

Environment Quarterly

EzemVelo Ngenyanga Ntathu • Mbango wa kotara • Mupo nga Kotara



**A look at South Africa's
State of Air Quality**

**We welcome Minister Barbara Creecy
and Deputy Minister Maggie Sotyu**



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA



2019 environment CALENDAR



JANUARY

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- 2 February World Wetlands Day
- 3 March World Wildlife Day
- 23 March World Meteorological Day
- 22 April Earth Day
- 12 May World Migratory Bird Day
- 22 May International Day for Biological Diversity

- 5 June World Environment Day
- 8 June World Oceans Day
- 17 June World Day to Combat Desertification
- 18 July Nelson Mandela Day
- 31 July World Ranger Day

- 16 September International Day for the Preservation of the Ozone Layer
- 19 September International Coastal Clean-up Day
- 22 September World Rhino Day
- 2-6 September National Parks Week
- 21 November World Fisheries Day

Cover story

6 All hands on deck for World Environment Day

Features

- 4 What is Air Pollution?
- 5 A look at South Africa's state of Air Quality
- 8 SA's Newly Declared Marine Protected Area Network
- 9 Let's combat desertification and grow the future together
- 10 Olivenhoutbosch shows up for Good Green Deeds
- 11 Department appoints environment ambassadorse
- 12 Opportunities for Youth in Environment
- 13 Meet Navigating Officer S'jabule Ntombela
- 14 Spotlight on Working for Wetlands: Kgaswane Mountain Reserve
- 16 Miss Earth Finalist talks about waste management
- 18 EPIP lifeguards to the rescue
- 23 Research: Nanomaterials in household products needs attention
- 24 The National Pollution Laboratory
- 25 Villagers fight alien plant species
- 26 From small beginnings to global south potential
- 28 Green tips for Green fingers
- 30 Shark dissector fights marine pollution
- 31 Improving Ocean Governance in the Benguela
- 32 Indigenous Setsong Tea to showcase in Paris
- 34 Waste pickers must be integrated into SA's economy
- 36 Top Predators protect ocean life
- 37 A Dream Destination for whale watchers
- 38 DEA spreads Good Green Deeds across the Easter Weekend

Regulars

- 20 Pull out poster: Protect Our Environment
- 22 Leadership profile: Ms Nonhlanhla Ngcobo: Chief Director for Facilities Management
- 39 All rise in Court: Gauteng Department of Agriculture and Rural Development and others VS Interwaste (PTY) LTD and others
- 40 Science Spaza: SOS - Save Our Seas



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Guest Editorial - Minister Barbara Creecy



Dear Valued Stakeholder,

Although I have only been the Minister of Environment, Forestry and Fisheries for less than a month, I have known the following things for many years –

- That sustainable development requires a vibrant, diverse economy; a happy, prosperous and equal society; and a healthy and productive environment.
- That climate change and mass extinction of biological species are not only a threat to future generations – but require urgent action right now.
- That sustainable development will only be achieved through partnerships amongst government, business, civil society and organised labour in the context of an informed and environmentally literate society.

In addressing some of these pressing issues, I am pleased to share with you that I am inheriting a Department with a significant track record in both policy development and implementation, so I am not starting from scratch.

The sustainable society we want to achieve is encapsulated in the United Nations

Sustainable Development Goals (SDGs) which paint a vision of a Planet in where all people enjoy a clean environment, health, education, safety, peace and dignified work.

Similarly the AU's Agenda 2063 stresses the need for Africa's natural resource base to be managed sustainably and in such a way that the needs of all our continent's people can be met.

These visions are localised in our National Development Plan – Vision 2030.

Achieving sustainable economic and social development, requires us to commit ourselves to ensuring that on World Environment day we recommit ourselves to work to realise the environmental rights promised in our constitution as a key enabler of a natural resource base that can in perpetuity sustainably support life on earth.

Those of you who followed the National and Provincial Election campaign would have understood that transforming our economy and creating work so that we can make progress in combatting poverty and inequality, remain the most pressing issues confronting this incoming administration.

There are some who would want to argue that there is an inherent contradiction between achieving sustainable development and the immediate demands of growing our economy and creating work.

I would want to argue that this does not have to be the case. The 2010 Integrated Resource Plan and the new draft which is under consideration, give recognition to the need to move toward a lower carbon economy, as does the National Development Plan.

In South Africa and across the African continent, we understand that the impacts of climate change on weather patterns, and the consequent risks of extreme weather events.

