Biodiversity – It Takes More than Money

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Biodiversity is an issue of global importance; it lies at the core of sustaining all forms of life known to mankind. And because there is no single party being held accountable for the depletion of the world's large variety of living organisms, the proper functioning of ecosystems is being continuously damaged by our daily activities and our unsustainable lifestyle practices.

Whilst the topic of biodiversity is often the center of controversial debate, few organisations in comparison have transformed their poor business practices to halt, or even reverse, the damage caused to the ecosystem and its fragile components. It doesn't help when people see themselves as 'microcosms', and claim their damage is "minimal" in the grand scale of this destruction. Neither does it help when blame is shifted to business, or governments; who may for example destroy forests for development and not replenish such resources in the quest for profit. The reality of this dire situation is that each of us - past, present and future generations has a role to play regarding the preservation of ecosystems and the biodiversity of our planet Earth. Indeed it is true that the Earth is, and has been, very 'forgiving' as regards the manner in which humans have abused and destroyed much of its animal and plant species, including the natural resources found in our rivers, oceans, forests and fertile land.

Just consider climate change over the last few decades; Green House Gas (GHG) levels are now higher than at any other time known to man, and are likely to rise between 2-5 degrees Celsius between 2030 and 2060. Scientists further state that climate change is regarded as a "market failure of the greatest scale the world has ever seen" and that by 2025, more than three billion people could be living in water-stressed countries.

And so answers are critically required from the perpetrators of this grand scale ecocide; ecosystems are collapsing across the world with 75% of fisheries being overfished, there's a 50% decline in global forest cover, 65% of agricultural land is in degradation, and many animal and plant species are simply being wiped out. As these ecocide atrocities continue without any signs of slowing down, so too are the perpetrators not being brought to book in any meaningful way. Expectedly, increasing levels of unemployment, poverty and poorly educated societies further exacerbate the balance of our ecosystems, as the delicate plant and animal life is plundered by people who literally struggle to survive. Research shows that 2% of the adult population across the globe own more than 50% of the global household wealth and that more than one billion people live on less than $1 per day.

The Millennium Development Goals (MDGs) have set lofty goals to amongst other; close the gap on ending poverty and hunger, improving child and maternal health, combating HIV/Aids and improving access to water and sanitation. The stark reality is that South Africa has fallen far behind its ability to achieve these goals by 2015. With this in mind, one can understand the need for millions of impoverished people to rely on the land. From a pure survival perspective, people in this unfortunate predicament will continue to deplete the components of the Earth's ecosystem. At the outset, one might assume that this situation is too big, and that it cannot be turned.

This is of course far from the truth, and the irony of a situation such as the one we are faced with at present could be stopped if, and only if, governments and big business across the globe were to begin behaving in a far more responsible manner, instead of remaining fixated upon matters such as political agendas, financial greed, market domination and poor leadership; these being just some of the stumbling blocks that prevent a sustainable biodiversity solution. Needless to say, governments worldwide are generally and noticeably quiet on the issues of biodiversity loss, and they appear inept regarding strict, enforceable penalties which should be applied when perpetrators disregard legislation, environmental policies or treaties which were intended to preserve the biodiversity and the balance of our ecosystems. Regrettably, biodiversity is generally not (or at best), even poorly being incorporated into the decision making processes and strategies of companies.

This even applies to those companies who ironically do have good intentions to protect the environment. Businesses in South Africa who are now expected to produce Integrated Reports (IR), will need to conduct an overall annual environmental impact study to understand the manner in which their business operations affect the ecosystem, either directly or indirectly. Indeed, it would be prudent that these studies are conducted by independent experts, save for also ensuring that not only is the correct information recorded in their IRs, but also that they are able to take precautionary and / or remedial action to preserve the biodiversity and negative impacts their operations may have caused.

