AN UNCERTAIN FUTURE?

Dr. Debra Roberts provides valuable insight into the heated negotiations at Durban’s COP17 / CMP7 Conference and discusses the political issues that must still be resolved if we are to prevent a global disaster.

UNDER THREAT

Jeanne Tarrant considers the severe decline in amphibian populations and the impact this will have on our planet.

GREENING DURBAN

We report back on the lasting impression COP17 / CMP7 Conference has left on our beautiful city.
A museum about the earth, its history and life on earth, both past and present.
Letter from the Editor

welcome

As Durban played host to COP17, the Museum hosted a number of events leading up to this momentous happening – it was indeed a very busy year for the Museum!

Our very successful seminar series “What’s up with the Weather?”, co-hosted with Life Long Learning, brought numerous people through our doors and highlighted how we could garden for extreme weather to the controversial issue of wind turbines. Some of the talks have been turned into articles for your reading pleasure. You can learn more about COP 17 in the article written by Debra Roberts.

The busyness extended beyond our seminars, and there are updates from all our departments about their activities including the hosting of BirdLife International during COP17, the Portraits of Resilience temporary display and numerous outreach programmes in which our education and exhibitions departments were involved.

Sadly we said goodbye this year to Cindy Govender, our volunteer co-ordinator of 14 years, and Anita Rauntenbach, our Mammal Department technician. Their presence is sorely missed and we wish them well in their new endeavours.

Thank you to those who sent us feedback on our new look. We appreciate your comments and have incorporated some of your suggestions. We love to hear from our readers, so please send us your thoughts and comments.

Till next year, happy reading!

Kirstin Williams
williamsk@durban.gov.za

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Form a conservancy with like-minded people in your area to control invasive alien plant life and maintain your local environment.

A conservancy is a voluntary, co-operative initiative to help owners and residents provide environmental management and promote stewardship of our natural resources at a community level. All conservancies are registered with our provincial conservation authority, Ezemvelo KZN Wildlife.

The first urban conservancy was established in 1991 with the Everton Conservancy in Gillitts. Twenty one years later, we now have a proud record of voluntary environmental work with over 40 other urban conservancies in and around eThekwini.

We hold regular bi-annual workshops to empower our residents with valuable knowledge and information and use many of our local experts for advice. Contact Jean Lindsay on 082 550 4427 or email her at lindsayjd@mweb.co.za
Letters to the Editor

Thola

New Directions
A fresh start

A request from Limpopo

I just wanted to say congrats on the new Thola Magazine. It looks great! And thanks for the nice articles about me!

Just a suggestion but maybe an idea to include at least one “educational” natural history article each issue, maybe from a guest writer? That was always the strong point of Palnmnt Post, and I often re-used those educational articles.

Best Wishes from cold and cloudy Limpopo!

Dr. Peter John Taylor
University of Venda, Limpopo

Fond memories

Thank you so much for the Palnmnt Post 2009 and the new Thola Magazine.

I have been fortunate to be on the mailing list since I visited the Museum some years ago. It was one of my most wonderful experiences: a fabulous museum and I enjoyed my visit so.

It was one of my most wonderful experiences: a fabulous museum...

I enjoyed my visit so.

A catalyst for change

I’d really like to congratulate you on the new look magazine, Thola, published for the Durban Natural Science Museum last year. I edit and compile the Annual Highlights Report for the South African Institute for Aquatic Biodiversity and your mag has suggested that change of leadership is an excellent catalyst for change in other ways.

Your new report/magazine is creative and innovative and a visual feast. Many thanks.

Penny Haworth
SAAIB: Grahamstown
If anything, the clear message sent by COP17 after being hosted in Durban, in December 2011, is the same as the one delivered by Wangari Maathai (above). Sadly, this “Mother of Trees” passed away on 26 September 2011, mere months before this significant gathering. Her sentiments, however, live on. Gone are the days when we look to others, including our government, and ask what it is that they are doing about the environmental crisis that exists? We instead need to ask ourselves “what it is that I am doing to circumvent this problem?”

Too often our public is expected to know all the issues around a global crisis such as Climate Change. This is due to the term Climate Change being touted in the media, in social circles, and at workplaces, yet very few people understand the issues, and the crisis that surrounds this phenomenon. It is in this vein that the DNSM approached our activities in 2011 and in the lead up to COP17, with our “What’s up with the Weather?” Seminar Series. The seminar series was conducted in conjunction with Life Long Learning KZN and was utilized as a platform to educate and inform our Durban public about issues surrounding this historic meeting in our City. Complementing this was the education programme delivered to some local and outlying schools, which included talks given to learners in isiZulu. Our message was simple: as all the nations descend on our City, our public should feel that they have participated, are more informed of the issues at hand, and that, together, we are also part of the solution.

Collaborations and partnerships are central to our success.

Whilst working as the Collections Manager at the former Natal Museum in 1998, I had the opportunity to meet an exceptional individual for whom I have an immense amount of respect. It was individuals such as Dr Angelo Lambiris that have developed my love for museums, and have instilled my passion for collections. When Dr Lambiris contacted me in early 2011 with a humble request for the DNSM to consider accepting his life-long work in the form of his private collection, I immediately responded with a resounding YES! It is actions such as this and those of Prof Ara Monadjem and others, that have ensured that our research collections have increased on average at 6% per annum since 2006. The efforts of various donors and their continued patronage of our facilities is indicative of the excellence of our facilities and the curatorial standards which we have set, including the confidence of the scientific community in our Museum as a biodiversity institution. Dr Lambiris and Prof Mike Cooper continue to volunteer their time and expertise in curating the herpetology and palaeontology collections, respectively, ensuring that the museum and science continue to benefit from their significant contributions.

Our association with the national and international science centre community through the South African Association of Science and Technology Centres (SAASTEC) and the Association of Science-Technology Centers (ASTC) saw us exhibiting at the 6th Science Centre World Congress in Cape Town in September and me being invited to present on Durban’s (and the museum’s) plans for COP17 at ASTC’s 2011 Annual Conference in Baltimore, USA in October. Central to this is the noticeable shift being made in South Africa, with museums, whilst unique in their own right, being viewed also as specialized science centres that have always made a critical contribution to education, human capacity development and environmental awareness.

Our international collaborations during COP17 with the Many Strong Voices programme (UNEP/GRID Arendal) and the Center for International Climate and Environmental Research - Oslo (CICERO) with the Portraits of Resilience Exhibition, as well

“The women of the Green Belt Movement have learned about the causes and the symptoms of environmental degradation. They have begun to appreciate that they, rather than their government, ought to be the custodians of the environment.”

- Wangari Maathai, Harvard University, USA, 1994

"Gone are the days that museums are viewed as dusty storage vaults with antiquated equipment, and mindsets".

- Allison Ruiters
as with BirdLife International and Partners (both expanded on in separate articles within the magazine) were excellent opportunities to further entrench ourselves as an international role-player. Our image of climate change is one of a polar bear floating on a piece of ice - but these first-hand accounts of climate change being experienced in so many different communities and countries globally, puts not only a scientific face, but also a human face to this scourge. Central to this, however, is the active participation of citizens, including youth, in ensuring that they are not just bystanders and victims, but rather are keeping their biodiversity, their cultures and their communities “alive” by making their voices heard.

Our joint programmes within the Municipality, both within our Unit of Parks, Recreation and Culture and also within the Libraries & Heritage Department ensured that we expelled the notion that museums are elitist institutions that only exist within the buildings that they reside in, and are accessible to a privileged few. Whilst there is still much work to be done in this arena, both within our organization and also in the public sphere where the culture of visiting museums is still not apparent, many opportunities were presented to us to take our science to varied spaces, from the dusty hills of KwaXimba, to the busy pavements of Church Walk, as well as to the open spaces of our natural areas within eThekwini.

However, the most important teamwork that exists is that within our museum. Our team’s focus on pure science, policy, marketing and effective utilization of our financial and human resources, along with a true passion for the Museum and their willingness to contribute beyond the normal call of duty ensures that we are able to maintain our standing as a world class institution. The support, wise counsel and enthusiasm that each one of you, staff and volunteers, bring to the museum is immeasurable. Thank you.

In the face of global climate change, our biodiversity management institutions, including museums, are well placed to contribute to climate protection and adaptation strategies, not only by the research that is undertaken by them, but also by making themselves relevant to cutting edge issues that are important in our public’s lives. Gone are the days that museums are viewed as dusty storage vaults with antiquated equipment, and mindsets. The onus is on institutions such as museums to place ourselves as a bridge between our natural heritage and our consumers, placing ourselves in the position where we are creating informed and responsible citizens around global issues.

“Today we are faced with a challenge that calls for a shift in our thinking, so that humanity stops threatening its life-support system. We are called to assist the Earth to heal her wounds and in the process heal our own - indeed to embrace the whole of creation in all its diversity, beauty and wonder. Recognizing that sustainable development, democracy and peace are indivisible is an idea whose time has come” - Wangari Maathai

Our biodiversity management institutions are well placed to contribute to climate protection and adaptation strategies.

E m i l v o n M a l t i t z  P h o t o g r a p h y

Website: www.limephoto.co.za
Blog: www.emilvonmaltitz.blogspot.com
email: emil@limephoto.co.za
Phone: 084 584 9959
Fax: 086 662 4540
I was in my office on an uneventful December morning in 2005 when I received a telephone call. The voice on the other side: “Good morning, my name is Phillip Tobias - may I please speak to Dr Redman?” I paused for a while thinking that this was a prank call. Phillip Tobias calling me?...and referring to me as Dr Redman?

It was indeed Prof. Phillip Tobias calling to congratulate the museum on its new Research Centre. He had read in the morning paper that the Durban Natural Science Museum had relocated its collections to a new building with state-of-the-art collections facilities. Then he asked, “If it is not too much trouble Dr Redman, would you be so kind as to show me around the new facility? You need not worry about transporting me; my friend Prof. Padayachee will transport me.” He was down in Durban for an annual trip to watch cricket on the 26th of December.

At the end of the call I was literally trembling with excitement. I immediately called curators Peter Taylor and David Allan and told them about the call and instructed them to get ready for our special guest. They were to cancel all meetings or visits to the university planned for that day! We did not yet have all our furniture and neither did we have proper tea cups and the rest that goes with it, but Tobias came and after the tour, joined us for a cup of tea in a very small tea room using one of our very old coffee mugs – he did not mind. I asked David Allan to invite Tony Carnie to join us as he had authored the story that Tobias had read about the new Research Centre. As Tony continued to fire question after question Tobias would occasionally remind me that I should stop him if he spoke too much or said things he should not say to Tony!

As he left we asked him to sign our Wall of Excellence which was just a bare wall at the time with no glass casing to protect the messages that would be written on it over the years. After he had written his message we locked down that space over the rest of the days that followed until exhibitions officer Andrew Carter had fitted Perspex covering over the area that Tobias had written his message just in case a well-meaning member of the staff decided to remove this thinking it was vandalism. The message read, “May the Natural Science Museum – and its Research Centre, go from strength to Strength! I am proud to have visited this Centre when it was a mere embryo – and I look forward to its lusty adolescence! – Phillip V. Tobias 29.XII. ’05”

That was my first encounter with this outstanding son of Africa. From the very first conversation I was amazed by his humility. From this day we corresponded occasionally until in 2009 when the eThekwini Municipality honoured him with the Living Legends Award, an occasion which coincided with the Museum’s launch of the “Darwin Now!” exhibition. Tobias again surprised me by humbly accepting the invitation to officially open this exhibition as well as graciously accepting the city’s Living Legends Award. I had assumed that, for someone who had received so many international awards, he would not be as excited as he was. He was almost like a child with excitement, asking if some of his special friends could be permitted to join him at the awards, even though all awardees are allowed to have guests with them – he did not make any assumptions.

After the awards we communicated more frequently and I would receive his famous newsletter which he circulated to friends and colleagues just to keep them up to date with matters in his life. From all the interaction I had with him, as well as from talking to those who were closer to him I concluded that Tobias was an ordinary human being. He was an ordinary human being who pursued the goal of ensuring that Africa regained her place as an equal among the continents with an unrelenting energy, a quiet tenacity and stubborn perseverance. The monuments and symbols named after him and those which will be in the future are both necessary and important. However his most important products are the over ten thousand students who learned to be human because they had the rare fortune to be his students. He fondly referred to them as his children!

The sense of loss at his departure afflicts us seemingly with greater intensity than the fond regard we had for him while he lived. While he lived, we assumed he would never die. I was always aware of his age as he would always make a point of telling you in passing, but this never made me think of the possibility that he would soon not be with us. Now that he is gone, we know that the pain that he has ceased to be, and the love for him that we carried with us, have all our furniture and neither did we have proper tea cups and the rest that goes with it, but Tobias came and after the tour, joined us for a cup of tea in a very small tea room using one of our very old coffee mugs – he did not mind. I asked David Allan to invite Tony Carnie to join us as he had authored the story that Tobias had read about the new Research Centre. As Tony continued to fire question after question Tobias would occasionally remind me that I should stop him if he spoke too much or said things he should not say to Tony!

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Because of you Tobias, no longer will Africa’s children be the despised of the earth.
Both locally and abroad, their sustained and extraordinary contributions have made an impact in various categories from music, sport, science, business, social work, education and more. They have, in their own way, helped to provide others with a sense of identity and continuity and have promoted respect for cultural diversity and human creativity. They have achieved greatness through their practices, knowledge and skills, and by their expressions have contributed to our city’s rich intangible cultural and natural heritage.

We recognise this heritage, as a legacy to the people of eThekwini, and that safeguarding and promoting this heritage in all its forms - tangible and intangible, cultural and natural, movable and immovable - are key to achieving dialogue, sustainable development and social cohesion. We also recognise that it is our duty to transmit this legacy intact to our children, for if we as a community are aware of the factors that have influenced our history and shaped our identity, we will be better placed to engage with others and build peaceful relations to forge our future.

An initiative of the eThekwini Municipality, the eThekwini Living Legends Awards acknowledges the greatness achieved by past and current residents of eThekwini in various fields of human endeavour, while they are still living. Having evolved into a programme, from what was previously a once-off event, the eThekwini Living Legends Awards now forms part of the eThekwini Heritage – Our Legacy strategy, led by the Parks, Recreation and Culture Unit of the Municipality.

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Since this Award’s inception in 2008, eThekwini Municipality has honoured individuals who have demonstrated extraordinary and sustained (legendary) contributions throughout their careers and whose legacies continue to influence their area of expertise. It serves to identify real role models worthy of emulation and also to celebrate unsung heroes, in various categories of expertise. One of the many criteria is that recipients, recommended via a public nomination process, need to be a past or current resident of eThekwini Municipality. The awards are presented at a Gala Dinner as part of the annual Celebrate Durban festivities. To date over 70 legends have been honoured. Past recipients of this award include: Cedric Sugar Ray Xulu (Sports); Judge Vuka Shabalala (Legal); Ashwin Trikamjee (Legal and Religion); Clive Barker (Sports); Alfred Nokwe (Arts & Culture); Cardinal Wilfred Napier (Religion).