Addressing climate change is triggering a technological revolution worldwide and one that is resulting in increasingly rapid technological innovation particularly in the world's energy economy, such as renewables, electric vehicles, the hydrogen economy etc. As such there are significant opportunities to create new industries, to

localise production and to support the struggle against unemployment by building the skills base for these industries to grow and flourish.

The implementation of the Just Transition we will do so in a way that is orderly and managed, and that takes account of the needs of those in jobs that might be affected.

Worldwide pollution, poor air quality, bad or absent waste management affects those living in conditions of poverty most severely. South Africa is no exception and the legacy of apartheid has meant that those living in historically disadvantaged areas shoulder this most acutely.

Transforming waste into raw material in our move to a circular economy, moving people closer to their places of work, improved public transport to get us around, are just a few contributions we can make to this priority.

Although we are not yet meeting international targets, our conservation estate is growing, both on land and at sea.

The latter has been the star performer. Last week 20 new Marine Protected Areas were declared. These new 'ocean parks' have increased South Africa's marine ecosystem area under protection by 1,250% overnight - from 0.4% to 5.4% of our oceans. But it's not size that counts.

Unlike many of our game parks, these ocean parks have been identified scientifically and provide protection to an impressive 90% of our marine habitat types. In terms of government priorities, these ocean parks will not only protect our rich marine biodiversity, but will also contribute to the sustainability of our fisheries and our fishing industry – a perfect example of sustainable development and a valuable outcome from the Operation Phakisa: Oceans Economy initiative.

Our 'Working For...' programmes are still providing crucial job opportunities in some of poorest of the poor communities whilst dealing with the scourge of invasive species.

So I have my work cut out for me.

Barbara Creecy
Minister of Environment, Forestry and Fisheries

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Find more information on: www.environment.gov.za or call 086 111 2468

The Department of Environment, Forestry and Fisheries welcomes Minister Barbara Creecy and Deputy Minister Maggie Sotyu



Waste harms the environment and human beings. It is important to ensure that waste is managed in a way that will minimise its harmful impacts.



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What is Air Pollution?

Images by Mujahid Safodien

Approximately 7 million people worldwide die prematurely each year from air pollution. World Environment Day 2019 urges governments, industry, communities, and individuals to come together to explore renewable energy and green technologies, and improve air quality in cities and regions across the world.



Above: Polluted air at Masakhane informal settlement, just outside eMalahleni (Witbank), with Duvha coal power station in the background.



Above: Cars are not safe from air pollution - children are at risk from toxic gases.



Above: Household air pollution from cooking with solid fuels, such as wood, dung, coal, and charcoal, kills million of people annually.

Breathing in polluted air can make one's nose burn, irritate the throat making breathing difficult or can irritate the eyes. This is a typical experience when one is cooking using wood, coal or paraffin. Tiny particles of dust and smoke can get deep into a person's lungs and cause problems like wheezing and coughing, especially to those people living with respiratory diseases. Some people are allergic to air pollutants (e.g. pollen, dust) especially during springtime and suffer from respiratory illnesses such as sinusitis and hay fever

Other health problems related to air pollution include asthma, cancer, heart diseases, skin irritations, headaches, dizziness, fatigue, stress, nervous disorders and birth defects.

What are the effects of air pollution?

Ozone Depletion
Global warming

What is the government doing to address air pollution?

The National Environmental Management: Air Quality Act is important as it helps the government to:

Regulate and manage air pollution in the country.

- Monitor the pollutants to ensure that air quality is improved.

- Enhance the quality of ambient air in order to secure an environment that is not harmful to the health and wellbeing of people.

Information from the monitoring stations is transmitted to the South African Air Quality Information System (SAAQIS), a partnership between the Department of Environment, Forestry and Fisheries and the South African Weather Service (SAWS).

This information is collected in REAL-TIME (LIVE), every five minutes and is made available through the SAAQIS website <https://saaqis.environment.gov.za> and an innovative mobile application tool called SAAQIS.

The AQI is a simplified tool for reporting air quality to the general public. The AQI tells you how clean or unhealthy your air is, and what associated health effects might be a concern.

In addition to man-made sources, large quantities of air pollutants are also released from natural sources which include:

- Veld fires, biological sources, wind erosion, volcanic eruptions.

What are the sources of air pollution?

- Industrial plants
- Power stations
- Mining
- Traffic
- Exhaust fumes
- Agricultural activities
- Household cooking
- Refuse burning

Other sources like chemical sprays; households products such as tobacco and cigarette smoke; fumes from paint, hairspray, varnish, aerosol sprays; and many cleaning products we use in our homes.