One hopes that the governments of the developed and developing countries who attended the UN Convention on Biological Diversity (CBD) in October 2012 in Hyderabad, India, will overcome their differences of opinions regarding their finance issues. That said, the WWF International's Coordinator for Biodiversity Policy, Rolf Hogan said, "Developed countries do not want to commit more money to reach resource mobilisation targets, and developing countries are saying if no money is made available, that they will "walk away" from their Nagoya* commitments." What lunacy is this? A person has got to question the agendas being driven by these so-called leaders who are supposed to have their citizens best interests at heart, let alone those of the planet Earth upon which our very existence depends.

* The Nagoya Protocol was adopted by its signatories on 29 October 2010 in Nagoya, Japan. Its objective is the fair and equitable sharing of benefits arising from the utilization of genetic resources, thereby contributing to the conservation and sustainable use of biodiversity. South Africa is also a signatory to this protocol.

Conservation Plan for the Black Rhino Gazetted

Nedbank Green News

Water and Environmental Affairs Minister Edna Molewa has gazetted the eagerly awaited Conservation Plan for the Black Rhino. The plan allows for the monitoring and review of actions taken to preserve the species and forms part of government's continued efforts to ensure the survival of South Africa's rhino population. "It will contribute significantly to the management and conservation of black rhino, presently under threat from poachers," a statement from the Minister said.

The Conservation Plan for the Black Rhino, which forms the basis of the Biodiversity Management Plan for this species in South Africa, was jointly developed by South African members of the Southern African Development Community (SADC) Rhino Management Group to promote the development and long-term maintenance of viable populations of the various sub-species of African rhino in the wild. It was published for public comment in 2011. The South African Rhino Management Group, which functions under the auspices of the International Union for the Conservation of Nature's Rhino Specialist Group, is to manage the implementation of the plan, including the legally required approval of management plans submitted by rhino conservation bodies for adoption by the government.

The 10-year conservation goal is to achieve an average South African meta-population growth rate for the two indigenous subspecies of black rhino of at least 5% per annum. The aim was also to achieve meta-population sizes for the two subspecies of 3 060. In addition to the achievement of a minimum 5% growth rate in the meta-population as part of biological management, the plan states that protection remains a key activity to minimise rhino losses from illegal activities. Protection measures include effective law enforcement, improved neighbour relations, effective criminal investigations and prosecuting, and securing and monitoring rhino horn stockpiles. Human resources will also be developed to ensure there are sufficient skills available to protect and manage black rhinos. Strict rhino hunting guidelines have also been included to ensure proper control over the removal of animals from breeding populations, and to combat any incidence of illegal hunting

Outeniqua Research Farm Information Day

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Sustainable Milk Production from Planted Pastures

The Western Cape Department of Agriculture's scientists from the Outeniqua Research Farm communicated their latest research findings, of the highest quality, during their Information Day, which was held on the 30th of October 2012. The day was themed 'Sustainable milk production from planted pastures' and was attended by more than 230 agriculturalists. Research is one of the key priorities of the Western Cape Department of Agriculture and it is important for critical research, relating to the sciences of soil, pastures and animal production, to be translated into practice, for the benefit of farmers. Research findings of the past two years were therefore presented in a popular and farmer orientated manner.

Western Cape Minister of Agriculture and Rural Development, Gerrit van Rensburg, opened the day by encouraging agricultural scientists to anticipate the needs of agriculturalists in the coming years. Research conducted on Outeniqua Research Farm complies with this message from the minister and scientists of the Western Cape Department of Agriculture were commended for being crowned the best research department in South Africa.

The research findings shared encompassed topics ranging from soil quality and cultivar evaluations to animal production from pastures, all affecting sustainability of dairy-pasture systems. Pieter Swanepoel shared initial findings of his PhD study on soil quality of pastures in the southern Cape. The most important soil quality indicators from the chemical, physical and biological components of soil were discussed and he summarized that proper soil functioning necessitates sound management of all three components to sustain soil as a living entity.