In 2011, the 4th Annual eThekwini Living Legends Awards Ceremony was held on 7 September at the Inkosi Albert Luthuli International Convention Centre. The following Legends were honoured: Dr Angelo Lambiris; Prof Paulos Zulu; Jonty Rhodes; Chief Justice Sandile Ngcobo; Don Mkhwanazi; Lorraine Scott; Dr. T.P. Naidoo; Susan Barry; Felicity Keats; Sam Ramsamy; Graeme Pollock; Lucas Nel; Vivian Reddy; Ndiko Xaba; Prof Thandinkosi Madiba; Roslyn Naran; Mato Madlala; Dudu Khoza; Thandi Ngxenelo; Mariam Cele; and Mbongeni Mthshali. The former Mayor of eThekwini, Mr Obed Mlaba, was awarded the Appreciation Award in recognition of his great leadership as Mayor of eThekwini.

The following biographies serve to give a brief outline of those Living Legend Awardees who have been recognised for their contribution to various disciplines within the domains of science and the environment, since the inception of these awards.

2009 Awardees
Prof. Philip Tobias, who sadly passed away on 7 June 2012 at the age of 86 (read a tribute to him on page 7), was one of the world’s leading paleoanthropologists and authorities on the evolution of humankind. Born in Durban, Tobias was associated with the Medical School of the University of the Witwatersrand for over 65 years, where he was the only person to hold three professorships simultaneously; he was best known for his pioneering work at South Africa’s famous hominid sites, having successfully campaigned for the Sterkfontein Caves to be proclaimed a World Heritage site. Tobias was the most highly honoured South African scientist, having received 16 honorary degrees and elected as a fellow, associate or honorary member of over 28 academic societies, including the National Academy of Sciences (USA) and the Royal Society of London. Among the many awards he received were the Order of Meritorious Service of South Africa (gold class) and the Charles R. Darwin Lifetime Achievement Award of the American Association of Physical Anthropologists. Not only an acclaimed scientist, but also a dedicated and passionate educator, the following words by Tobias speak volumes about the legacy he has left: “I have taught over 10,000 students, and all of those are, in some small way, like my children. So it is not a genetic legacy that I leave, but rather a cultural one, orally
transmitted through education, the value of which cannot be overemphasized. I like to honestly that almost every one of them has given something very valuable to me, and I remember them as my own family.”

Dr Kumi Naidoo, Executive Director of Greenpeace International and Chair of the civil society alliance “Global Campaign for Climate Action” (GCCA), was born in Durban in 1965. Naidoo has served as Secretary General of CIVICUS: World Alliance for Citizen Participation; was the founding executive director of the South African National NGO Coalition (SANGOCO) and also the founding Chair of the Global Call to Action against Poverty (GCAP), where he remains global ambassador. He serves as a board member of Global Reporting Initiative, Earth Rights International and Food and Trees for Africa.

Prof. Hoosen “Jerry” Coovadia, is an internationally renowned and leading South African researcher in maternal and child health, and has led ground-breaking research in mother-to-child transmission of HIV. Coovadia, an anti-apartheid veteran, was the former Head of Paediatrics at the Nelson R Mandela School of Medicine at UKZN and the Victor Daitz Chair in HIV and AIDS, and is currently a Director in the Durban Branch of the Reproductive Health Research Unit of the Department of Obstetrics and Gynaecology, at the University of the Witwatersrand. Recognised by US-based Family Health International as one of the top 50 most influential individuals in HIV and AIDS in the world, Coovadia is currently a member of the National Planning Commission. Recipient of a numerous accolades, honorary doctorates and awards, including Science-for-Society Gold Medal 2003 award (Academy of Science of South Africa) and the Star of South Africa by President Nelson Mandela for his contribution to democracy, Coovadia’s dedication as a clinician and teacher has also produced scores of informed medical professionals and researchers.

2010 AWARDEE

Prof. Patricia Berjak, recognised internationally for her pioneering and fundamental studies on seed recalcitrance, has studied seeds and seed storage for over 30 years. Currently an “A-rated” scientist with the National Research Foundation, Berjak has mentored young researchers, including supervision of 37 MSc and 16 PhD students, a number of whom have gone on to establish successful scientific careers of their own. Berjak has established a world-class research group in the School of Biological and Conservation Sciences at the University of KwaZulu-Natal, where she currently holds the position of Professor Emeritus. As a world icon in her field, Berjak has been honoured with numerous awards including the 2004 Distinguished Woman Scientist Award (National Dept of Science & Technology), the Order of Mapungubwe and the Silver Medal of the South African Association of Botanists.

2011 AWARDEES

Prof. Thandinkosi Madiba is an international authority on Diseases of the Colon and has established the first Colorectal Unit in KwaZulu-Natal. He is founder of the Colorectal Cancer and Sigma Support Group as well as the University of KwaZulu-Natal’s Surgical Society. Madiba has played and continues to play an active role in the official structures of the University and the Medical School by contributing to policy and strategy formulation. He has championed transformation at the Medical School and has initiated numerous sessions that have promoted and encouraged the notion of black women surgeons.

Dr. Angelo Lambiris is a living legend in the field of Herpetology. He has published over 180 scientific papers and two books. He has studied reptiles and amphibians for over 50 years and owns a priceless research collection comprising nearly 5 000 specimens of over 460 species. His career includes esteemed positions with the then Natal Parks Board, Durnell Institute for Conservation and Ecology and the University of Durban-Westville. Lambiris is also an expert in herpetological veterinary medicine and holds the Fredric L. Frye Lifetime Achiever’s Award in this field. These Living Legends, like our Heritage, are unique and precious. They help us to define our cultural identity, and therefore the work that they do lies at the heart of our spiritual well-being and has the potential to build our nation.
DISTINGUISHED guests, it is a pleasure and a privilege for me to address you on this special occasion. It is particularly significant for me to deliver this lecture in memory of Magqubu Ntombela, a true pioneer in African conservation. What is worth noting is that, though Magqubu never went to school, his knowledge of the environment and its different constituents far exceeds that of professors and other scholars who spent years at tertiary institutions.

There are numerous lessons that we have learned from Magqubu Ntombela, including the fact that human beings are not separate from the environment they live in; human beings are an integral part of the environment. Modern conservation is based on this premise. Hence we talk about living together in harmony with the environment. Protected areas will only thrive if the communities outside such areas have a full understanding of what happens inside such areas. Gone are the days when those working inside protected areas saw themselves as the only ones who knew what conservation was all about. Gone are the days when communities were barred by fences from engaging with conservation authority; the fences created through us and them syndrome – with conservation authorities on the inside and communities on the outside. Conservation can no longer be done for the sake of conservation; it has to be done in the context of what people are doing and will do in the future. We conserve for the benefit of present and future generations. It is important for communities to be informed, as we all know that knowledge is power.

Conservation can no longer be done for the sake of conservation; it has to be done in the context of what people are doing and will do in the future. We conserve for the benefit of present and future generations. It is imperative that all stakeholders in this industry should benefit from what is done. The benefits can be either tangible or intangible. One way in which communities can benefit is by being informed, as we all know that knowledge is power. It is important for communities to be empowered in order for them to live in harmony with nature. The time has come for conservation authorities to create awareness among communities as to why the environment is crucial for their sustainable survival. Conservation authorities should broaden their horizons by gaining more understanding of what happens outside protected areas. This will enable them to carve out a niche for conservation within the broader spectrum of socio-economic issues. A case in point here is what happened at Ndumo Nature Reserve, where the community cut the fence to gain access to the reserve and cultivate the land. The reason why the community did this was because there was no socio-economic development outside the reserve. If conservation authorities had played a role in the development of the community, this unfortunate incident could have been avoided. This proves that boundaries don’t mean anything when communities are poor and cannot satisfy their subsistence needs.

Conservation authorities will always look over their shoulders if they don’t play an active role in the reduction of poverty by influencing the policies that pertain to areas in the immediate vicinity of protected areas. Conservationists cannot blame anybody but themselves for the problems that beset protected areas. Most of these problems are a consequence of the attitude of conservationists towards communities. Currently we are faced with the serious problem of rhino poaching, and some of these poachers come from the neighbouring communities. If we improve our relationship with communities, they can assist us in fighting against poachers. We want communities to be on our side, and not the other way around; therefore we should take a wider view of conservation.

The Museum’s annual lecture, the Magqubu Ntombela - Ian Player Lecture, took place on 22 September in our Research Centre Hall. A very grand affair with the hall decked out beautifully in green and silver, our guest speaker was Dr. Bandile Mkhize – CEO of Ezemvelo KZN Wildlife. His speech was so well received that we’ve decided to transcribe it here in full:
Conservation cannot be looked at differently from other human needs like housing, sanitation, education, health etc. If conservation is to be taken seriously, it must demonstrate how it can contribute to the development of communities. Conservation should be done for the benefit of people, with the understanding that people are at the centre of all human endeavour. They can conserve or destroy nature. We would like them to work with us in conserving nature, but when they ask us what is in it for them, we must be in a position to answer that question.

Conservationists should not be seen as gatekeepers when it comes to issues of development. The duty of conservationists is to provide alternatives, but not to stifle development. Conservationists should say to a developer, “This cannot be done here because it will harm the environment, but it can be done elsewhere where the effects on the environment will be minimal.” Concepts like touching the ground lightly and adaptive management should take precedent. Conservationists must be seen as useful advisers rather than people who react negatively to what other people propose. Creation of awareness of the importance of conservation among people who are not in the business of conservation is critical. At every turn conservationists must speak the language that everybody can understand. That language centres around the fact that conservation is everybody’s business; it is not the preserve of a few who reside or work within protected areas.

In our dealings with communities from all walks of life we must never make the mistake of thinking that they have no knowledge of conservation. Even in the olden days, communities showed great respect for indigenous trees, rivers, wetlands and other things. Some members of the community in rural areas have a wonderful way of describing the natural systems that once existed and how these systems sustained livelihoods. These communities have knowledge of how things should work in the natural environment. Conservationists can learn a lot from these people. All that has to be done is to give them an opportunity to share their knowledge and experiences. Another repository of great knowledge of how natural systems work is traditional leadership. Traditional leaders have a wealth of knowledge about how conservation could be made to work for communities in a sustainable manner. This wealth of knowledge that traditional leaders have about conservation should be harnessed and ingrained into the new paradigm of conservation that recognises the importance of human beings as agents for conservation.

It is a fact that human beings can make or break conservation. It is incumbent upon all of us to harness the good that is there in human beings in order for them to realise that it is imperative for them to live in harmony with nature. Human beings are part of nature and if they destroy it, they are destroying themselves. Conservation should be used to solve real world problems that emanate from people’s behaviour. Nothing could be more artificial in environmental terms than the idea of boundaries. Natural resources and land use patterns have an impact on the lives and cost of living of people.

In conclusion, I want to touch on the issue of co-management of protected areas with claimant communities. I want to do this as an illustration of why conservationists should embrace a new perspective on how they go about their business. When you co-manage a protected area with communities, it cannot be “business as usual”, because the expectations of communities are very high – and in many instances unrealistic. In spite of

If conservation is to be taken seriously, it must demonstrate how it can contribute to the development of communities.
Although their name and appearance suggest otherwise, the checkered elephant shrew (*Rhynchocyon cirnei*) is more closely related to the aardvark, sea cow, and elephant than they are to shrews. Native to Africa, they are one of the largest of the elephant shrews and can grow to a length 30 centimetres, with their tails adding an additional 25 centimetres. Sadly, they are now an endangered species and their population is in rapid decline. Loss of habitat is the greatest threat they face.

**Relatively speaking**

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We received 110 rodent, shrew and bat specimens from the West African countries of Liberia and Sierra Leone – these were collected by Prof. Ara Monadjem of the University of Swaziland. Prof. Monadjem has been a long-time benefactor of the Museum, having donated approximately 565 small mammal specimens over the past 14 years. The growth of the Collection was also boosted by the donation of 46 specimens from the Democratic Republic of Congo that were kindly donated by James Harvey, an ecological researcher and biodiversity consultant.

Other notable additions included the skulls of 75 Bush Karoo rats donated by Chris and Mathilde Stuart, and 120 small mammal specimens that I collected during surveys of several KZN reserves in May and June. Since the departure of Ms. Anita Rautenbach, the Mammalogy Department has been kept afloat through the kind assistance of Ms. Smangele Shabalala, a volunteer assigned to the department since July 2011. During the December/January period my two Honours students, Sylvana Reddy and Tarin Ramsaroop, also assisted in completing an inventory of the wet and dry Mammal Collections.

FIELD WORK
Between 1989 and 1997 Dr. Peter Taylor, former DNSM Curator of Mammals, embarked on several extensive small mammal surveys of KwaZulu-Natal reserves. Through his efforts approximately 900 specimens of 48 species were collected from 22 localities. The new scientific data, along with mammal records from several museums, were compiled into The Smaller Mammals of KwaZulu-Natal published in 1998. This publication remains the only definitive synthesis of available data on the smaller mammals of KwaZulu-Natal.

The many advances made in the fields of DNA analyses and molecular cytogenetics, as well as increased sampling efforts, has indicated a higher diversity of small mammal species within the province than the figure originally reported in 1998 (105 species).
As part of an initiative to compile an updated species list for the province, I intend to conduct small-mammal surveys of various protected areas within the province. Areas that have been under-sampled in the past are key regions that will be surveyed. In May/June 2011 I conducted small-mammal surveys of several KZN reserves, including Chelmsford, Vryheid Hill and Albert Falls. I was accompanied by doctoral students Adriaan Engelbrecht (Stellenbosch University) and Andrea Spickett (Onderstepoort Veterinary Institute) who assisted me with fieldwork.

A total of 120 specimens of 16 species were collected, with several new records added for the Chelmsford and Vryheid Hill Nature Reserves.

In the latter part of the year I was invited to survey the bat fauna in Phinda Private Game Reserve, along with Dr. Corrie Schoeman and Dr. Joy Coleman, two researchers based at the University of KwaZulu-Natal. We spent a week in September conducting acoustic surveys and actively sampling for bats using mist-nets and harp-traps. As Phinda is a big five reserve, our activities were limited to three luxurious five star safari lodges (much to our delight). That, however, did not stop the big five from encroaching on our turf!

We had a mad rush trying to take down mist-nets erected across our infinity pool at Vlei Lodge, when a herd of 25 elephants decided that they needed to take a drink of water. We managed to collect data from nine different species, including a Zulu serotine (Neoromicia zuluensis) of which there are only 15 specimens in the collection. Data collected from the acoustic surveys indicate far greater bat diversity.

CONFERENCES
Anita and I were afforded the opportunity to attend the 11th African Small Mammal Symposium (ASMS) held at University of Swaziland’s, Kwaluseni Campus (3-8 July 2011). Held every four years, the ASMS conferences provide a platform for local and international scientists to interact and present their research, which is based on African small mammals.

I presented a paper on Chromosomal evolution in Malagasy Chiroptera and a poster entitled Cranial size and shape variation in Afro-Malagasy Otomops (Chiroptera: Molossidae) in the Systematics and Phylogeography forum. Anita presented a paper based on her Honours study in the Ecology and Conservation Forum.