Above: Air quality monitoring station.



Above: Clean fires campaign in Mamelodi.

Join the conversation on Twitter #beatairpollution #goodgreendeeds

A look at South Africa's State of Air Quality

By Salome Tsoka

National Air Quality Officer Dr Thuli Khumalo highlights how the state of South Africa's air quality is worse in winter and calls on all South Africans to take responsibility.



What's the state of Air Quality in winter?

The state of air quality in South Africa during winter is our worst time in terms of emission sources and the climatic conditions that trap the air pollution. There are two things that happen during winter. The first, is that the temperature drops and people have an increased need to keep warm. They want to burn coal to keep warm and keep the heat going. The second, is a natural phenomenon which we call the inversion layer. The inversion layer happens when the earth's surface cools down faster than the upper atmosphere, as such there's no more mixing of air parcels. So, the air pollution is just trapped there. That is why the monitoring stations will measure high levels of air pollution during winter.

Should SA be moving towards renewable power sources?

I believe we should be moving towards renewable energy as a country. We have the resources for it, we have sun and wind and we can generate electricity using those. We do have legislation in the department for a just transition to a lower carbon future.

We've got pollution implementation plans that commit industries to produce less going forward. However, the solution doesn't rely on industry only. We need to change our behaviour and be conscious of our activities that are adding to the problem.

Is the Department running any awareness campaigns with this regard?

There's a role that awareness can play especially when people have choices and options. During this year's Environment Day we want to have an event on air pollution and share with the public in terms of behavioural change that people can do. We want to make people aware of their individual contributions

How can people access information on the state of air quality in the country?

The Department has developed the South African Air Quality Information System (SAAQIS) App which is available for android and apple devices. Information found on the app as well as new regulations regarding air quality are also available on the SAAQIS website. The app gives you live readings of the state of air as it is measured in the monitoring stations.



About the contributor: Salome Tsoka

Ms Salome Tsoka holds a BA Degree in Journalism from the University of Johannesburg and has been writing for as long as she can remember. She is an intern in the Chief Directorate: Communications and has a unique passion for writing captivating stories.

All hands on deck for World Environment Day

By Veronica Mahlaba

To celebrate World Environment Day, the Minister of Environment, Forestry and Fisheries, Ms Barbara Creecy along with the Deputy Minister, Ms Maggie Soty and the Gauteng MEC for Economic Development, Agriculture and Environment Dr Kgosisentso Ramokgopa lead a Good Green Deeds clean up in Nellmapius, Mamelodi East on 05 June 2019.

The community clean-up was aimed at raising awareness about waste management and the significance of a clean and safe environment to the health of all South Africans as part of the Good Green Deeds Programme launched by President Cyril Ramaphosa in March 2019.

Nellmapius is affected by illegal dumping that impacts negatively on resident's daily lives. While the proportion of households with access to formal waste removal has grown to 80% compared to 55% in 2001. Waste removal remains a challenge in many urban areas. Only 66% of households have refuse removal at least once per week. The consequence is that many households resort to informal waste disposal.

The Minister said that she and the Deputy Minister are extremely happy that people have chosen to support them on their very first public activity in their new role. She further explained that World Environment Day is a very important day when we have to recommit ourselves to saving our planet and to improving the quality of life of all people in our communities.

"What we understand across the world is that poor environmental management affects people living in poor and working class communities the most. Here in South Africa our situation is no exception to that world trend, because of the history that we come from. Black communities and communities where people live in poverty carry a disproportionate burden of the effects of poor environmental management. We find that in many communities, particularly informal settlements we don't see a situation where waste removal is each and every week. The consequence of that is people are forced to use informal systems of waste removal, which is dumping," said Minister Creecy.





Above: MEC for Economic Development, Agriculture and Environment, Dr Kgosientso Ramokgopa, Deputy Minister Maggie Sotyu and Minister of Environment, Forestry and Fisheries Barbara Creecy speaking to the community of Mamelodi on the importance of the day.



Above: A signage was also put up to stop people from dumping waste from an open area.

She further stated that the WED is about creating awareness of our National Waste Management Strategy. It's about creating awareness that it is important that we clean up the environment because it has an enormous impact on the health of communities, our natural resources, waterways and so on. This was also an opportunity for people to start understanding that waste can also be viewed as an income generating commodity.

"The Department of Environment, Forestry and Fisheries as the custodian of the National Waste Management Strategy has extensive programmes to recycle waste, including glass, plastic, paper, sludge, ash and so forth. Those programmes are all about developing the value chains, supporting the emergence of small and micro enterprises and corporative and of course most importantly about finding ways to use this area to create jobs," Minister Creecy explained.