Dalena Lombard discussed subtropical grasses and summer forage crops as alternative pasture. Janke van der Colf provided valuable information regarding phase 1 cultivar evaluations of tall and meadow fescue, festulolium hybrids, annual and perennial ryegrass cultivars and hybrids, perennial legume cultivars, cocksfoot and *Bromus* spp. Lombard and Van der Colf stressed that the choice of which species or cultivar to use should be based on the specific purpose of the pasture to be established, seasonal production potential and the persistence over years.

They provided information to assist farmers when selecting a species or cultivar based on specific seasonal feed shortages and fodder flow requirements within their pasture systems. Dr Philip Botha discussed the influence of planting date on the production potential of annual ryegrass. He concluded that Italian ryegrass, if not strategically over-sown into perennial pasture, is a better option than Westerwolds ryegrass based on growth rate and total production. This information is indispensable to pastoralists for the management of sustainable pastures and successful fodder flow programs.

From a dairy production point of view, two MSc students, Lobke Steyn and Josef van Wyngaard, discussed the feeding of a high fibre concentrate to overcome pasture shortages during winter and the use of palm kernel expeller as an alternative to maize in dairy supplements, respectively.

Prof Robin Meeske debated strategies of rearing less replacement heifers to increase profitability. He showed that breeding heifers only from the top half of cows and inseminating the bottom half of cows in the herd with beef semen, can be profitable. After the proceedings, recognition of participation for the Peter Edwards Award for the best conservation farmer in the Western Cape was given to the following small-holder farmers:

- Freddie Persensie of Baviaanshoek in the Hessequa District
- Ernest Joubert of Toekomslaagte in the Mosselbay District
- John Johannes Nicolaas Swart of Sleeping Beauty in the Riversdale District

Figure 1: Presenters at the Outeniqua Research Farm Information Day 2012: *Front row, from left to right*: Annelene Swanepoel (Scientific Manager: Institute for Plant Science), Lobke Steyn (MSc Student), Dalena Lombard (Research Technician), Janke van der Colf (Scientist), Prof Robin Meeske (Specialist Scientist). *Back row from left to right*: Josef van Wyngaard (MSc Student), Minister Gerrit van Rensburg (Minister of Agriculture and Rural Development), Dr Philip Botha (Specialist Scientist), Pieter Swanepoel (Scientist).

Figure 2: Small holder farmers who received recognition for participation for the Peter Edwards Award. *Left to right:* Mr Ernest Joubert, Mr Freddie Persensie,Minister Gerrit van Rensburg (Minister of Agriculture and Rural Development, Mr John Johannes Nicolaas Swart and Nelmarié Saayman (Grassland Society of Southern Africa representative and Scientist at Western Cape Department of Agriculture).

Garden Route Initiative Information Sharing Session

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The Garden Route is a place of true natural beauty having verdant and ecologically diverse vegetation, numerous lagoons and lakes dotted along the coast, lush natural forests and mountain and coastal fynbos. The series of lake havens host a variety of aquatic species and have been proclaimed as a Ramsar site (wetlands of international importance). No wonder the Garden Route has been placed 42nd on the National Geographic Magazine's 100 Journeys of a Lifetime special edition, finally receiving the prime international destination status it so well deserves.

However, since it is a very popular and sought-after area, there are enormous challenges to meet. Urban expansion, invasive alien species and the exhaustion of natural resources, including water and ocean stocks, are difficulties that need to be faced. The Garden Route Initiative, governed by a Steering Committee of qualified professionals and volunteers supports the different activities of its cohorts in the areas of climate change, biodiversity, social upliftment, environmental education, rivers and wetlands, water resources and sustainable energy. Their efforts in conservation and environmental sustainability are vitally important for the critically sensitive area of the Garden Route.

On 26 October 2012, an information sharing session was held in the George Municipality Conference Theatre where a multitude of organisations shared information on projects which have been undertaken, conservation successes, internship programmes and many more.