We had the pleasure of meeting invited guest speakers Dr. David Happold and Dr. Meredith Happold, authors of several notable publications on African mammals. I also managed to reconnect with several African researchers whom I first met whilst I was working as a Museum intern on the ECORAT (ecologically-based rodent management) project. We were treated to a mid-conference excursion to a cultural centre and natural history museum, and ended the day off with a game-drive and scrumptious buffet (including warthog spit-braai) at a local game reserve.

RESEARCH
The past year has been a flurry of activity in terms of research. I spent three weeks completing outstanding laboratory based research towards my doctoral thesis at the Evolutionary Genomics Laboratory at Stellenbosch University, under the supervision of Dr. R. Victor Rambau, a molecular cytogeneticist at Stellenbosch University.

My ties with Stellenbosch University were further strengthened by the publication of a paper stemming from collaborative research on chromosomal evolution in nesomyine rodents: Solano E, Gilbert C, Richards L, Taylor PJ, et al. (2011) First karyotypic descriptions of Malagasy rodents (Nesomyinae, Muridae) reveal variation at multiple taxonomic levels. Journal of Zoology, London 285(2): 110-118.

I also co-supervised two Honours students from the University of KwaZulu-Natal, Tarin Ramsaroo and Sylvana Reddy. The projects were aimed at investigating chromosomal variation amongst various species of bats, including tenrecs and nesomyine rodents from Madagascar.
We had a mad rush trying to take down the mist-nets erected across our infinity pool at Vlei Lodge, when a herd of 25 elephants decided they needed to take a drink of water.

WORK EXPERIENCE
The Mammalogy Department hosted two high school learners, Anda Mbadi (Durban High School) and Jennifer Slotow (Crawford College). With the assistance of Anita and Smangele, the two learners were treated to a three-day, behind-the-scenes experience at the Research Centre.

They participated in various day-to-day activities, including specimen preparation and identification. Ms. Slotow spent a morning at the Westville Campus of the University of KwaZulu-Natal, assisting me and my students with our chromosome research on Afro-Malagasy small mammals.

YEAR OF THE BAT (2011-2012)
Ecologically and economically speaking, bats provide many important roles that include seed dispersal, pollination and insect control. But despite their apparent value, over one fifth of the world’s bat species are currently regarded as threatened.

To promote bat awareness and conservation worldwide, The United Nations Environment Programme (UNEP) Convention on Migratory Species (CMS) and The Agreement on the Conservation of Populations of European Bats (EUROBATS) have joined forces and declared 2011 - 2012 International Year of the Bat.

As part of the international celebrations, on the 19th May 2011 the Museum in collaboration with Bats KZN, hosted its own Year of the Bat function.

I presented a talk on Madagascar’s bat biodiversity and the challenges that face Malagasy bat conservationists. I also spoke about my various research trips to the island. Here I conducted bat surveys and collected data towards my doctoral study which is aimed at investigating the chromosomal diversity and evolution among and within various Afro-Malagasy bat families.

For more information on Year of the Bat, please contact Bats KZN on 082 322 4215 or visit www.yearofthebat.org

New horizons
At the end of August the Museum bade a fond farewell to a treasured staff member, Ms. Anita Rautenbach. Anita started working as a volunteer within the Mammal Department in 2006. In early 2007 she was appointed the Technical Assistant to the Curator of Mammals. Anita proved to be a valued addition to the Department and was instrumental in facilitating and managing the rapidly-growing Mammal Collection over the past five years. During her tenure at the Museum she prepared approximately 2500 mammal specimens. Despite her busy work schedule she managed to obtain her Bachelor of Science (Honours) degree from the University of KwaZulu-Natal at the end of 2009.

She subsequently went on to register for her Masters degree that was aimed at investigating rodent and shrew ecology and biology in the Phinda Private Game Reserve, KwaZulu-Natal. Through her field-based research she made a significant contribution to the Mammal Collection, having deposited 565 rodent and shrew specimens. She decided to leave the Museum at the end of August 2011 in order to pursue further training as a field guide and to undertake independent ecological consultancy work. We wish her the best of luck in her future academic endeavours.
The economic opportunities, the local and international exposure for Durban, and the significant platform created by the event to raise awareness of climate change amongst the city’s residents, are just some of these. But the arrival of more than 20,000 visitors to Durban also had a significant environmental impact. From the carbon emissions produced as a result of international and local travel and energy use at venues and accommodation establishments, to the waste generated from the consumption of food and the discarding of packaging, the impact of an event like COP17/CMP7 on the environment is vast.

For Durban, ensuring that events are held and managed in an environmentally responsible manner is a key part of helping to market the city as a desirable and globally competitive eventing destination. Following on from the city’s first significant exploration into ‘event greening’ with the 2010 FIFA Soccer World Cup, COP17/CMP7 provided yet another critical opportunity for the city to demonstrate its commitment to greening mega events in a meaningful way.

THE CARBON FOOTPRINT OF COP17/CMP7

From day to day as we travel from place to place and use energy, each of us is responsible for producing carbon dioxide, one of the greenhouse gases that contributes towards climate change. The size of each person’s ‘carbon footprint’ will vary depending on the choices he or she makes – whether to travel in a vehicle or hop on a bicycle, whether to use an electric or solar geyser, whether to eat meat or choose a vegetarian diet. The same is true for big events. A major commitment for Durban in hosting COP17/CMP7 was to calculate and then offset the local carbon footprint of the event. So, as far as possible, the emissions linked to energy use at event venues and in accommodation establishments were calculated, along with emissions associated with local public transport and the transport of equipment, waste and catering to and from major venues. Initial estimates put the local carbon footprint at 15,000 tCO₂. Of this, energy use at delegate accommodation made up the greatest single contributor (61%), energy use at all event venues the second largest contributor (23%), and intra-city transportation the third largest contributor (15%). This estimate will be verified and recalculated based on actual data collected during the COP17/CMP7 event.

But Durban’s responsibility did not end there. As far as possible, choices were made in the planning of the event to try to reduce energy use. For example, in preparation for COP17/CMP7, the ICC and Durban Exhibition
The footprint that must be offset. Are important, there will always be a part of the place for the COP delegates, and that cycling and walking paths were easily available. The project was recognised as the official voluntary offset mechanism for COP17, with delegates able to contribute online in order to offset their carbon footprint. What is important about the Durban Ceba Initiative (apart from its carbon offset value) is the role that it has played, and will continue to play, in promoting "Afrikanised adaptation" responses to climate change that simultaneously restore ecosystems, address the challenges of climate change and alleviate poverty.

**The Ecological Footprint of COP17/CMP7**

However, what the carbon footprint does not consider is the impact of the increased consumption of other resources that are required to support an event of this magnitude. Resources such as water and food are liberally consumed by the thousands of delegates who arrive for events like COP17. Whether it is organic vegetables, processed hamburgers or bottles of water, functional ecosystems are needed to produce the resources that are used in the manufacture of these goods. For eThekwini Municipality, understanding the ecological footprint of an event is important in moving towards hosting environmentally responsible events in the future. In this area, Durban has once again been a pioneer by developing a methodology to calculate the ecological footprint of events in the city. The preliminary calculations for COP17 are eye-opening! It is estimated that each COP17/CMP7 delegate produced up to 4kg of waste per day which is enough to fill 4½ large rubbish bins with waste. Over the 12 days of COP17/CMP7, the waste produced by all the delegates could fill at least one and a half Olympic-sized swimming pools. The water required to produce liquid beverages, clean plates and wash linen, for example, may have been as much as 975 litres for each delegate every day. This is equivalent to standing under a shower for 65 minutes! In a water scarce country such as ours, and where there are competing needs for land usage and diminishing opportunities for more landfills, these figures should highlight for us the need to put measures in place to minimise these impacts on our land- and water-based ecosystems.

**Green Accommodation**

Another focus for the city’s Greening Programme was the accommodation sector. For many of the delegates coming to COP17/CMP7, most of their time would have been spent either at one of the main venues, or in their hotel room, and so it was important to make sure that accommodation establishments were also promoting the green principles of the event and helping to reduce their environmental impact. In fact, the early carbon footprint calculations suggest that one of the largest contributors to this footprint was energy use in hotels and B&Bs. During the build-up to COP17/CMP7, the municipality hosted two forums for these establishments, and promoted the concept of ‘Responsible Tourism’ with a particular focus on issues such as energy and water use, as well as waste management and recycling. Those who attended the forums were equipped with a toolkit of relevant information to encourage them to implement these practices in their own businesses. The Responsible Visitor’s Charter was also produced as part of this programme, and asked visitors to make some simple environmental commitments during their time in Durban, as part of the broader city greening initiatives.

**Event Greening – The way forward**

But perhaps even more important than the specifics of the projects that were implemented as part of the COP17/CMP7 Greening Programme, are the kinds of questions that these processes begin to raise – questions around how these greening principles can become more entrenched in the way the city does its business; questions around the responsibility of all event organisers in the city to play their own role in minimising and offsetting their environmental impact, and questions around the sustainability of our daily patterns of resource consumption, not only as part of mega events. It is this advocacy role of event greening programmes that is so important in making people more aware of the impact that their actions may have on ecosystems at large, and encouraging them to start making smarter choices about how they live their lives. For Durban, the greening of mega events is only the start of a much longer journey towards ensuring that the city becomes a global example of environmental sustainability in action, and that every resident in Durban plays an active part in ensuring that this vision for our city is achieved.

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**LEFT:** Two COP17/CMP7 green volunteers informing the public and delegates about CEBA credits.

**CENTRE:** At the launch of the Durban Ceba Initiative are Mr Ravi Pillay (MEC for Human Settlements and Public Works, KZN), Ms Cristina Figueres (Executive Secretary, UNFCC) and Cllr James Nxumalo (Mayor, eThekwini Municipality) with community members employed by the project. **BELOW:** Inside Durban’s International Convention Centre during COP17/CMP7.
On a wing and a prayer

MAIN PICTURE: A ‘Vulnerable’ Cape Vulture in flight, photographed during the census of the breeding colony at Colleywobbles. (Photo: David Allan)
The Ornithology Department has long maintained a research interest in the conservation status of Bearded and Cape vultures in the Lesotho highlands. Our focus on vultures both intensified and broadened during the past year. BirdLife South Africa commissioned the Ornithology Department to produce a review of the conservation status of vultures throughout Africa. Towards the end of the year a questionnaire was distributed widely throughout the continent, with the aim of gathering information on these highly threatened species. But more immediate threats brought a sharper focus on the plight of these magnificent birds.

Proposals for large-scale wind farms in the Lesotho highlands surfaced at short notice and resulted in two helicopter surveys (one with staff from Ezemvelo KZN Wildlife) of the potentially impacted regions in the Maloti-Drakensberg mountains. Vultures on the wing are particularly vulnerable to potential collisions with wind turbines and the construction of wind farms within the few remaining strongholds of these birds in southern Africa, which include the Lesotho highlands, are cause for the gravest concern.

At equally short notice, an ill-conceived road construction project materialised close to one of the largest remaining Cape Vulture breeding colonies at Colleywobbles in the Eastern Cape (close to the town of Idutywa). Two field trips were made to the site and a detailed census of the colony was carried out. During the second trip, the opportunity was also taken to census three other breeding colonies of this species in the former Transkei region of the Eastern Cape.

The momentum generated by this emphasis on vultures will accelerate moving into 2012.
What a great find

MAIN IMAGE: The Great Shearwater photographed off the Durban coast in July; only the second recorded in KwaZulu-Natal. RIGHT: The immature Greater Frigatebird that returned to Durban Bay in 2011. (Photos: David Allan)
A BAY OF PLENTY
The monthly waterbird counts in Durban Bay, done in conjunction with BirdLife Port Natal and the South African Navy, continued unabated in 2011, the 12th year of continuous coverage. Avian highlights of the surveys included the immature Greater Frigatebird that was first seen in 2010 and which made a very welcome return to the Bay from January to March. Almost as interesting was the appearance of a somewhat forlorn juvenile Greater Flamingo in July, which remained until the end of the year (and beyond!). More noteworthy was an exceptional winter influx of Cape Cormorants, with up to 32 being counted between May and September. Another exciting visitor was the Bar-tailed Godwit, with two birds encountered in November, and singletons in April and December. Four Red-billed Teal and a Little Grebe, all in December, were also of more than passing interest.

The Ornithology Department’s attention to waterbirds was extended further than Durban Bay during the course of the year. Information on the aquatic birds of the Mblokkweni, Little Amanzimtoti and Umgeni estuaries, all along the eThekwini coastline, was synthesised and presented at workshops as part of water ‘reserve determinations’ for these wetlands. These studies were commissioned by the eThekwini Water & Sanitation Department, a sister department of the Museum.

ABOVE: There was a large winter influx of Cape Cormorants into Durban Bay during 2011.
INSET: A Spotted Ground-Thrush in Pigeon Valley.
(photos: David Allan)

We were even able to spread our wings far offshore, leading pelagic seabird trips in June, July and December as part of a fund-raising drive by BirdLife South Africa. Far and away the highlight of these forays was the sighting of a Great Shearwater in July, only the second recorded in KwaZulu-Natal.

FILM TO THE RESCUE
Perhaps the most unusual challenge for the Ornithology Department in 2011 came in the form of two Spotted Ground-Thrushes that killed themselves flying into the windows of a newly constructed building in the Pigeon Valley Nature Reserve. This species is globally threatened and Pigeon Valley is one of its primary strongholds in Durban. Since the well-being of this species is also a municipal responsibility, something had to be done. Working with Sibu Mkhwanazi (Senior Manager: Natural Resources & Special Services) a service provider was located who was able to cover the offending window panes with a special film that eliminates the reflection of the surrounding forest, which was the cause of the problem. This seems to have done the trick and no similar events have occurred.

Birds of a feather
David Allan has spent the past six years working with Hugh Chittenden (Chairman of the John Voelcker Bird Book Fund) and renowned artist, Ingrid Weiersbye, on a book covering geographical variation in southern African birds. The aim of this publication is to illustrate the plumage differences, or geographical variation of southern African bird subspecies.

This will be the first regional guide in the world to depict subspecies in Field Guide format, a project that the Trustees of the John Voelcker Bird Book Fund hope will inspire experienced birders to learn more about regional plumage differences.

Over four years have been spent selecting skins that show sufficient plumage variation to illustrate. Ingrid Weiersbye, the sole artist for the project, has meticulously captured the subtle plumage differences and jizz of these southern African races.

This past year proved to be the crux in the preparation of this volume, with all the introductory sections and the individual species accounts being compiled.

Publication is scheduled for the middle of 2012.
The close of 2011 proved hectic for Durban, as the 17th Conference of the Parties to the United Nations Framework Convention on Climate Change, or COP17 for short, rolled into town in late November. But admittedly, this was not quite as hectic as the Soccer World Cup of the previous year (nor nearly as much fun!). COP17 was serious business. The main event was hosted at the city’s International Convention Centre (ICC) but the myriad of satellite events spilled over into many surrounding venues, including the Museum. BirdLife International, as one of the world’s most influential environmental NGOs, was well represented at COP17. The Museum was honoured to host the BirdLife International welcoming function, their COP17 side event, and an in-house seminar for their own staff. All three events were held at the Research Centre.