The MEC for Economic Development, Agriculture and Environment Dr Kgosientso Ramokgopa stated that as government they need to mobilise communities and ensure that they engender some sort of responsibility and that the primary responsibility of getting areas clean does not reside with the government but it is the responsibility of communities.

"We need to ensure that there is cooperation between the three spheres of government to ensure that our interventions are impactful and meaningful. I am glad that all three spheres are here and there must be frequency and reliability of collection of domestic waste. I think we will get it right."

To prevent further illegal dumping of waste a signage that dissuades the community from dumping in open spaces was put up and bollards were also erected around the areas where illegal dumping occurs to prevent community members from throwing away waste there.



About the contributor: Veronica Mahlaba

Ms Veronica Mahlaba is the Senior Communication Officer at the national Department of Environment, Forestry and Fisheries serving under the Communications Chief Directorate. Ms Mahlaba has experience as a Lecturer in the Media Studies Department at a private college.

SA's Newly Declared Marine Protected Area Network

By Tshego Letshwiti

Photos by Steve Benjamin, ACEP Imidia Project, Peter Chadwick



Above: Amathole Offshore MPA includes a high diversity of lace corals



Above: The Red Roman Fish only occurs in South African Waters



Above: Marine Protected Areas Tourism activities.

In May 2019, the Department of Environment, Forestry and Fisheries officially declared the long-awaited new network of 20 Marine Protected Areas (MPAs). Work on the new approved network of MPAs dates back to 2014, when the South African government endorsed a plan to achieve, as part of Operation Phakisa: Ocean Economy, a viable network of MPAs.

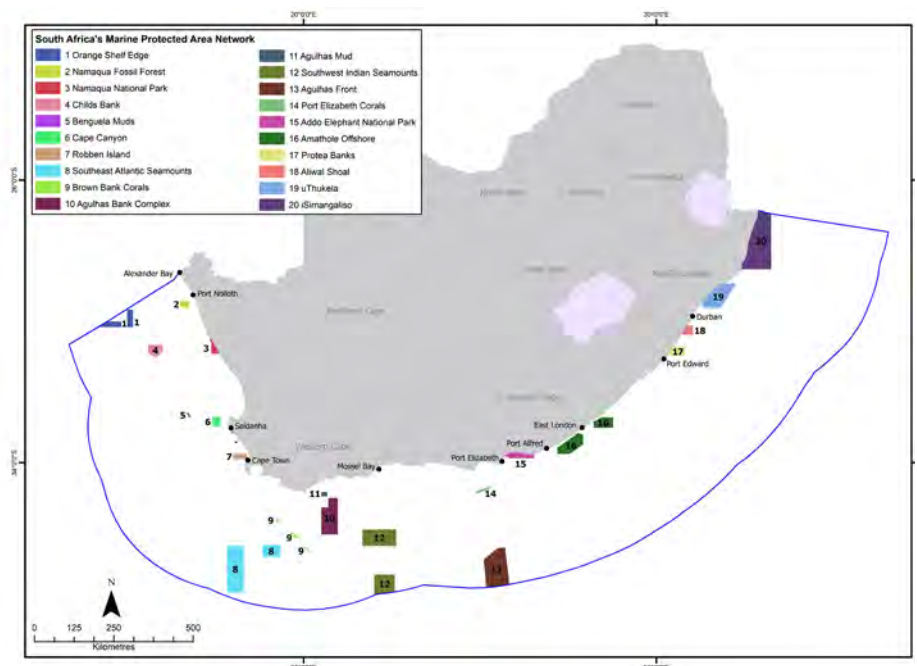
Some benefits of the new network of MPAs include an increase in the spatial protection of South Africa's ocean environment from the current 0.4% to 5.4%, providing some protection to 90% of habitat types, as well as contributing to global protection in line with South Africa's commitment to the Convention on Biological Diversity, a sister Convention to those on Climate Change and Sustainable Development.

MPAs provide safe spaces in which fish can breed undisturbed. They are essential to maintaining eco-certification of the South African deep-sea trawl fishery. This certification process assesses whether habitat and nursery areas for the hake fishery, are adequately protected. MPAs also contribute to growing South Africa's marine eco-tourism sector by providing undisturbed natural habitat for whales, sharks, seals, dolphins,

turtles and seabirds for international and domestic tourists to experience.

