 Hillcrest – Ptn 1 of Erf 341 Forest Hills – Ptn 1 of Erf 340 Forest Hills – Ptn 1 of 131 Forest Hills – Erf 127 Cliffdale – Ptn 31 of the Farm Waterfall No 978 – Rem of Hamilton No. 14305 – Rem of Erf 747 Tongaat – Erf 48 Crestview – Erf 282, 282 and 284 (of 270) of the farm Upper End Langefontein No. 980.
	Proclaimed nature reserves: nil	Proclaimed nature reserves: nil	Proclaimed nature reserves: nil	The proclamation of the Roosefontein Nature Reserve is currently in the late stages of proclamation.
3. Percentage of D'MOSS that is managed	Data not available	Managed: 8.4% Zoned (not managed): 2.5% None: 89.1%	Managed: 12% Zoned (not managed): 2.0% None: 86%	
4. Patterns in abundance of certain species of fauna/flora	Decrease in waterbird and chameleon species	Decrease in waterbird and chameleon species	Decrease in chameleon abundance noted	High numbers of Cape Cormorants were recorded and the extremely rare vagrant to SA the Greater Frigate Bird was recorded.

Shortlisted indicators	2008/2009	2009/2010	2010/2011	Additional information/comment
5. How much land has been transformed	112827.65 ha	112827.65 ha	122685.69 ha	53% of the eThekwini Municipal area. Changes to the land class layer will only be collated in this report every 3 years.
6. Invasive alien species (EPCPD)	Budget (EPCPD): R 3.24 million for invasive alien clearing. Total jobs created: No data	Budget (EPCPD): R 4.57 million for invasive alien clearing. Total jobs created: No data	Budget (EPCPD): R 6.33 million for invasive alien clearing. Total jobs created: 176	
	NRD budget for IAS control: R 1.15 million Total trees planted by the PLCD: 2543	NRD budget for IAS control: R 1.17 million Total trees planted by the PLCD: 2654	NRD budget for IAS control: R 1.66 million Total trees planted by the PLCD: 1999	All trees planted by the Parks, Leisure and Cemetries Department were indigenous.

CONCLUSION

This is the eThekwini Municipality's third State of Biodiversity Indicators report. The next report will be for the 2011/2012 municipal financial year and will be produced in December 2012.



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