The welcoming function was particularly well attended by local stakeholders in the bird-conservation fraternity, who got a rare chance to rub shoulders with their counterparts from elsewhere in the world, especially from other African countries. I was especially privileged during this function to give a talk reviewing the Museum’s history of ornithology and ornithologists. BirdLife’s formal side event, funded by the MacArthur Foundation, was entitled An adaptation framework for Africa: the role of ecosystems in climate-change adaptation. It called attention to the effect of climate change on biodiversity and ecosystems, and therefore on the lives and livelihoods of people. In particular, it showcased adaptive management strategies that are ecosystem based and that show the importance of protecting the natural resource base, providing alternative livelihood options, and thereby strengthening resilience to future climate change.

It was gratifying that the Museum was able to contribute to this global gathering focused on addressing one of the greatest challenges faced by humankind.

David Allan reports back on the hosting of BirdLife International and its events held during COP17 in Durban last year.
We will remember 2011 as the year the world indulged the issue of climate change in Durban with COP 17. While some credible results can be said to have been achieved, in reality what the world saw was the nations’ top leaders – from developed and developing countries – striving to minimise what they needed to commit to as much as possible, and still look good and please everyone. Nothing legally binding will occur before 2020.

Outside the air-conditioned venue, climate change carried on unabated. During the last decade or so the world has experienced unprecedented floods, earthquakes, hurricanes and the like. Climate change scientists have now shown convincing causal links between this dramatic increase in natural disasters and climate change, with evidence also showing that anthropomorphic emissions are the likely cause (Allali et al, 2007). CO₂ emissions in the year 2000 were 20X – the same as in 1800 (World Energy Council, 2004), with human mobility (km/person/day) at 1000X, also what it was in 1800 (World Energy Council, 2004). Direct observations of accelerated climate change include increased global mean temperature (approximately 0.75° C since 1860), increased global average sea level, decreased northern hemisphere snow cover, increased drought, increased proportion of heavy rainfall, increased hurricane intensity, increased ocean acidity and increases in tropical diseases (Allali et al, 2007). That our planet’s climate has been changing over the last few hundred years is surely unquestionable.

Mark Brown, from the School of Life Sciences at the University of KwaZulu-Natal, takes a look at the challenges birds face as a result of global climate change.

**Too Hot to Handle?**

How climate change is affecting our birds.
More sobering are the predictions of future changes. The average surface temperature of the Earth is likely to increase by 1.1 to 6.4°C by 2100 (with Africa predicted to have an even higher increase) and a predicted average sea level rise of between 10 and 90cm by 2100 (Allali et al., 2007). Four characteristics of climate change effects are that they are cumulative, irreversible, global, and have large time lags – today’s actions are tomorrow’s problems.

Due to climate warming some birds in Europe have even stopped migrating altogether.

Globally, the Earth’s inhabitants have already started to respond to these climatic changes. Birds, being charismatic species that are well studied, are perhaps the group we now know the most about in terms of their responses. A climate change risk report on bird species summed it up like this: “This analysis finds compelling evidence that, with 0.8°C of warming having occurred over the past century, strong negative impacts on birds are already taking place. Climate change is affecting birds’ behaviour, distribution and population dynamics, and is implicated in complete breeding failure in some populations” (Wormworth & Mallon, 2006). Highly sensitive to weather, birds are the quintessential “canaries in the coal mine”, and are already responding to current levels of climate change. Some of the differences that have been documented so far include changes in phenology (shifts in timing), range shifts/contractions, biometric changes, mismatches between behaviour and environment, population dynamics and increased extinction risk.

PHENOLOGY
This refers to the timing of regular events in an animal’s life cycle. Climate-induced changes in phenology in birds has already been documented in terms of migratory arrival/departure (incl. protandry), egg laying and moult. These have already been documented in bird species in North America, Australia and Europe. Due to climate warming some birds in Europe have even stopped migrating altogether (Lehikoinen et al., 2004). Ecologist Alastair Fitter from York University in the UK says; “It’s when the canary keels over that you know you’re in trouble – and these changes in phenology are the canary” (Jensen, 2004). The changes are of concern because they can force a given bird species’ life cycle out of synchrony with the ecosystems and communities of which it is a part. Birds around the world have advanced the timing of spring phenological phenomena (such as migration and egg-laying) at a rate of 6.6 days per decade on average (Root and Hughes, 2005), which is the greatest rate of change for any taxonomic group studied to date. Approximately 60 per cent of studies on egg-laying show long-term advances in laying date (Dunn, 2004). As an example, the North American Common Murre has advanced its breeding date by 24 days per decade (Root et al., 2003). In the UK, where decades of extensive records exist, between 26 and 72 per cent of recorded migrant bird species have an earlier spring arrival, with arrival date advances of up to two weeks over the past two to three decades (Robinson et al., 2005). In Australia, on average, birds have been arriving 3.5 days earlier per decade since 1960, with half the species studied showing significantly earlier arrival (Beaumont et al., 2006). On the local front, Barn Swallows are...
now leaving northern parts of South Africa 8 days earlier than they did 20 years ago, explaining in part how the species has been able to fit their extended breeding season in Yom-Tov et al., 2012.

RANGE SHIFTS
In response to the warming climate, UK bird species’ ranges are shifting by extending northward, with northern margins of many species’ distributions moving an average of 18.9 km further over two decades (Niven et al., 2009). For example, the Red-breasted Merganser and the Spruce Grouse moved the northermost limit of their ranges by 317 and 316 miles respectively in the last 20 years (Niven et al, 2009).

In southern Africa range shifts appear to be more complicated, with current bird atlas data showing species’ range shifts occurring in a number of different directions. The Red-billed Firefinch has moved southwards and westwards within the last 2 decades, and has been closely followed by its brood parasite, the Village Indigobird (SABAP 2, 2012). Other species showing similar shifts include the Woolly-necked Stork, Purple-banded Sunbird and White-winged Widowbird. Range contractions, like that shown by the Gurney’s Sugarbird and Rosy-throated Longclaw (SABAP 2, 2012) are more concerning, suggesting that these species might not have the capacity to adjust to climate change. In some cases range shift predictions are quite scary – for example, the Blue Crane (our national bird) looks set to cut its range by 57% by the year 2085 (BirdLife International & Durham University, 2012).

BIOMETRIC CHANGES
Bergman’s rule states that populations of warm-blooded animals will exhibit smaller size at single locations over time, rather than between locations at one time – biologists have predicted that as the climate warms in a particular place, birds should get smaller. Indeed, research has found this to be the case in some species in Israel and Britain. For example, the average body mass of the Yellow-vented Bulbul in Israel decreased by 16% over a 40 year period (Yom-Tov, 2001). Preliminary results from a long-term study in Pieternaritzburg suggest that similar changes have occurred in Southern Red Bishops and Village Weavers (Brown, unpublished). Similarly, Allen’s rule states that appendage size in a species is reduced in populations living in cold climates. Adjusting this rule to climate change, scientists predict that wing length should increase in response to global warming at a particular site. Although too early to be conclusive, some results from Israeli and British birds have shown increased wing length in the last 40 years (Yom-Tov, 2006).

MISMATCHED BEHAVIOR AND ENVIRONMENT
“Global warming may cause migration and nesting to get out of step with food supplies. As a result, the ‘early birds’ may not get the worm” (NWF/FABC, 2002). In France, Blue Tits in Montpellier are exerting themselves at almost double the normal metabolic rate as they forage to feed their young. Climatic warming has meant that the birds are failing to breed when and where their food is in peak abundance, forcing them to exert extra energy foraging (Pennisi, 2001). These Blue Tit parents’ overall survival was compromised because they had to work harder to feed their young.

POPULATION DYNAMICS
Probably the two most commonly studied measures of population dynamics are reproductive success and adult survival, both of which have been shown to be affected by climate change. The average breeding success of Mediterranean populations of Pied Flycatchers declined by approximately 15% between 1984 and 2001 (Wormworth & Mallon, 2006). This long-distance migrant did not arrive at its breeding grounds early enough to breed and make use of peak food supplies to meet the nestlings’ substantial demand. Sometimes breeding failures are caused by extreme seasons, and the consequences can be dire. For example, the number of chicks fledged per pair in the Common Murre in the North Sea during 2003 and 2004 slumped from a norm of 0.75 to 0.3 in one population, with another failing to produce any chicks at all (Wormworth & Mallon, 2006). These breeding failures have been linked to food chain disruptions caused to a large extent by climate change. On the upside, adult survival in some Northern Hemisphere species has increased in response to global warming. Grey Heron, Common Buzzard, Cormorant, Song Thrush and Redwing wintering in Europe have increased survival by 2 to 6 per cent per 1°C rise in temperature, most likely because foraging is easier (Anonymous, 2004). However, decreased survival has also been recorded in some species. Rockhopper Penguin population on sub-Antarctic Campbell Island has decreased by 94%. Numbers declined from 1.6 million in 1942 to 103,000 breeding pairs in 1985 (Cunningham and Mores, 1994). While some of this decline can be linked to overfishing, climate change has seemingly played its role too.

EXTINCTION RISK
“Climate change is emerging as the greatest threat to natural communities in many, if not most, of the world’s ecosystems in coming decades, with mid-range climate change scenarios expected to produce greater extinction rates than habitat loss, currently deemed the top threat to biodiversity” (Thomas et al., 2004). Extinction predictions based on modelling are quite sobering – with warming by 2100 of approximately 2.5°C, species richness for 426 bird species native to Europe will optimistically decrease by 8.6% and pessimistically decrease by 40% (Wormworth & Mallon, 2006). A mid-range climate change for South Africa is predicted to result in between 25 and 40% extinction of bird species by 2050 (Wormworth & Mallon, 2006). In summary, it is clear that climate change poses a distinct challenge for our birds, and that they will have to adapt quickly if they are to survive. Whether the climate change models, which are quite scary, will be proved true or not remains to be seen, but if they are, then several of our wonderful bird species may disappear by the end of the century.

References:
It was a very busy year for the Exhibitions Department. All manner of design work – including numerous banners, flyers, invitations, adverts, posters and a booklet – were produced. Maintenance work was carried out on a number of the permanent displays in the galleries. Two dioramas were upgraded in the Bird Gallery and some changes were made to other permanent displays, such as the nest display. We had to contend with water damage in the Mammal Gallery due to rain water leaking from the Durban Art Gallery (DAG). Apart from some smaller temporary displays, such as for the donations function, we also produced two large temporary displays in the Museum. Two portable banner displays were also created. The climate change seminars hosted by the Durban Natural Science Museum (DNSM) prior to COP17 added to our workload in the form of banners, invitations and photographs. We also collaborated on hosting the Portraits of Resilience exhibition, which coincided with COP17.

PERMANENT DISPLAYS

Early in the year we discovered that a vast number of the new LED ‘birdie’ spotlights that were put in during the 2010 upgrade of the Museum were not working. After consulting with the contractors who originally installed them it was discovered that there was a fault with one of the components and all the lights had to be repaired. During February a team from Giantlight (Pty) Ltd from Gauteng came to the Museum and we spent an entire week opening and closing nearly all the display cases throughout the galleries, repairing all the spotlights (approximately 160 in total). We used the opportunity to clean the displays, replace the Vapona, and photograph and document all the specimens as part of the future display database/movement of specimens register.

A number of display cases’ interiors were repainted, viz. the D’MOSS display in the Mammal Gallery, the Lizard display in the Reptile Gallery, the Birds’ Nests and Crowned Eagle displays in the Bird Gallery, and the Geology display in the Geology and Palaeontology Gallery. This required the removal of all the specimens and display material prior to the painting, and their subsequent replacement. The riverbank nest of the Malachite Kingfisher in the Nest display was also renovated.

The Penguin and Gannet displays in the Bird Gallery were upgraded. Two beautiful oil on canvas paintings, depicting coastal scenes in the Western Cape, were commissioned from Ingrid Weiersbye and Choice Carpenters were hired to make curved backing boards. Considerable research went into choosing the right gluing and application method to stick the paintings to the boards, as a non-acidic medium was required. This was supplied by Spectrum Art & Office Supplies. The Choice Carpenters and Museum Exhibitions team then proceeded to attach the paintings to the boards and insert them into the display cases. Sand and seashells were added to the base of the displays as a finishing touch. The resultant dioramas have added a wonderful continuity to the gallery.

GEOLOGY & PALAEONTOLOGY INTERACTIVE GALLERY

In March, we made contact with Michael Wolf (owner of the Cape Town based company, Formula-d interactive) regarding the planning of an integrated, interactive Palaeontology and Geology Gallery. Our concept was workshopped with Michael during a Durban visit and the work started on phase one, a prehistoric animation sequence to be projected against one of the gallery walls.

Time was spent perusing the libraries for ‘prehistoric landscape’ references and the
subsequent scans were sent to the animator in charge, Warwick de Kock. Suggestions and requested changes were the order of the day, but finally the much anticipated animation sequence was completed and delivered, together with an in-depth conceptual booklet.

When the funding situation altered course, a completely new concept had to be devised. Llewellyn Henriques of Advanced Electronic Solutions was asked to verify the validity of such a proposal. We await funding in order to proceed with the project.

**TEMPORARY DISPLAYS**

Year of the Bat, the first temporary display for 2011, replaced the previous one on Invasive Alien Plants. The labels were supplied courtesy of the KZN Bat Interest Group and A2 laminated prints of these were produced by Fishwicks Printers. The Mammalogy Department supplied information, bat specimens and equipment for the display. They also supplied bat droppings, which meant the Exhibitions Department had to collect rat and gecko droppings to use as a comparison! Some additional photographs and illustrations were sourced from the Internet and the Museum Library kindly loaned a number of bat books. The display was opened on 20 July 2011.

The second temporary display, entitled Curators & Collections, was opened on 16 November 2011. This display showcased all the Museum’s core collections, viz. Ornithology, Mammalogy, Entomology, Palaeontology and Herpetology, and their curators. The display was broken up into six components, the first explaining the purpose of the collections and the other five detailing the individual collections and their curators. Equipment and specimens were loaned by each department to add further interest to the display.

**PORTABLE BANNER DISPLAYS**

Two portable banner displays were designed and produced. The first was a collaborative effort between all the heritage departments, viz. the DNSM, the DAG and the Local History Museum (LHM). A number of exhibition systems were investigated and finally the TRIGA system was agreed upon due to its flexibility and superior strength. This was necessary as the display had to be used outdoors. The graphic designers from Science were commissioned to design the material and Signergy supplied the printing and presentation system. The display was opened at the Botanic Gardens on 2 September 2011.

The second portable banner display, also a TRIGA system, was made for the DNSM’s exhibition stand at the 6th annual Science Centre World Congress in Cape Town during September 2011. It showcased all the Museum’s curators and collections. This too was designed by Science, and Signergy again supplied the printing and display system. A PowerPoint Presentation on the DNSM was also produced to accompany the TRIGA display.