Additionally, an adequate network of MPAs will also provide the basis for ongoing resilience to the impact of climate change. Oceans are an essential component of the climate system, absorbing and transferring heat, and regulating the exchange of carbon dioxide (CO₂) with the atmosphere. With increasing CO₂ levels, and rising ocean temperatures, this regulatory capacity is at risk.

South Africa's ocean space, which is one of the most varied in the world, is highly productive with rich biodiversity providing for living and non-living resources that contribute significantly to the country's economy and to job creation. As we grow and intensify the ocean economy, it is essential to provide the necessary protection to a representative sample of marine ecosystems, thereby ensuring their resilience to human use and impact, and to the impacts associated with climate change.



About the contributor: Tshego Letshwiti

Ms Tshego Letshwiti is an Assistant Director within the Internal and External Communications Sub-Directorate at the Department of Environment, Forestry and Fisheries, in Cape Town. She joined the Department in February 2014 after working in print and broadcast Media. She holds a BA Honours Degree in Journalism from the University of Johannesburg.

Let's combat desertification and grow the future together

By Thizwilondi Rambau



Above: Impacts of Desertification, Land Degradation and Drought on agriculture and livelihoods.



Above: Demonstration of interventions and activities to combat desertification.



Above: There is an urgent need to rehabilitate, conserve and restore degraded landscapes through Sustainable Land Management.

World Day to Combat Desertification (WCD) is observed as a unique occasion to remind everybody that Desertification, Land Degradation and the effects of Drought (DLDD) can be effectively tackled and that solutions are possible.

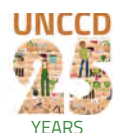
The 2019 WCD will be celebrated under the theme: "25 years of implementation of the Convention and beyond, focusing on the path the Convention has taken, and the future the Convention could bring", and the Slogan as: "Let's grow the future together". The 2019 theme is calling us to celebrate the 25 years of progress made on Sustainable Land Management (SLM) and how we

envison a world in which Land Degradation Neutrality (LDN) provides a solid basis for poverty reduction, food and water security and climate change mitigation and adaptation?

Different reports indicate that DLDD affects many countries globally. The recurrent and growing threats of forest fires, heatwaves, mass migrations, flash floods, sea-level rise as well as food and water insecurity will become more evident. Given that, there is an urgent need to address these challenges through rehabilitation, conservation and restoration of degraded landscapes through sustainable land management (SLM) practices and approaches.

There is an urgent need to grow economies and secure enough food, clean water and energy by ensuring land users an enabling environment for SLM; and SLM should be everyone's business. Together, we can restore the productivity of over 2 billion hectares of degraded lands and improve the livelihoods of more than 1.3 billion people around the world. With the costs of land restoration in the range of approximately R2165.52 a hectare, achieving LDN is one of the most cost-effective ways not only to fight against hunger but also to cope with climate change, secure water and energy resources and promote inclusive growth.

17 June is World Day to Combat Desertification Let's grow the future together



RESPONSE TO DROUGHT

The approach being employed by government in addressing desertification, land degradation and the effects of drought facilitates coherent and integrated approaches through multi-sectoral programmes namely, the Landcare Programme, Working for Land, Working for Water, Working on Fire and Working for Wetlands amongst others. These responses contribute to job creation, food and water security, skills development and rural development by rehabilitating, conserving and restoration of degraded landscapes.



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#Let'sgrowthefuturetogether

#GoodGreenDeeds

Olivenhoutbosch shows up for Good Green Deeds

By Fhatuwani Mulaudzi

Olivenhoutbosch residents have responded to President Cyril Ramaphosa's call to keep South Africa clean. The Department of Environment, Forestry and Fisheries, non-profit organisations and members of the Olivenhoutbosch community came together to keep the country clean. The clean-up campaign took place at an open wetland area in Ext. 26, at Olivenhoutbosch on 29 March 2019.

The wetland area is used as a dumping area, which the Department and NGOs are hoping to change through the campaign. The drive for the campaign is to raise awareness and to educate community members about waste management, recycling and wetland ecology. Community members came in numbers to support the initiative.

Ms Boitumelo Dlamini who is a Control Environmental Officer Grade B in the waste management section at DEFF, said they have a working relationship with different NGOs which focus on environmental protection efforts. "Olivenhoutbosch is one of the areas that have high levels of illegal dumping hotspots and therefore the DEFF saw it fit to support such an initiative which focuses on clearing illegal dumps," she said.

The purpose of the DEFF is to inculcate the cleanliness behaviour of communities and to raise awareness on economic opportunities which arises from waste. Ms Dlamini said the community needs to know that waste is a resource and they should separate their waste at source to ensure that the recyclable materials are not contaminated. "The DEFF also advises the community to turn the illegal dumps into green spaces ie: community gardens or parks, in order to combat the illegal dumping culture in the community," she said.