A disconcerting talk was given by the Landmark Foundation, which shared research relating to top trophic level conservation. They also spoke out against killing of predators and government departments issuing more permits for extermination of predators than the population of predators in the area. Other conservation related addresses included that of Roland Scholtz, who gave a talk on a potential model for active private conservation in the Fransmanshoek Conservancy, the Oyster Bay Reserve, which provided information on their involvement in conservation, preservation and educational projects, SANParks, which presented information of projects on environmental education, socio-economic development and cultural heritage resource management, WESSA provided information on their EcoSchools and the Mossel Bay Environmental Partnership on their community upliftment projects.

The Custodians of Rare and Endangered Wild Flowers (CREW), a division of the South African National Botanical Institute (SANBI), shared their successes on the monitoring of more than 200 sites, 300 special plants and 40 threatened plants. They reported on their discovery of three previously undescribed plant species

Penny Price of the Department of Environmental Affairs conveyed interesting information about the Eden districts' Climate Change Adaptation Programme which focuses on mitigation and adaptation to climate change at a local level.

It was finally announced that the Eden District Municipality Coastal Management Programme can now be downloaded from www.edendm.co.za. It is a robust document which aids in decision making processes relating to the management of environmentally sustainable, functioning natural systems in the Eden District.

Southern African Butterfly Atlas

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Finally, the Southern African Butterfly Atlas and Red List book is available for order, via the pre-publication offer! It's really a beautiful book - all 794 of our butterfly species and subspecies are illustrated to aid identification, there are distribution maps for all of them, as well as their conservation assessments. This book presents all the work done during the butterfly atlas project (SABCA), which I managed from 2007-2011. (A4, about 600 pages, full colour, hard cover)

If you'd like to see more details and place an order (or more) for the book, please visit this link:
http://adu.org.za/sabca_book.php

Please note: The prepublication offer ends 31 March and thereafter you will no longer be able to order the book. We will only be printing the number of books that are ordered so it will be extremely difficult if not impossible for you to obtain a copy later on.

ASSAf elects New President and Council

The Academy of Science of South Africa (ASSAf) has inaugurated its new President and new Council of the Academy for the 2012 – 2016 cycle. The names of the elected candidates have been forwarded to the Minister of Science and Technology for appointment as prescribed by the ASSAf Act (*Act 67 of 2001*).The Academy of Science of South Africa (ASSAf) is the official national academy of science and represents the country in the international community of science academies. ASSAf is governed by a Council comprising 13 members, of whom 12 are elected from the membership and one is appointed by the Minister as representative of the National Advisory Council on Innovation (NACI). The Academy has five office-bearers: the President, two Vice-Presidents, General-Secretary and Treasurer.

The Council members are:

President and Chairperson of ASSAf Council

Prof Dayanand (Daya) Reddy holds the South African Research Chair in Computational Mechanics in the Department of Mathematics and Applied Mathematics at the University of Cape Town. He is also Director of the Centre for Research in Computational and Applied Mechanics, and served as Dean of the Faculty of Science at the University of Cape Town over the period 1999 – 2005. He is a recipient of the Order of Mapungubwe (Bronze), awarded by the President of South Africa for distinguished contributions to science.

Vice-Presidents

Prof Patricia Berjak is a Professor Emeritus and Senior Research Associate at the University of KwaZulu-Natal. She is a Fellow of the university and the Academy of Sciences for the Developing World (TWAS). In 2006, she was awarded the National Order of Mapungubwe (Silver).

Prof Iqbal Parker is the Director of the International Centre for Genetic Engineering and Biotechnology, Cape Town. He was the Head of the Division of Medical Biochemistry and Director of Research in the Health Science Faculty at the University of Cape Town.

General Secretary

Prof Hester (Este) Vorster, previous Director of the Centre of Excellence for Nutrition at the North-West University, is a Research Professor in Nutrition at the university, and General Secretary of the Academy of Science of South Africa.