**CLIMATE CHANGE SEMINARS AND DISPLAY COLLABORATION**

The Exhibitions Department was responsible for producing banners and invitations, making up small temporary displays and taking photographs at the climate change seminars which ran from 22 June to 16 November 2011.

Late in August the Museum received a phone call from Canadian photographer and project originator, Christine Germano, requesting display space for a climate change exhibition entitled Portraits of Resilience, to open in conjunction with COP17. We agreed to host the exhibition and a lengthy correspondence between Christine and the team ensued in order to get the project up and running. We completed an extensive background investigation into the supporting partners behind the exhibition (Many Strong Voices) to verify their authenticity.

High resolution visual material, typefaces and logos were sent through from Canada as requested and we proceeded to design outdoor banners and indoor posters to promote the exhibition. John Crump, Senior Advisor on Climate Change for the Polar Centre at GRID-Arendal (a Norwegian foundation that supports the work of the United Nations Environment Programme), personally delivered the material to be displayed and we attached the fence banners and mounted the exhibition on the new portable pinboards manufactured by Scotty Maharaj of Choice Carpenters.

Niall Haygarth from Corporate Policy kindly printed out additional promotional material sent by John Crump’s design team, as well as our own promotional poster designed for the Museum foyer.

Finally, on 29 November, the official opening took place at the Research Centre with John Crump as the guest speaker.

Shortly afterwards a promotional teaser display was designed in the form of three pull-up banners, intended to entice more visitors to the Research Centre.

**EXHIBITIONS TEAM:**

Dudu Hlatshwayo (Exhibitions Curator)
Immie Mostert (Museum Officer)
Andrew Carter (Museum Officer)
Entomologist Kirstin Williams takes a close look at the department’s activities last year which took her to Grahamstown, the Free State, and Kosi Bay.

The congress provided a podium for the exchange of new ideas and information.

I attended two insightful conferences during the course of 2011. In January, Rhodes University in Grahamstown hosted the annual conference of The South African Society for Systematic Biology (SASSB) titled “Biodiversity Matters”.

The conference had four main objectives:
1. To raise awareness of the current knowledge of the biological diversity of the region.
2. To share that knowledge in the international scientific community and the general public.
3. To look for common patterns of diversity that might suggest how this diversity arose.
4. To find evidence of how diversity has responded to changes in the environment over the last few million years.

Professor Martin Villet, entomology lecturer and an Honorary Research Associate of the South African Institute for Aquatic Biodiversity (SAIAB) said, “The conference adopted this theme for its discussion of matters, issues and topics in the study of biodiversity. It is a celebration of the rich heritage of nature and why biodiversity matters to human welfare, economics and pleasure.”

Next was the XVIIth Congress of the Entomological Society of Southern Africa (ESSA) which was held in July at the University of the Free State in Bloemfontein.

With a specific emphasis on the advancement of entomology and all its facets on the African continent in general, the congress provided a podium for the exchange of new ideas and information relevant to the discipline.

Both events were well attended and provided great opportunities to network with fellow entomologists and researchers. Conferences like these are important for sharing research results and getting input into future projects.
SABIF PROJECT
We were fortunate to receive the funding we applied for from South African Biodiversity Information Forum (SABIF) under the auspices of SANBI, to complete the digitisation of our collection. SABIF is the South African node of the Global Biodiversity Information Forum (GBIF), which has a website that anyone can access to search for information on biodiversity.

Two contract staff members were employed, Mariana Tomalin and Daindree Naidoo, both of whom worked for us on our previous project and so came with experience and a good understanding of what needed to be done. They started working in February and have done a sterling job!

By the time the project is completed at the end of January 2012, they will have added an additional 40 000 records to the system and our entire collection will be electronically captured! This is a huge step forward for the department and will allow us instant access to our data.

VOLUNTEER
Since the department has not had a technician for quite some time, we were allocated a volunteer by the Education Department to work three mornings a week.

We were very fortunate to get Odile Pfaehler, who has a master’s degree in entomology and came with previous work experience in a museum. She took on the task of updating the taxonomy of the Diptera (flies). This involved a great deal of research to find the most recent publications and name changes for all the species that we have in the collection. She did a very good job and updated both the information in the database, and the labels in the collection drawers. It was a pleasure to have her helping in the department!

FIELD TRIP
In October I joined staff from the KwaZulu-Natal Museum on a field trip to Kosi Bay Nature Reserve. Dr Torsten Dikow of the USA sponsored the trip to collect the flies he is researching, instead of coming out to South Africa himself.

We stayed in a self-catering chalet in the Reserve, which allowed us to collect insects right on our doorstep. It was a very productive trip with the four dipterists – Jason Londt, Ray Miller, Burgert Muller and myself – catching flies for our own research as well as Dr Dikow’s. Malacologists, Dai Herbert and Linda Davis, also from the KwaZulu-Natal Museum spent their time collecting snails. The area is breathtakingly beautiful and it was a good reminder of what an incredible country we live in. The material I collected (which included some species we didn’t have before) was added to the collection. The trip was very successful and we hope to do this kind of collaborative work again next year.

CURATION
Having the SABIF staff and our volunteer, Odile, working on the collection has meant that a close eye has been kept on the specimens. This allowed us to pick up mould problems, which were attributed to a malfunction with the airconditioner. This was dealt with effectively by using thymol crystals in the drawers. One of our cabinets, which had become so warped through aging that we were unable to remove the drawers, was also fixed.

FAR LEFT: Mariana Tomalin working on the SABIF project. BELOW: Odile Pfaehler updating the taxonomy of the Diptera and Burgert Muller, Linda Davis, Jason Londt, Ray Miller and Dai Herbert enjoying a sundowner after a day in the field.

Dr Torsten Dikow
Research Scientist at the Biodiversity Synthesis Center in the USA.
RESEARCH

My research is mainly focused on the green bottle blowflies, *Lucilia* which are often used as helpful tools to aid medical and forensic professionals. There are several different species of flies in South Africa that are forensically significant, but it is important to know their biology and geographic distribution in order to use them in forensic investigations. If a certain species not indigenous to the area is found at a crime scene, a forensic investigator may conclude that a corpse has been moved from its original location. Blowflies (including the *Lucilias*) are among the first insects to colonise a corpse after death. There are four main stages of decomposition of a body – fresh, bloated, active decay and dry. Once the flies land on a corpse, the females will feed on a protein source, such as blood, to mature their eggs and then locate a suitable site on the corpse to lay their eggs. The eggs hatch and the maggots feed on the body tissue. Once they reach maturity, the maggots leave the body to find a suitable site to pupate. The next generation of flies will emerge from the pupae. As the body decomposes and the flies complete their life cycle, beetles start to colonise the body.

*Lucilia cuprina* is also responsible for a condition known as ‘sheep strike’ which occurs when the female fly locates a sheep and lays her eggs in open wounds or around the anal area where it is moist and dirty. The emerging larvae start to feed on the faecal material and then on the sheep itself which causes large lesions, destroys the wool and in really bad infestations, may prove to be fatal.

But for patients who suffer from slow healing wounds, the maggots of *L. sericata* have been used successfully by medical doctors in debridement therapy. The maggots cleanse the wound by eating the dead and infectious skin preventing gangrene and further infection.

My paper entitled “Occurrence of natural hybrids in *Lucilia sericata* and *Lucilia cuprina*” was submitted to the *Journal of Medical and Veterinary Entomology* in October.

An informal research group consisting of entomology staff from the South African Sugar Research Institute, the KwaZulu-Natal Museum and our department met a couple of times this year to discuss our different research projects. This gave us the opportunity to connect with fellow researchers in the area and provide feedback and suggestions on current projects. This has proved to be a very useful association.

The history of MDT

Records have documented that maggots have been used for centuries in wound treatment. There are reports of the use of maggots for wound healing by Maya Native Americans and Aboriginal tribes in Australia. There have also been reports of the use of maggot debridement therapy (MDT) in Renaissance times. Military physicians have observed that soldiers whose wounds had become colonized with maggots experienced significantly less morbidity and mortality than soldiers whose wounds had not become colonized. These physicians included Napoleon’s general surgeon, Baron Dominique Larrey.
What’s up with the weather?

Kate Richardson reports on a series of successful talks co-hosted by Life Long Learning KZN and the Durban Natural Science Museum.

Life Long Learning KZN is a non-profit organisation offering educational events and courses to the general public in KwaZulu-Natal. With the hosting of the United Nations 17th Conference of the Parties (COP17) in Durban from 28 November to 9 December 2011, the issue of climate change was at the forefront of everyone’s thoughts. Life Long Learning decided to run a series of lectures, introducing the various issues to the public and also giving some practical solutions to the problems presented.

Life Long Learning does not own lecture rooms, so talks and events are hosted in various venues around the province. Being central, well-known, and open to scientific learning, the Museum was the perfect place to host this series. Since plans had already been made to host one or two climate change events at the DNSM, the decision was made to co-host the series with Life Long Learning. Like all new ventures, co-management brought with it many challenges, but the series was a great success and achieved its aim of introducing the issues surrounding climate change to the general public.

Lectures and talks in the series ranged from the highly scientific to the easily accessible, and covered varied topics such as bird distribution changes, sea level rises, fresh water usage, the role of faith communities in combating climate change, greening events, gardening for climate change, green buildings, and energy usage in the municipality. Attendance ranged from around 15 to well over 50 people, but whatever the number, the group was enthusiastic about understanding the issues and discussing possible solutions. It was encouraging to see the same faces coming to many of the talks, but even more heartening was the number of attendees who did not typically come to either Museum or Life Long Learning events.

Life Long Learning has a full series of events and talks planned for 2012, so log on to www.lllkzn.net to see what is on offer. The courses are primarily for personal and social development, sometimes for Continuing Professional Development, but not for qualifications.

A very big thanks must go to the Museum, and especially Renusha and the Research Centre team, for all the extra hours and extra work entailed in running such a successful series.

RUNNING ON EMPTY

Roger Peplow and Kate Richardson discuss the challenges of changing our energy lifestyles.

The majority of energy consumed by humans today comes from burning natural hydrocarbons – predominantly the fossil fuels coal, oil and natural gas. These are finite resources and while there are many opinions as to how long these resources will last, it is obvious that there will come a time when they become exhausted. Combustion of hydrocarbons also generates carbon dioxide, the major greenhouse gas, and there is considerable global concern that the increasing level of carbon dioxide in the atmosphere is causing global warming. So the options are: to reduce power usage, to find alternative sources of energy, or to reduce the number of humans in the world (a fairly unpopular option!).

This article will look at the potential of renewable energy. Major renewable energy sources are sunlight, wind and water, which can be used when we need it, rather than when the wind blows or the sun shines, these renewable resources will never be able to replace fossil fuels completely.

In order to put some of these renewable energy resources into context, David MacKay produced an excellent book, Sustainable Energy – Without the Hot Air, which he makes freely available via his web site. In this book he analyses the energy requirements of the UK and then looks at all the possible ways in which these requirements can be met. He takes a very high level, macroscopic view of the issues. While this analysis is based on UK needs, population and geography, he does apply the analysis to Europe and the USA with similar results. In this article we will extract some of the highlights of this book and add some comment on the applicability of the results to South Africa.

The units used here are kilowatt hours per person per day (kWh/p/d): you can compare the usage in your own house by looking at your eThekwini Municipality electricity account, which is also in kWh.

The book breaks energy demand into domestic lighting, heating, cooling etc and looks at each major action, such as how much energy is consumed by a bath (5 kWh/p/day) or a shower (1.4 kWh/p/d). Adding heating, cooking and other domestic consumption, the book concludes that the average person in the UK consumes around 41 kWh/p/d through domestic activity. The next major contributor to personal consumption is the motor car. Assuming that everyone in the UK...
will average 18 000 km/year, or 50 km/day, this translates (with a reasonably efficient car) into approximately 40 kWh/p/d, very similar to domestic consumption.

How do these figures relate to South Africa? Using Eskom’s largest peak demand of 2011\(^2\) (week 22) of 36212 MW and dividing this by a population of 50 million people\(^3\) we get to 17 kWh/p/d – comparable, but as expected considerably smaller than the UK total. This figure would have to be modified to compensate for two important factors: firstly, domestic energy that derives from coal, gas, wood etc and secondly, the fact that Eskom’s electricity supplies industry and commerce as well as the domestic market.

South African car usage can be estimated using the SA Petroleum Industry Association’s figure of 11.3 billion litres\(^4\) of petrol (2009) – using the same conversions as *Without the Hot Air*, this gives us 11.3 billion litres\(^*\) 10 kWh/litre spread over 50 million people and 365 days, which comes to 6 kWh/p/d. Again as expected, this is comparable to, but lower than, the UK figures.

MacKay determines that including air travel, farming, food production, transport and all other general consumption of goods, the average UK person uses approximately 191 kWh/p/d.

He then looks at renewable energy production. For example, if one allowed 10% of the land area of the UK (the windiest 10%) to be densely covered with wind turbines, at the current output of 2 W/m\(^2\) they would be able to produce 20 kWh/p/d through wind power. Think of this: 10% of the land occupied by turbines providing half of the domestic power only. To compound the problem, the turbines and the land usage would not be enough; it would also be necessary to create means of storing this energy for times when the wind is not blowing. Similarly, if 5% of the country (200 m\(^2\) per person) were covered with 10% efficient photo-voltaic solar panels, these would produce about 50 kWh/p/d, approximately 25% of the consumption requirement. To put this area of PV panels into context, it would require approximately 100 times the area of all the PV cells in the world (2008 time frame).

In estimating all the possible sources of renewable energy (including offshore wind farms, biomass, and wave and tide generation) the conclusion is that, even if money were no object and the land could be heavily utilised for power generation, the UK will never be able to cater for its existing requirements from sustainable energy.

Neither, the book concludes, will the USA or Europe. The options for using renewable energy would then be to wait until the energy efficiency of renewable sources becomes better (energy efficiencies are becoming better all the time due to increasing research) or to buy energy from other countries (solar farms in the Sahara desert, for example). Countries containing parts of the Sahara desert could thus become major role players in energy production.

In South Africa we have around 24 000 m\(^2\) of land per person (1.22 million km\(^2\) with 50 million people) compared to only 4 000 m\(^2\) in the UK. We also have better sunshine and lower consumption, so with about six times the land per person, less than one third the domestic electricity usage and one sixth of the car usage, it would be possible, given adequate funding, to power all of South Africa’s needs from renewable power – providing our population does not grow significantly and does not increase its consumption to UK levels.

For personal energy efficiency and guidelines for various options see also the Energy Efficiency Guidelines produced by the eThekwini Environmental Planning & Climate Protection Department available at: http://fifaworldcup.durban.gov.za/Pages/GreeningDurban2010

Roger Peplow is an electronic engineer at the University of KwaZulu-Natal, where power-saving is becoming an increasingly important part of their teaching. Kate Richardson is Life Sciences Track Leader at Life Long Learning.

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WHERE TO FROM HERE?
A long-held religious and philosophical idea – humans as the masters of planet Earth – has turned into a stark reality. What we do now already affects the planet of the year 3000 or even 50,000.  