Mr Thapelo Mabogoana of the Olivenhoutbosch community said the community will now be alert, and

think twice before throwing waste in the wetland. "The department's efforts will not be taken for granted, and we will encourage community members to keep their community clean," he said.

Mr Willem Snyman from the FRESH NGO said the organisation's role is to try and get some light back into the wetland area. "We want to plant trees and establish an organic perma-culture vegetable garden", said Mr Snyman.

The NGO said it picked the Olivenhoutbosch community since it has so many wetlands areas, and seeing that the community is not well informed about the wetlands and how they should be taken care off.

The Good Green Deeds Campaign is working towards the responsible management of waste, and keeping communities as clean and as green as possible. The aim of this initiative is to encourage South Africans to stop littering and illegal dumping.



Above: Olivenhoutbosch residents, DEFF Staff, and NGO representatives cleaning up the wetland area.



About the contributor: Fhatuwani Mulaudzi

Ms Fhatuwani Mulaudzi is a Media Liaison intern at the Department of Environment, Forestry and Fisheries. She studied Journalism at Tshwane University of Technology, and has a passion for writing. She started writing for community newspapers when she was still studying.



Department appoints environment ambassadors

By Nomxolisi Mashiya, Madimetja Mogotlane and Abraham Shoba

A total of 153 youth from different municipalities around the country have been appointed as project support officers for the Department of Environment, Forestry and Fisheries.

The environment ambassadors, as they are called, will participate in this programme for three years and extend their environmental management education to people in their local municipalities. The primary objective of the programme is to educate communities about conservation and protection of environment while creating job opportunities and skills development for young people.

The department initiated the Youth Community Outreach Programme in 2018. Its key objectives are:

- Promote active participation of youth in environmental management;
- Create job opportunities for youth;
- Environment-related skills development opportunities,
- Work experience for employability;
- Enhance the environment capacity to enable effective and efficient execution of environment functions in municipalities.

In each municipality there will be 23 young people and 44 in each metro. 213 of these young people are graduates with a degree or National diploma in environment-related studies, bonafides or originate from the jurisdiction of the municipalities. To date, 184 out of 213 have been appointed and placed in the municipalities.



Above: Ms Innocentia Magubane one of the youth employed as youth environmental coordinators in the youth community outreach programme.

Ms Magubane holds a National Diploma in Nature Conservation and she is from Paulpietersburg in Edumbelocal Municipality in KwaZulu-Natal. In 2018, she was advised by a friend to register as an unemployed graduate in the local municipality's database. It was from registering with the municipality's database that the Department of Environment, Forestry and Fisheries got hold of her CV and subsequently successfully interviewed her to be one of the youth employed as youth environmental coordinators in the youth community outreach programme.



Above: Before he became a Project Support Officers Mr Sphamandla Mbatha worked as a petrol attendant.

Mr Mbatha who has a National Diploma in Environmental Science says he wants to learn as much as he can about the environment sector. "In the next three years, I want to teach my community about maintaining a clean and healthy environment for future generations. I would like to thank the department for giving me such an unimaginable opportunity and I hope other graduates will also be given the same opportunity," he said.

About the contributors: Nomxolisi Mashiya, Madimetja Mogotlane and Abraham Shoba

Ms Nomxolisi Mashiya is the Director: Stakeholder Engagement and Public Awareness in the Chief Directorate: Communications at the Department of Environment, Forestry and Fisheries.

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Mr Abraham Shoba is working as a Communications Officer in Corporate Communications at the Department of Environment, Forestry and Fisheries.

Opportunities for Youth in Environment



Above: On a regular basis, the Department of Environmental Affairs hosts career expos at different locations across the country to increase knowledge on environmental careers.

Fresh young minds like yours are needed to revolutionise the way we travel, the energy we use, minimize our waste as well as sustainably feed our people and build our houses and towns amongst others. To pursue a career in the sector, students would generally need to study certain subjects at Grade 12 level in high school, depending on the specific career you have in mind. Most programmes that are relevant to environmental careers are classified as Science Programmes. Relevant subjects in Grade 12 include Mathematics, Biology, Physical Sciences, English and/or Geography.

Environmental Affairs Internship Programme

The environmental field provides many exciting, interesting and satisfying career choices, stretching across a range of fields and disciplines.

The Department of Environmental Affairs has implemented an internship programme, which aims to create a pipeline of candidates that may compete for appointments in and outside the department.