Treasurer

Prof Sunil Maharaj holds the South African Research Chair in Gravitating Systems. He is a Senior Professor of Applied Mathematics at the University of KwaZulu-Natal and serves as Director of the Astrophysics and Cosmology Research Unit.

Climate Change Could Devastate Agriculture

Christopher Doering

USA Today

Climate change could have a drastic and harmful effect on U.S. agriculture, forcing farmers and ranchers to alter where they grow crops and costing them millions of dollars in additional costs to tackle weeds, pests and diseases that threaten their operations, a sweeping government report said Tuesday.

An analysis released by the Agriculture Department said that although U.S. crops and livestock have been able to adapt to changes in their surroundings for close to 150 years, the accelerating pace and intensity of global warming during the next few decades may soon be too much for the once-resilient sector to overcome. "We're going to end up in a situation where we have a multitude of things happening that are going to negatively impact crop production," said Jerry Hatfield, a laboratory director and plant physiologist with USDA's Agricultural Research Service and lead author of the study. "In fact, we saw this in 2012 with the drought."

The National Oceanic and Atmospheric Administration said 2012 was the hottest year ever in the USA since record-keeping began in 1895, surpassing the previous high by a full degree Fahrenheit. The country was battered by the worst drought in more than 50 years, and crops withered away in bone-dry fields across the Midwest.

In the report, researchers said U.S. cropland agriculture will be fairly resistant to climate change during the next quarter-century.

Farmers will be able to minimize the impact of global warming on their crops by changing the timing of farming practices and utilizing specialized crop varieties more resilient to drought, disease and heat, among other practices, the report found. Crops also may benefit by increasing the use of irrigation when possible and shifting production areas to regions where the temperature is more conducive for better output. Depending on where they live, some farmers could benefit financially at the expense of others.

By the middle of the century and beyond, adaptation becomes more difficult and costly as plants and animals that have adapted to warming climate conditions will have to do so even more — making the productivity of crops and livestock increasingly more unpredictable. Temperature increases and more extreme swings in precipitation could lead to a drop in yield for major U.S. crops and reduce the profitability of many agriculture operations. The reason is that higher temperatures cause crops to mature more quickly, reducing the growing season and yields as a result. Faster growth could reduce grain, forage, fiber and fruit production if the plants can't get the proper level of nutrients or water.

Among the biggest threat to crops from rising temperatures and accelerated levels of carbon dioxide is an increase in the cost for the agricultural industry to control weeds, a challenge that tops more than $11 billion annually, according to the study. Warmer weather provides an ideal atmosphere for weeds to thrive, but at the same time, it can stunt the growth of traditional plants like grain and soybeans.

The entire USA is likely to warm substantially during the next 40 years, increasing 1-2 degrees Celsius over much of the country, according to the study. The warmth is likely to be more significant in much of the interior USA where temperatures are likely to increase 2-3 degrees Celsius. The USDA review said climate change will affect livestock by throwing off an animal's optimal core body temperature, which could hurt productivity and limit the production of meat, milk or eggs. A warmer and more humid weather pattern is likely to increase the prevalence of insect and diseases, further diminishing an animal's health and output.

The 146-page report, written by a team of 56 authors from the federal government, universities, the private sector and other groups, stopped short of providing answers on how to stop or curtail global warming. The analysis was done by reviewing more than 1,400 publications that looked at the effect of climate change on U.S. agriculture.

In a separate report, the USDA looked at literature reviewing the impact of climate change on the country's forests. The data indicated the most visible and significant short-term effects on forests will be caused by fire, insects, invasive species or a mix of these occurring together.

Wildfires are likely to increase throughout the USA, causing at least a doubling of area burned by the mid-21st century. "That's the conservative end," said Dave Cleaves, a climate change adviser with the USDA's Forest Service. "We can't just stand back and let these natural conditions occur.".