CHRISTIAN SCHWAGERL AND PAUL CRUTZEN

The City of Durban proudly hosted COP17/CMP7, the largest conference ever to be held in Africa. But was it a cause for COP-timism or just another global climate COP-out? **Dr Debra Roberts** provides an insightful account of the proceedings.

November 2011 saw the world returning to Durban’s shores for a second time in as many years. Eighteen months before, our city was home to the orange-clad Dutch soccer supporters and witnessed the inaugural use of the best looking venue of the 2010 FIFA Soccer World Cup™, the iconic Moses Mabhida stadium. Durban was dubbed the ‘Miami of Africa’ by international visitors discovering our great city for the first time, and the beachfront fan park became a draw card for guest and local alike. Colourful, multi-cultural, eclectic – Durban was definitely the warmest place to be during a soccer-mad South African winter.

A year and a half later, the city’s slogan “the warmest place to be” took on a more ominous meaning as the world gathered in Durban for the next instalment of the United Nations climate change negotiations. No trophy was at stake, and there were no applauding spectators, but there was the climate equivalent of a ‘sudden death’ playoff in the final hours of the COP!

In order to understand what happened at COP17/CMP7 we have to start at the beginning and analyse the global context within which the climate change negotiations take place. We live at a critical point in the planet’s history: a period dubbed the “Anthropocene”. This term was first coined by Eugene Stoermer and then popularised by Paul Crutzen, the winner of the 1995 Nobel Prize for Chemistry for his research on ozone-depleting chemicals. The ‘anthro’ in Anthropocene acknowledges that human activities now rival the forces of Nature, pushing the world into an unknown state through human interference with biological, chemical and geological processes such as...
the water and carbon cycle. This recalls Morton’s (2007) concept of “ecology without nature” whereby humankind uses its technological power to create its own global ecology, independent of Nature. As noted by Crutzen and Schwägerl (2011): “For millennia, humans have behaved as rebels against a superpower we call ‘Nature’. In the 20th century, however, new technologies, fossil fuels, and a fast-growing population resulted in a ‘Great Acceleration’ of our own powers. Albeit clumsily, we are taking control of Nature’s realm, from climate to DNA. We humans are becoming the dominant force for change on Earth. A long-held religious and philosophical idea – humans as the masters of planet Earth – has turned into a stark reality. What we do now already affects the planet of the year 3000 or even 50,000.”

Power without responsibility is, however, a dangerous mix. Unfortunately the notion of selfless global responsibility has not been hardwired into the evolutionary pathway that has brought us from the prosimians of 55 million years ago to today’s only surviving hominid species. Whilst we might anticipate a long evolutionary future for our relatively young species, we are likely to be sent off life’s playing fields before half time if we do not become better attuned to the global systems that surround us. The potential red card we face is outlined in a 2009 paper authored by Johan Rockström and 28 other leading global environmental change thinkers who have revolutionised global systems thinking by identifying and quantifying the existence of planetary boundaries. These boundaries define the “safe operating space for humanity with respect to the functioning of the Earth System” (Rockström et al, 2009). In other words, the playing field for the game of life. There are nine such boundaries: biodiversity, climate change, nitrogen and phosphorous cycles, land use change, freshwater resources, toxic chemicals, aerosols, ocean acidification and ozone depletion. Of these, three have already been exceeded: climate change, rate of biodiversity loss and changes to the global nitrogen cycle. Others (such as ocean...
If we were a wise hominid species, we would also see this as a major opportunity to transform ourselves, our society and our economy into the global environmental Dream Team!
THE NEED FOR TRANSFORMATION
Returning to a climatically safe operating space will require us to curb the greenhouse gas emissions that are the result of our fossil fuel addiction, hyperconsumption and growing numbers. This presupposes a radical transformation in the way we live our lives, grow our economy and practise our politics. But even if such radical transformation was instantaneously possible, the option of preventing climate change is already lost. Currently the World Health Organization estimates that over 150 000 people die each year due to the increase in extreme events, greater disease burden and rising levels of malnutrition resulting from climate change. So the real question is, how do we prevent existing ‘serious’ climate change from escalating into ‘dangerous’ climate change? Present thinking suggests that we must limit global average temperature increase to below 2°C or less above preindustrial (circa 1750) temperatures. This requires us to significantly reduce the amount of greenhouse gases we produce, and to remove existing greenhouses from the atmosphere by maintaining and increasing carbon sinks (such as forests and grasslands). Regardless of the levels of mitigation achieved, however, a certain level of climate change is now unavoidable given the long lifetime of carbon dioxide and other greenhouse gases and the thermal inertia of the oceans. Unfortunately there is no ‘carbon undo’ button, even if we do manage to stabilise green house gas concentrations in the atmosphere. As a result, there is an increasingly urgent need to help people and their supporting ecosystems and infrastructure adapt to escalating levels of climate change, especially on vulnerable continents such as Africa.

It was this quest for appropriate responses to global mitigation and adaptation challenges that brought the United Nations machine and the associated legion of 195 country delegations to Durban’s shores in November 2011 for COP17/CMP7.

THE COP ROADMAP
I have attended a fair number of COP events in the past, but this was my first COP as a representative of the host city and as a national negotiator for South Africa. Excitement and adrenalin ran high amongst everyone involved in the year-long preparations, but that paled in comparison to the experience of COP17 itself. As an editorial in Nature (2011) observed, “Late-night talks, later-night arguments and early-morning pacts between battling negotiators with the apparent fate of the world resting on their shoulders give the process a melodrama that is hard to resist, particularly for those who experienced it first hand in the chaos of the Durban meeting.”

So why all the melodrama? Simply put, Durban marked a particularly critical point in the climate change negotiations. The journey had begun 16 years earlier in Berlin in 1995 with the first meeting of the country signatories (known as ‘parties’ in United Nations lingo) to the United Nations Framework Convention on Climate Change (UNFCCC). The purpose of the Convention was to encourage the industrialised nations to...
voluntarily stabilise their greenhouse gas emissions. The Convention entered into force (i.e. became legally binding on the signatories) in 1994 following its global introduction at the Earth Summit in Rio de Janeiro in 1992 (otherwise known as the United Nations Conference on Environment and Development). Because each meeting of the United Nations’ environmental conventions is referred to as a ‘conference of the parties’, these global gatherings are commonly known as COPs. After a long and contested delay, the Kyoto Protocol (a protocol under the UNFCCC) entered into force in 2005 and these meetings became known as COP/CMPs (i.e. Conference of the Parties serving as a meeting of the Parties to the Kyoto Protocol). So COP17/CMP7 refers to the 17th meeting of the countries that signed the UNFCCC and the 7th meeting of the countries that signed the Kyoto Protocol.

The difference between the Convention and the Protocol is that the Kyoto Protocol is not a voluntary commitment; instead it commits industrialised countries to stabilise greenhouse gases via legally binding emissions limits within a specified time frame. Given that the Protocol’s first commitment period runs from 2008 to 2012, a negotiating track was initiated in 2005 at COP11/CMP1 in Montreal to discuss post-2012 commitments for industrialised countries. In 2007 at COP13/CMP3 in Bali, a second negotiating track was initiated to ensure the full, effective

1 http://www.who.int/heli/risks/climate change/en/
3 Over and above the existing impacts of climate variability.
4 It was adopted in 1997.
and sustained implementation of the Convention through long-term co-operative action. This would allow the engagement of countries that had not signed the Kyoto Protocol – such as the USA and Australia (at that time) – and provide the opportunity to address the “common but differentiated” responsibilities of the big emitters of the Global South – such as India and China. For both negotiating tracks ad hoc working groups were established, and an initial deadline of 2009 was set to achieve a new legally binding agreement to fulfil the Convention’s goal of stabilising “greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate”.

The 2009 COP15/CMP5 meeting in Copenhagen, however, turned out to be the biggest COP-out on record. Despite the hype of ‘Hopenhagen’ emblazoned on posters plastered onto every available surface in the city, the process rapidly degenerated into ‘Brokenhagen’. This was primarily due to the questionable tactics employed by the Danish COP Presidency and other parties and included a combination of secret text and select behind-closed-doors meetings. The resulting high levels of distrust amongst the parties created a sharp rift between the Global North and Global South and left the negotiations on the brink of disaster, with no agreement in sight for most of the two weeks. In the final days of COP15, however, an unexpected breakthrough was achieved as a result of a meeting between President Obama and the presidents of the BASIC countries (Brazil, South Africa, India and China). The resulting Copenhagen Accord (ironically evolved from the secret “Danish Text” that caused so much trouble at the beginning of COP15/CMP5 when it was leaked to the press) also received inputs from a behind-closed-doors “Friends of the Chair” group convened by the Danish COP presidency. It is not surprising, given the manner of its birth and the identity of its authors, that the Copenhagen Accord was viewed by many parties as non-inclusive, anti-democratic, anti-transparent, unacceptable and unambitious, and as a result could not be formally adopted by the COP (which runs on a consensus basis) due to formal opposition from Bolivia, Venezuela, Costa Rica, Nicaragua, Cuba and Tuvalu. In the end it could only be noted in the plenary session.

The most significant problems with the Copenhagen Accord are that:

- It is not legally binding.
- It has no target for emissions reductions and does not set a peaking year for greenhouse gas emissions.
- It was drafted by the major industrialised countries and the largest carbon emitters of the newly industrialising countries.
- It contains no guarantee of, or information on, where the promised $100 billion per annum of new climate funds promised by 2020, would come from.
- It excludes earlier more ambitious proposals (by the Small Island Developing States and others) that aimed to limit average global temperature rise to 1.5°C.

Furthermore, scientific analyses of the pledges made under the Copenhagen Accord indicate that the net result of implementation will be a global average temperature increase of 3.5-3.9°C by 2100. This is a far cry from the 2°C limit which marks the boundary between ‘serious’ and ‘dangerous’ climate change! This overshoot is driven by the Gigatonne Gap (UNEP 2011) i.e. the difference between the 44 gigatonnes of carbon dioxide equivalent (GtC02e) emissions permitted in 2020 if we are to achieve the 2°C limit, and the median estimate of 51 GtC02e that would be the result if the higher-ambition Copenhagen Accord pledges are implemented together with strict accounting rules.

Given the colossal failure of Copenhagen, the focus of COP16/CMP6 in Cancun was to rescue and regalvanise the multilateral negotiating process. The Mexican COP presidency was widely commended for an international engagement process that was transparent, inclusive, and focused on re-establishing a basis of trust amongst the parties – and was thankfully free of any secret, bottom-drawer text! But despite the hard work of the Mexican diplomats, no clear path
COP15/CMP5 in Copenhagen in 2009 however, turned out to be the biggest COP-out on record. Despite the hype of ‘Hopenhagen’ emblazoned on posters plastered across every available surface in the city, the process rapidly degenerated into ‘Brokenhagen’.

to a binding agreement emerged in Cancun and fearing another Copenhagen-type failure, parties were quick to accept incremental outcomes that fell well short of initial, more ambitious demands in order to keep the multilateral process alive. The key outcomes of Cancun were largely institutional and included establishing the Cancun Adaptation Framework and Adaptation Committee. The process of making the Green Climate Fund operational was also initiated (our own Minister Manuel was co-chair of the Transitional Committee responsible for designing the fund) and a Technology Mechanism comprised of a Technology Executive Committee and a Climate Technology Centre and Network was created. Unfortunately, Cancun also saw the Copenhagen Accord pledges imported into the UNFCCC, marking a shift from the pursuit of a legally binding agreement based on science, to an acceptance of politically palatable pledges. This highlighted the ever-growing gap between governments’ stated ambition of 2°C and their related underperforming actions.
COP17/CMP7
Because the issue of new binding targets was deferred in Cancun, COP17/CMP7 in Durban became the last chance for the world to agree on a second commitment period for the Kyoto Protocol. The stakes in Durban were thus very high, and for much of the two weeks the talks (as usual) appeared on the verge of collapse. A climate ‘sudden death playoff’, however, resulted in a deal being thrashed out in what were described as ‘bizarre, last minute huddles’ in the main conference hall during the early hours of 11 December 2011 – in full sight of anyone who remained during the dying hours of the longest COP to date1.

Overall the blend of savvy politicking and exhaustion resulted in four broad areas of progress:

**The Durban Platform for Enhanced Action**
Hot on the heels of the Bali Action Plan, Copenhagen Accord and Cancun Agreements we now have (imaginary drum roll)... the Durban Platform for Enhanced Action (DPEA). This agreement initiates a new round of negotiations that will culminate in 2015 with the development of a “protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties” and will be operationalised by 2020. The final deal at COP17/CMP7 was struck with the addition of the third option of “an agreed outcome with legal force” which was a compromise struck between the European Union (EU) and India in one of the ‘huddles’ that formed during a break in the formal negotiations. A new Ad Hoc Working Group on the Durban Platform for Enhanced Action has also been established to undertake the work required to develop this new legally binding agreement2. The DPEA is a tentative step forward in the international negotiation process, providing for the reintegration of countries that have remained outside, or have withdrawn from the Kyoto Protocol, and brings all parties – both from the Global North and South – onto one negotiating track. On the downside, it delays the toughest questions for three years and is a non-binding agreement. The global timetable it sets is also out of step with the scientific data. In 2007 the Intergovernmental Panel on Climate Change indicated in their Fourth Assessment Report that greenhouse gas emissions would need to peak in 2015 if there is to be any chance of keeping global temperature increase below 2°C. If we are lucky, the DPEA will ensure that parties agree on how to achieve this goal by 2015, with implementation of the agreements only starting in 2020. This delay will produce a significant Implementation Gap in the global action required to address climate change. In short, there is a real fear that agreement to the DPEA comes at the expense of ambition in the short-term and equity in the long-term, particularly as there is no reference to the ‘common but differentiated responsibilities’ of the Global North and South in achieving the DPEA’s goals. There are also the whispered concerns that it may not be possible to achieve in the next three years what it has been impossible to achieve in the last 17, that is, an universally binding climate protection agreement.

**Kyoto Protocol**
The DPEA was supported by parties from the Global South partly because COP17/CMP7 also reached an agreement on a second commitment period for the Kyoto Protocol. It was, however, a minor victory as the world’s largest emitters will not participate in an inclusive, legally binding agreement until 2020 and the parties who have signed up for the second commitment period (primarily the European Union - EU) only have to reduce emissions by at least 25-40% below 1990 levels by 2020. This is no more stringent than what the EU is currently committed to under the European Union Emissions Trading Scheme. The Kyoto Protocol thus locks in low targets and likely emissions increases over the next decade. It will also be a ‘lite’ version of the Protocol, with Japan and Russia confirming that they will not be taking on any targets and Canada withdrawing entirely. Australia, New Zealand, Norway and Switzerland are likely to join the EU (providing certain conditions are met) but even with these additional commitments, the Protocol will cover only 15-16% of global emissions. The Kyoto Protocol thus remains a shadow of what it once was, and exists simply to keep carbon markets alive. The second commitment period is set to begin on 1 January 2013 and end either on 31 December 2017 or 31 December 2020 – the exact date will be negotiated in Qatar at COP18.