Unemployed South African undergraduate and postgraduate students who have not been previously employed under any internship programme can apply in fields that are in line with the department's core business.

Applicants should not be above 35 years of age. Applications for 2019/2020 will open in October this year.



Above: Mr Steven Mabungana showing learners the impact that pollution has on ocean life.

Find us at a Career expo near you

On a regular basis, the Department of Environment, Forestry and Fisheries hosts career expos at different locations across the country to increase knowledge on Environmental careers and to help students make the right career choices at tertiary level.

Career opportunities and bursaries offered by DEA that learners and unemployed youth are informed about are as follows and not limited to the list:

- Environmental Law
- Resource Economics
- Waste and Pollution Management
- Environmental Sciences
- Chemistry / Chemical Engineering
- Marine Biology and Marine Sciences
- Toxicology
- Geographic Information Systems
- Conservation Planning and Conservation Biology
- Statistics

The expos also provide exhibitors an opportunity to advertise their work opportunities on various fields of work, bursaries, internship programs, learnership programs and graduate programmes

For more information contact: Department of Environmental Affairs Mr Thomas Mathiba Director: Sector Education, Training and Development Tel: 012 310 3653 Email: tmathiba@environment.gov.za Call Centre Tel: 086 111 2468 Email: callcentre@environment.gov.za Switch Board: 012 310 - 3911 Physical Address Environment House 473 Steve Biko Road Corner of Soutpansberg Road Arcadia Pretoria 0002 Postal Address Private Bag X447 Pretoria 0001

Meet Navigating Officer S'jabule Ntombela

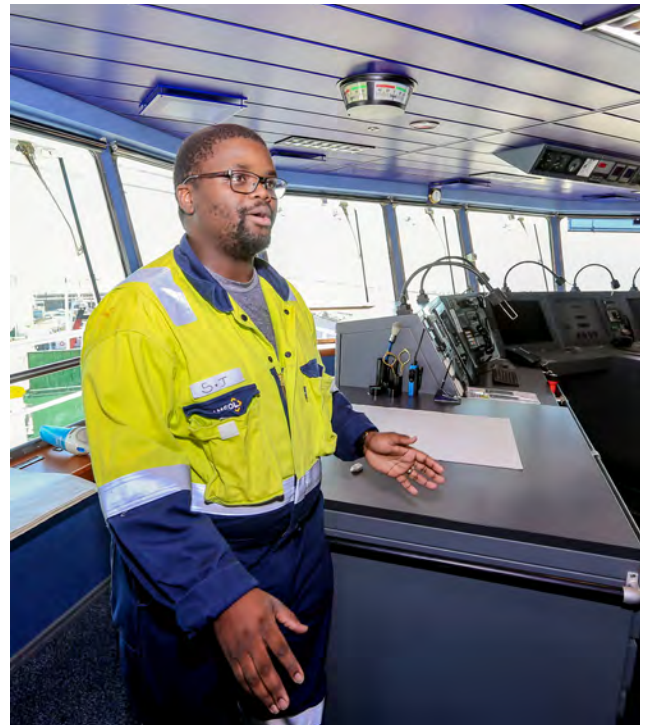
By Perfect Hlongwane

We meet Navigating Officer S'jabule Ntombela, 29, who is stationed in the navigation room of the SA Agulhas II, from which the huge vessel is steered. On a smaller ship or boat this is known as the cockpit, or stern, but on a ship the size of the SA Agulhas II it is referred to as the bridge. The space itself highlights how advanced technology has changed the way in which ships of this size are steered. It is kitted out with an impressive array of screens, from which the various computerised systems necessary for navigating oceanic waters are monitored.

S'jabule points out that, despite the highly computerised network of systems, manual steering and the human eye still form an integral part of the job of navigation. To emphasize this fact, he shows us an observation window located on the right side of this navigation room, from which the Navigating Officers on duty can look down and physically observe the waters way below, seven decks down. Navigating a ship of this size is a combination of both automatic and manual steering, he says. As with all decks on the ship, telephonic receivers are on hand, enabling communication with the captain, other areas of the huge vessel, as well as with the outside world.

Equipping him for his critical role as a Navigating Officer, S'jabule holds a National Diploma in Maritime Studies. The process of qualifying to do this kind of work is not just a matter of theory, however. For this reason, the training involves periods of study as well as practical, on-deck training. S'jabule reveals that he is amongst the first group of officers trained under the Operation Phakisa initiative focusing on Marine Transport and Manufacturing, which identified the need for training and upskilling of officers capable of joining the crews of vessels such as the SA Agulhas II.