**Green Climate Fund**
The launch of the Green Climate Fund (GCF) was one of the most important outcomes of the Durban conference. The COP approved the ‘governing instrument’ for the GCF, which means that all operational elements of the fund, including key staff, should be in place by the end of 2012. The aim is to balance the allocation of resources from the GCF between adaptation and mitigation activities, but failure to identify how the long-term finance of $100 billion required to support developing countries will be raised and mobilised, was an important and disappointing setback. There is thus growing concern that the GCF will remain an empty shell, creating a significant Climate Finance Gap.

**55 pages of decisions under the Long-term Co-operative Action negotiation track!**
One of the key steps forward in terms of long-term co-operative action was the operationalisation of the Adaptation Committee through the agreement on its membership, authorities, and modes of work. Developing countries will hold the majority of seats on the 16 member committee, and it will be open to observers (NGOs, local

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1 It ran 36 hours over time.
3 The Ad Hoc Working Group on Long-term Cooperative Action has been extended for an additional year to allow it to achieve the outcomes envisaged in the Bali Action Plan.

After 17 years of negotiations all that has been achieved is that the science of climate change and the politics of climate change now inhabit parallel, disconnected universes.
governments, researchers). One of its primary tasks will be to co-ordinate the UNFCCC adaptation work streams.

SO WHAT DOES IT ALL ADD UP TO?
Despite the progress made in Durban, an analysis of the resulting pledges suggests that the world is still on course for a 3.5°C warming this century. So the elephant in the room remains – that is, the gap between countries’ pledges and actions and the level of ambition required by science to avoid dangerous climate change. This creates the fourth and final of our governance gaps, the Ambition Gap. We need to pay special attention to these gaps as they are likely to trip us up, causing us to fall over the thresholds that define the safe operating space that is critical to our continued existence. This will remove the ability to radically and rapidly transform our society, economy and ultimately our relationship with Nature.

So while the deal struck in Durban may be regarded a success in the political process to tackle climate change, for the climate itself it is an unqualified disaster. In fact, Durban highlighted that after 17 years of negotiations all that has been achieved is that the science of climate change and the politics of climate change now inhabit parallel, disconnected universes.

THE DURBAN ADAPTATION CHARTER
From a local government perspective, however, there was some good news. The “Durban Local Government Convention – adapting to changing climate” was convened from 2 to 4 November 2011 by a local government partnership consisting of eThekwini Municipality, the South African Local Government Association, South African Cities Network and ICLEI – Local Governments for Sustainability (the local government focal point in the UNFCCC negotiations). Over three days the Local Government Convention registered over 750 participants, representing 53 countries. The key outcome of their deliberations was the Durban Adaptation Charter signed by 114 mayors representing over 950 local governments. The Charter is a partner commitment to the mitigation-focused Mexico City Pact signed by local governments in Mexico City prior to COP16/CMP6 in Cancun. It ensures that climate change adaption (the priority for most African cities and an issue often neglected because of the global focus on mitigation) is firmly entrenched in the international local government agenda. The Mayor of Durban (Councillor James Nxumalo) presented the Durban Adaptation Charter to the high level segment of COP17/CMP7 and has been charged by the signatories of the Charter to present it to the World Mayor’s Council on Climate Change – of which he is a member – in order that they can consider appropriate implementation mechanisms. The Environmental Planning and Climate Protection Department of eThekwini Municipality (together with its COP17/CMP7 local government partners) is leading the national and international process to ensure that the Durban Adaptation Charter becomes an effective international tool for local level adaptation action.

LEFT: Mayor of Durban, Councillor James Nxumalo signs the Durban Adaptation Charter with Mr. David Cadman of ICLEI. BELOW: COP 17 CMP 7 Delegates debate the issues.
MORE GAPS THAN GUSTO

So what are we to make of COP17/CMP7? I have a number of different views, depending on which hat I wear. As a member of the organising committee for COP17/CMP7 and the Durban Local Government Convention, I am thrilled with the professional way in which the preparations culminated in the effective and smooth delivery of both events, and excited by the potential of the Durban Adaptation Charter to deliver effective and meaningful local adaptation action.

As a national level negotiator who is aware of the difficult global geopolitics within which we find ourselves, I have to concede (somewhat unwillingly) that the Durban Platform of Enhanced Action and the token second commitment period for the Kyoto Protocol is probably what political success looks like at this point in time.

But as a scientist, my mood is darker. Having gone to COP17/CMP7 looking for a transformative solution that would allow us to leapfrog across the gigatonne, ambition, implementation and finance gaps to a world that respects and operates within natural thresholds, I have to concur with the author of the editorial in *Nature* (2011) who observed that “… as the Durban Platform crowds with politicians, the climate train they wait for has left the station”. We are not yet the aspirational hominid we need to be if we want to be able to survive in a world of thresholds and to transform governance gaps into bridges that help us protect the environment and ourselves. Mark Lynas in his thought provoking book *The God Species* concludes, “we are phenomenally, stupendously ignorant” – a product of the fact that “our culture and politics languishes decades behind our science”. Indeed, if COP17/CMP7 has taught me anything, it is that we urgently need to reconnect with our science and that we must work harder to ensure that climate policy is driven by science rather than the vagaries of international politics and bully-boy tactics.

Poverty, under development, hunger, disease – none of these battles can be won without a functioning environment. Understanding how that environment works requires good science. So… in the end COP17/CMP7 in Durban produced no global transformation and the natural thresholds and international governance gaps still loom frighteningly large and wide. This is the real legacy we will carry to Doha for COP18/CMP – yet another city that will, in its turn, entertain both the ‘beautiful game’ and the ‘game of life’!

Dr. Debra Roberts is Deputy Head of eThekwini Municipality’s Environmental Planning and Climate Protection Department

REFERENCES:
- Crutzen, PJ and Schwägerl, C (2011) *Living in the Anthropocene: Toward a New Global Ethos*
  http://e360.yale.edu/feature/living_in_the_anthropocene_toward_a_new_global_ethos/2363
  http://www.nature.com/nature/journal/v480/n7377/full/480292a.html
  http://www.ecologyandsociety.org/vol14/iss2/art32/
  http://www.unep.org/publications/ebooks/bridgingemissionsgap/
  http://epi.yale.edu/epi2012/summary
Kirstin Williams takes a look at the value of our museums’ natural history collections and highlights the importance of careful curatorship.

Natural history collections are often built up over a period of many years and regularly include, amongst others, items such as insects, birds, mammals, amphibians, reptiles, fossils and spiders. There are two main methods of storing these specimens – either dried or in a preserving liquid such as ethanol or formalin. Dry collections can include items such as pinned insects, dried skins and bones.

Originally, natural history collections developed as a result of the exploration of new areas. Scientists would go out to new places and collect everything they found. It was also a popular hobby of amateur naturalists to keep their own collections of items such as butterflies or birds’ eggs. These were often donated to museums at a later stage. In the early days, items were also bought by museums. With our current understanding of the value of biodiversity, museums do not buy items anymore and do not encourage wide-scale collecting. Rather, all collecting is done with conserving the environment in mind, so only voucher specimens are collected, and only for specific research projects.

Traditionally, collections have been used for alpha taxonomy – identifying and describing new species based on their morphology. This is still a very valuable and important aspect of collections, but other uses have developed in more recent years. Artists use them for doing illustrations for books such as Robert’s Birds of Southern Africa. Seeing the bird specimens enables the artists to capture all the finer details which would otherwise be missed. Information that can be obtained from each of the specimens (e.g. locality and date it was collected) can be used for collating State of Biodiversity reports, which give an indication of how healthy ecosystems are in a certain area. Predictive models can be used for conservation purposes by using information such as locality data and inputting variables such as rainfall, temperature and humidity. Maps of areas where particular species are likely to occur can then be produced. This method can also be used for climate change studies to predict what will happen to certain species if conditions such as rainfall and temperature change. Molecular taxonomy has become very popular in the past few years. Using small pieces of specimens (e.g. skin samples, toe pads of birds or legs of insects) DNA can be extracted and sequenced. The sequences can then be compared to those of other species to determine the relationships between them. This approach has also uncovered many cryptic species, where the species are very difficult to separate on morphology alone.

These examples of how collections can be used show the value that they hold. It is very important that these collections be carefully curated to ensure their longevity as their usefulness cannot be underestimated.
Is climate change yet another threat? Herpetologist, Jeanne Tarrant takes a look at the complexities surrounding the decline of many amphibian species.

Few people realise how important frogs are. Amphibians (comprised of frogs, salamanders and caecilians) are integral to the food chain – both as a food source to many other animals, and in pest and disease control by consuming huge numbers of insects (including mosquitoes). Tadpoles also play an important role in keeping waterways clean by feeding on algae. Many species of amphibians have also provided humans with numerous medicines for use as pain killers, blood pressure control, antibiotics and most recently, for blocking HIV-transmission. By losing species we are not only losing a key link in the food chain, but also potentially losing important cures for human ailments.

Most frogs have what is known as a biphasic lifestyle, utilising both the aquatic and terrestrial environments during their life-cycle. For this reason, and due to their extremely sensitive and thin skin, frogs are supreme bioindicators. This means their presence indicates a healthy environment. The fact that one third of all amphibian species is listed as threatened should be an important warning that all is not right with the global environment. Amphibians are the most threatened Class of vertebrate animal on Earth, with 32% of all species (approximately 6 500) threatened, compared with 12% of birds and 23% of mammals.

There is no simple explanation for what is causing these severe amphibian declines. Combinations of various anthropogenic factors are, however, the likely root. Habitat loss, pollution and disease (particularly the amphibian chytrid fungus) have been identified as major threats. The question of whether climate change is directly causing declines has been a point of debate amongst scientists. However, growing evidence shows that climatic changes are affecting biological systems worldwide. Amphibians are heavily reliant on precipitation and the seasonality thereof as breeding cues, and as a result some amphibian communities are being directly affected by changes in climatic conditions. This is particularly noticeable in montane regions, where species’ physiological intolerances to changes in temperature and/or precipitation have resulted in mortality. Warming trends also appear to be altering the breeding behaviour of some species in temperate regions, with breeding being recorded earlier each year.

Increased UV radiation is also detrimental to amphibians, for example by decreasing hatching success.

Amphibians are the most threatened Class of vertebrate animal on earth.

In addition, there is already evidence of tropical habitats moving both laterally and to higher altitudes as temperatures increase, resulting in shifts in the spatial distribution and ranges of several species. In the past, species could move unhindered, but now these shifts are often blocked by human development through habitat removal, amplifying the effects of climate change. Thus, despite amphibians
having survived previous rapid climate changes (such as the glacial-interglacial transition some 12 000 – 20 000 years ago) the present situation is giving rise to multiple challenges that may result in extinction. Predictive modelling using climate-change scenarios for South Africa show that the western parts of the country will become more arid, resulting in range contractions and decreases in species’ richness. Towards the eastern regions rainfall and temperature are expected to increase, resulting in shifts in species’ distributions to higher altitudes. Implementing conservation strategies now will be important to ensure long-term survival of those species most at risk.

As in the case of most threats to biodiversity, the effects of climate change are compounded by synergistic factors, such as species’ interactions in relation to different climatic variables. In particular, the relationships between pathogens and their hosts are likely to be impacted, since temperature, rainfall patterns and humidity levels influence pathogen activity. Increased temperatures are expected to influence disease virulence and accelerate the spread of disease, making additional hosts susceptible. Changes in precipitation and increased UV radiation may also affect the immune systems of amphibians. Understanding the relationship between amphibian pathogens (especially as B. dendrobatidis which causes the disease chytridiomycosis and is responsible for amphibian declines and extinctions worldwide) and environmental change will be essential in addressing amphibian decline.

Although the effects of climate change on amphibians are complex, the current situation will undoubtedly have far-reaching consequences for many amphibian species. Environmental changes have occurred over millions of years and amphibians have persisted. The declines and extinctions that are now taking place are occurring because most of the threats causing them have come about in the last 100 years – a time-span that has not allowed amphibians to adapt. Amphibian declines are indicative of escalating environmental problems, including climate change, loss of biodiversity, chemical contamination of the planet and rapid human population growth; all that need to be tackled urgently in order to curb the extinctions that are occurring in a wide range of taxa.

An orphan no longer

Dr. Angelo Lambiris is a retired zoology lecturer. His research interests include the taxonomy, systematics and general biology of southern African amphibians and reptiles. He has assisted with curation of the DNSM herpetology collection from 2009. He is currently revising specimen identifications and classification. It is envisaged that each specimen would be relabeled, and that the contents of jars of each species would be sorted and separated by geographical region.

The collection houses specimens collected from 1899 to present and consist mostly of wet-preserved specimens from South Africa, Botswana, Mozambique, Namibia, Swaziland and Zambia. The amphibians are represented by 57 species of frogs, toads, salamanders and caecilians. The reptiles are comprised of approximately 142 species of tortoises, lizards and snakes.

LAMBIRIS HERPETOLOGICAL COLLECTION
The collection that was started in November 1963 was originally intended to provide reference material for studies on the morphology, taxonomy, systematics, biology and biogeography of southern African amphibians and reptiles. Specimens without reliable data, or extralimital taxa, were therefore excluded. In the mid-1990s this policy was revised to include such previously excluded material. The principal reasons for this shift were a perceived need to expand the scope of the collection to represent taxa of systematic importance in a much broader context. Taxonomy and systematics remain the principal purposes of the collection, and properly documented material forms by far the greater proportion of it; yet the inclusion of exotic species with few data has allowed the teaching of general herpetology at university level with a breadth of demonstration material that few, if any, universities in South Africa could readily match.

Gymnophiona (caecilians, or wormlike legless amphibians) comprise two species, in two genera and two families. The Anura (frogs and toads) comprise 139 (sub-)species in 42 genera, 11 families, and 10 sub-families.

Reptilia: The Chelonia (tortoises, terrapins and turtles) comprise 20 species in 32 genera and 9 families. The Crocodylia comprise 5 species, 3 genera, and 2 families. The Sauria (lizards) comprise 165 (sub-)species in 58 genera, 15 families, and 9 sub-families. The Amphisbaenia (worm-lizards) comprise 6 species in 2 genera and 1 family. The Serpentes (snakes) comprise 133 species in 59 genera, 9 families and 16 sub-families.

In all, the collection currently includes 4278 catalogued specimens representing 500 (sub-)species in 195 genera, 55 families, and 43 sub-families.

The collection has always been regarded as being held in trust for the use of colleagues and students, and for future generations. It is entirely due to Allison Ruiters and her vision of a dynamic new future for the Durban Natural Science Museum, with still greater emphasis on research, development of the collections, and education, that I have bequeathed my collection to the Museum in the hope that it may help form the nucleus of a flourishing Department of Herpetology that will take its place alongside other leaders in the field. The bequest was formally celebrated at a ceremony on 3 February 2011.

MAY THE DURBAN MUSEUM CONTINUE TO INSPIRE AND EDUCATE THE CHILDREN OF GENERATIONS AS YET UNBORN! YOU ARE ALL SO WONDERFUL!

Angelo Lambiris 3 Feb 2011
While the COP17 proceedings were taking place at the ICC, the DNSM education team took on another venture: school visits within the eThekwini Municipality district and beyond. The visits were aimed at everyone from primary to high school, all with an underlying message of environmental awareness focusing mostly on mitigating and adapting to climate change. We were joined by the Natural Resources Department, Life Long Learning (an NGO) and COO-EE. All the visits ended with the planting of a tree, which symbolised each school’s pledge to play a role in saving our biodiversity.

CINDY GOVENDER’S FAREWELL
Cindy Govender joined the Museum in 2000 as a trust volunteer, and then became the Museum’s volunteer programme co-ordinator. She has now resigned in order to be with her family full-time. Cindy ensured that the Museum moved to a higher level, with respect to customer care, and the excellent relationship that she had with both staff and volunteers, past and present, will always be remembered.

MAGQUBU NTOMBELA LEGACY PROGRAMME
The Magqubu Ntombela Legacy Programme is an extension of the Museum’s Magqubu Ntombela - Ian Player annual lecture which was initiated in 2010. The legacy programme in 2011, entailed a tour of Stainbank Nature Reserve by learners of various grades led by Wilderness Leadership School tour guides. The aim of the programme, which is envisaged will grow in future years to include more conservation areas, is to expose learners to a spiritual experience with nature and to build up a more green-conscious young generation, regardless of the career path they choose in the future. The whole experience, which included Khethamahle Primary School and Chesterville Secondary School, makes learners aware of the importance of protecting and conserving our natural areas, and their contribution towards preserving our biodiversity for the benefit of future generations.

KWANUNU EXHIBITION
In March, as part of our education programme, we hosted the annual KwaNunu Exhibition in the City Hall galleries. The purpose of this exhibition is two-fold: to showcase South Africa’s incredible biodiversity, and to have local relevance by using carefully constructed and managed displays that can appeal to all ages, from toddlers and pre-schoolers to school leavers, parents and educators. Museum departments, together with invited external organisations, engaged with invited schools and members of the public of all ages as they perused exhibitions.

This year’s exhibition was supported by the following external organisations: Primates Africa, SASRI, WESSA – Treasure Beach, BirdLife Port Natal, Bat Interest Group and Umgeni River Bird Park.

We would like to thank our colleagues, our external partners and the educators who worked with us to make this a successful event.
MUSEUM DAY CELEBRATIONS
Traditionally, International Museum Day is held annually on 18 May. However, this year the date coincided with Local Government Elections, so Museum Day celebrations in South Africa were moved to 23–25 May. Working together with the Local History Museum and the Durban Art Gallery, a week-long programme was developed to celebrate museums. The celebrations commenced with an exhibition on Church Walk, outside the City Hall, with each museum showcasing their displays and specimens to passing members of the public. The purpose of this was to promote museums in the city, inform the public of the location of these museums and to give them a glimpse of what they would see when visiting each of the museum sites. The public were enthralled by the exhibitions, and relished the opportunity to ask questions and handle some of the specimens on display, ensuring that the marketing objective of this exercise was achieved.

The DNSM hosted one of the events in the programme during the week-long celebrations, The Link between Memory, Community and Identity, including Family Identity, which saw schools, together with residents from two old age homes, participating. Under the programme directorship of Gcina Mhlophe, renowned storyteller and author, both groups were invited to share information with each other through different mediums (poetry, plays, songs and stories). Stories about the different animals found at the Museum included sharing individuals’ histories, and how their names have been used to make surnames. The opportunity to celebrate museums is important as it ensures that the public knows about their existence and accessibility (entrance into most museums is free).

In this instance, learners discovered that not only is a wealth of natural science and indigenous knowledge available in these institutions, but also amongst our elders.

CELEBRATING OUR HERITAGE
The Education Department participated in the various events held as part of the annual Celebrate Durban activities in September, which the Parks, Recreation and Culture (PRC) Unit celebrated under the banner Celebrating our Heritage. Along with other departments within the PRC Unit, we had the opportunity to showcase our museum at various events during this period. This included the Botanical Gardens for the launch of the month’s activities; in KwaXimba for the Sports Department Expo; and at New Germany Nature Reserve for the Parks Department Expo. Apart from exhibitions at various sites throughout our city, we also organized nature trails for invited schools in a number of natural protected areas within eThekwini, together with the Parks Department Education staff.

EDUCATOR WORKSHOPS
Three educator workshops were conducted in 2011 as part of the annual Educator Programme. Since 2011 was the International Year of Chemistry and Forests, the workshops covered topics such as water, the paper trail, and indigenous and exotic plants.

Work experience
In 2011 DNSM had an opportunity to host two interns (funded by the National Science and Technology Forum) for nine months.

This is part of the National Youth Service Programme run by the NSTF, where unemployed graduates are deployed to science-based organisations to gain work experience while adding value to the services being offered by the host organisation. We were able to recruit Pinkey Phungula, a former volunteer at the Museum, and Vusi Nhlangase. Here are their stories:

**PINKY**
Our first day at the museum (5 July 2011) started with Zamo, the volunteer co-ordinator, introducing us to the Museum staff. She introduced us as “NSTF interns joining the Education Department to assist in the upgrading of existing education programmes, and the development of new ones”. To which one staff member exclaimed, “Wow! I foresee great new things at the Museum!” That proclamation sounded very daunting as it sounded as if we were supposed to change the functioning of the whole Museum! We had the first meeting in Busi’s office (Education Officer), where we worked together with the team to arrange the schedule and were also given a list of our duties, which looked intimidating. That was the beginning of the craziest, yet most enjoyable experience of our lives. Vusi has a BSc. in Applied Chemistry and I have a National Diploma in Nature Conservation. Coming from completely different fields meant that we had to find a way to work together, which was an excellent learning curve for both of us.

We were involved in various activities at the Museum, including guided tours, outreach programmes such as National Science Week, various expos during the month of September and school visits during the period of COP17... the list is endless. We engaged with both young and old and tried to educate them about the different topics covered at the Museum. There were many challenges, but we learnt a great deal and had lots of fun.

Coming from the Nature Conservation field, it was very exciting to strengthen my knowledge as well as my communication skills in this way. My experience at the Museum taught me how to deal with the different types of people who come to such a facility, as well as how to be a good team player. I achieved a lot of my personal goals through this programme.

**VUSI**
I learned a lot from the Museum and was given an opportunity to improve my knowledge of other branches of Science. Both my communication and my presentation skills improved. I would like to thank the Education Officers for giving me the chance to create educational activities; this really elevated my thinking to the next level, which is a great achievement for me. It also helped in my job interviews as it allowed job recruiters to realize that I am able to think logically, and possess the planning and organisational skills that are important in any job situation.
What does the frozen Arctic with its ice and snow have in common with small tropical islands where it is hot all year round? And what does it have to do with South Africa? A lot, if you go by the images and stories in the Portraits of Resilience photography project.

Portraits of Resilience gives young people in the Small Island Developing States and the Arctic a voice - and puts a youthful, human face onto climate change. Through this project the students write essays, learn to take photographs and work hard to present their communities to the outside world. Their work really shows that people in these regions are not helpless victims of climate change. If anything, this exhibition demonstrates that youth have a profound sense of place and a strong desire to see their cultures and communities survive and thrive.

Portraits is part of the Many Strong Voices Programme (www.manystrongvoices.org). MSV brings together people and organisations in the Small Island Developing States (SIDS) and the Arctic. These regions are experiencing first-hand the effects of rapid climate change. With coastal erosion, temperature increases and changes in regional weather patterns, climate change affects everything from how people make a living and what food they eat, to the survival of traditional cultures.

In its 2007 report, the Intergovernmental Panel on Climate Change said these regions are among those most vulnerable to rapid climate change. They will see effects sooner than other more temperate regions. In fact, they are already seeing significant changes. However, while they may be vulnerable, people in the Arctic and SIDS are taking action – from developing local and regional adaption strategies, to lobbying world governments to cut the greenhouse gas emissions that are altering the climate. At any and every opportunity they tell their tale to the world.

Stories connect us in a concrete way to these communities. By sharing their stories, people in these regions present a powerful argument about why the rest of the world needs to care about what’s happening to them – and why immediate action is needed.

Led by Christine Germano, a professional photographer from Canada, Portraits of Resilience held its first exhibition at the climate change conference in Copenhagen in 2009. It was put on display at the Winter Olympics in Vancouver and has been shown in museums in Norway, the United States and Fiji. An exhibition featuring communities in Fiji, Tuvalu, Kiribati, Alaska, Norway, Greenland and Canada opened in the Durban Natural Science Museum Research Centre during the United Nations Framework Climate Change Convention negotiations in Durban in December 2011.

Attending the opening of the exhibition were students and teachers from Hunt Road Secondary School, J.E. Ndlovu High School and Esizibeni Primary School. At first glance, one might wonder what children in South Africa have in common with their counterparts...
in far-flung parts of the world like Alaska, Greenland, Tuvalu or Fiji. The answer is simple: it’s their shared future that is at stake. The negotiations in Durban and next year in Qatar (and in other locations after that) have one objective, despite all the political wrangling – to figure out a way to create conditions that will allow us to grow enough food for all and maintain cultures and societies where everyone gets a fair and sustainable share of the world’s resources. In order to do this, we need to reduce the current consumption of fossil fuels dramatically. We must preserve and strengthen our connection to the world that sustains us. We know this, even if we don’t act like we do.

The other thing that brings these nations together is that children are children. They have families. They go to school. They spend too much time on their phones and on Facebook. They think about the future. They know the world is in trouble because they see it in front of them.

Maybe the best way to show this connection is through a story:

Megan Piscoya is finishing high school in Shishmaref; it’s a community of a few hundred people on a small island off the coast of Alaska. The area has been used by the Inupiat people of the region – you would call them Eskimos – for thousands of years. It’s been a permanent village for about 50 years. Now, increasingly violent and more frequent storms are washing Megan’s island into the sea.

Climate change means that in winter sea ice doesn’t form a barrier around the island like it once did. The ice used to protect the island from the fierce winter storms that blow across the Bering Strait. Now the coastline is receding, houses have collapsed and the runway has had to be moved. The old sea wall has been swamped. A new one has been built, but how long will it last?

People on Shishmaref are running out of room and are looking at relocating to the mainland. To rebuild the village elsewhere will cost hundreds of millions of dollars – money they don’t have.

Megan came down to Chicago in October 2010 for the opening of a Portraits exhibit at the Field Museum of Natural History. She spoke to a group of students about what climate change meant in her isolated village. The Chicago youngsters listened politely.

It was only when she mentioned that changes to the water supply in the community meant that she and her family could only use the communal showers once or twice a week that the southern scholars perked up. They couldn’t believe it. No showers when you want one? Suddenly the conversation came alive and the children connected with what Megan was going through.

That’s the power of storytelling. That’s what Portraits does: it tells stories in words and pictures. No matter what the differences in geography, climate and culture may be, students in South Africa have a lot in common with their counterparts in the Arctic and Small Island Developing States. They are the first generation to share a global culture. These kinds of connections are important – and they can create change. Just ask the people of Egypt, Tunisia and Libya.

As in politics, the solutions to the threat of a rapidly changing climate will be found in unity, not division. Unity is the message that Nelson Mandela gave South Africa when he walked out of prison. He changed the country and the way the world looks at conflict. He offered a different possibility because he believed it could be done.

There is a unifying message in Portraits of Resilience. They may just be children in remote parts of the world, but they are aware and they are part of the conversation. If you wonder how all this will end, remember the words of anthropologist, Margaret Mead:

“Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has.”

The library has a large collection of journals acquired through subscriptions and on an exchange basis. They provide staff and researchers with current information that is critical for their research. These publications have been managed manually since the existence of the library, but things are about to change: training has already begun for the online management of journals. With the manual system some issues were not received on time; this often lead to the problem of incomplete information – gaps that could not be filled until the missing issue arrived. This also delayed the process of sending journals for binding, which is essential for extending the lifespan of these resources. Furthermore, the time allowed for claiming missing issues is limited – if the deadline is not met, ordered copies still have to be paid for.

The Serials Module is putting the control of serials back into the hands of the librarians. Not only is the module relevant in this IT age, but it also enables the librarians to supply information in an effective and efficient way. All the journals that have been bound will need to be catalogued and have their spines labeled so that, with a few clicks on the library system, information can be provided almost immediately. In doing this, the library will also be in line with the Libraries and Heritage Department’s vision to “create a leading edge footprint and digital doorway in Africa that provides knowledge, opportunity and experience of culture and heritage”. The librarians can link the vendor with the title so that a claim can be printed when the journal is not received by a particular date. The dates on which the different issues are supposed to be received can also be predicted.

The price of journal subscriptions is continuously increasing, so much so that very few books are added to the stock. The price increase for the 2011/2012 journals was so high that one journal increased by 79%.

E-journals are an alternative to hard copy manuscripts. They save space and are cost-effective but the challenge comes when managing the e-journals. In order to do this successfully, the support system from the IT department will need to have very few or no network interruptions.
## Museum Diary: 2012/13

<table>
<thead>
<tr>
<th>Event</th>
<th>Details</th>
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<tr>
<td><strong>“Night at the Museum” Sleepover</strong></td>
<td>DNSM City Hall, 6 July 2012</td>
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<tr>
<td><strong>DNSM 125 year Celebration</strong></td>
<td>Venue to be confirmed, 23 July 2012, Launch of Durban Natural Science Museum’s Novitates journal</td>
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<tr>
<td><strong>DNSM Seminar Series</strong></td>
<td>DNSM Research Centre, 25 July 2012, Sean o’ Donoghue, The KZN Sardine Run</td>
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<td><strong>National Science Week</strong></td>
<td>Various venues, 30 July – 4 August</td>
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<tr>
<td><strong>KwaZulu City Hall</strong></td>
<td>DNSM City Hall, August 2012, Re-launch of hands-on Science Centre</td>
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<tr>
<td><strong>DNSM Seminar Series</strong></td>
<td>DNSM Research Centre, 29 August 2012, Andrew Whitley, Buffelsdraai Reforestation Project</td>
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<tr>
<td><strong>Recycling Workshop</strong></td>
<td>DNSM Research Centre, 12 September</td>
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<tr>
<td><strong>Magqubu Ntombela – Ian Player Annual Lecture and Stop Rhino Poaching Exhibition Launch</strong></td>
<td>DNSM City Hall, 26 September 2012, The Lecture is dedicated to increasing conservation awareness amongst all the peoples of Southern Africa, to exemplify how one can live harmoniously, practically and spiritually with our land, with each other and within ourselves.</td>
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<tr>
<td><strong>“Night at the Museum” Sleepover</strong></td>
<td>DNSM City Hall, 5 October 2012</td>
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<tr>
<td><strong>DNSM Seminar Series</strong></td>
<td>DNSM Research Centre, 28 November 2012, Leigh Richards, Small Mammals of KwaZulu-Natal</td>
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<tr>
<td><strong>DNSM Holiday Programme</strong></td>
<td>Various venues, 10-14 December 2012</td>
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<tr>
<td><strong>“Night at the Museum” Sleepover</strong></td>
<td>DNSM City Hall, January 2013</td>
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*All events are subject to change*
STOP POACHING RHINO

EXHIBITION LAUNCH
26 SEPTEMBER 2012