As part of their practical training for the Maritime Studies diploma, cadets spend a great deal of time on the Agulhas II's predecessor, the SA Agulhas, which has been discontinued from ocean travel and now serves as a training facility, under the auspices of the South African Maritime Safety Authority (SAMSA). This kind of training is important, S'jabule says, because by the time he joined the crew of the Agulhas II he was already comfortable and equipped with hands-on experience of being aboard a ship, and with the different aspects of navigation that his job entails.



Coming to the job itself, he says that a large chunk of his duties as a Navigating Officer consists of planning for trips and expeditions many months in advance. It is early in the month of May when we meet S'jabule, but he is hard at work preparing for an expedition to the Antarctic region beginning in late September. "You have to be prepared for long absences from home in this job, for example the trip much later this year means I'll be out at sea for about 35 days. But there's nothing like being out on the ocean. That's a feeling I just can't describe," S'jabule says, revealing what attracted him to maritime studies.

As part of Operation Phakisa's skills initiative, select High Schools around the country will now offer Marine Sciences as a subject, for those interested in following in Navigating Officer S'jabule Ntombela's footsteps. The subject can also serve as a springboard to careers in maritime law, economics and nautical sciences.



About the contributor: Perfect Hlongwane

Mr Perfect Hlongwane is a writer and editor from Johannesburg. Formerly a lecturer in the English Department at Wits University, he left academia for a career in publications, editing Soccer News, South Africa's first Black-owned sports magazine, and subsequently the glossy SoccerLife magazine. He has done copy editing work for Media24, the Mail & Guardian, Jacana Media and others. *Jozi*, his first novel, was shortlisted for the UJ Writing in English Debut Prize in 2014. His second novel, *Sanity Prevail*, is forthcoming from Blackbird Books in 2020.

Kgaswane Mountain Reserve

By Veronica Mahlaba and Dr Piet-Louis Grundling

The Kgaswane Mountain Reserve's primary ecological management objective is to deliver continuous and sustainable flow of good quality water. It hosts various wetland types amongst other peatland and mires with sphagnum moss. Peatlands host a third of terrestrial carbon and 10% of global fresh water. Sphagnum moss only occur in a few places in South Africa.

The main problem that the wetland encounters is erosion and sedimentation (likely from old farming practices such as over grazing and too much burning of the veld, as well as some road infrastructure. The Department's role is to provide rehabilitation works, training and research. The department has made the following interventions:

- a. Training and capacity building
- b. Rehabilitation Planning
- c. Research support
- d. Rehabilitation measures (types: silt fences, weirs and chutes)

The purpose is to trap sediment, arrest erosion and rewet the wetland. The interventions are working especially in trapping sediment and erosion control. Through this rehabilitation of the wetland, the Working for Wetlands (WfW) have built academic relationships with tertiary students. WfW employs two specialists (Drs. Farai Tererai and Piet-Louis Grundling) with an interest in academic research and student development.

"The relationship at Kgaswane is not only to support the Agricultural Research Council and related students in their Water Research Commission project but also to measure the success of our interventions in order to determine our success, learn from our mistakes and apply lessons learned in our planning and

implementation nationally," stated Dr Grundling. Kgaswane Mountain Reserve is a nature reserve of 5,300 hectares consisting of veld and mountains run by the North West Parks and Tourism Board and is located in Rustenburg on the northern slopes of the Magaliesberg.



Above: Postgraduate students walking around the Kgaswane Nature Reserve to assess if rehabilitation measures are working.



Above: Postgraduate students with Dr Farai Tererai determining how much ground water is flowing in the foliage. It is called Eco-hydrology.



Working for Wetlands Testimonials



Ms Lufuno Nemakhavhani

1. What are you studying?

Master's Degree in Environmental Management.

2. Where are you studying it?

University of Free State

3. What does your research about wetlands entail?

It is the assessment of wetland rehabilitation interventions using hydrology, geomorphology and vegetation in Kgaswane Mountain Reserve.

4. What are you hoping to find or prove from your research?

I am hoping to find out if the wetland rehabilitation structures that have been put in place at the Kgaswane Mountain Reserve are functional and serving its purpose.

5. What made you interested in this field of study?

I work with wetlands and have grown interest in learning more about them and how to conserve them.

6. Why do you think wetlands are important?

They are important because they provide ecological services to us and they store up water which is important in South Africa.

7. Would you recommend your field of study to the youth out there?

Yes, because it is a field that is crucial in our country and we need more researchers to help protect our wetlands.

8. How has working with DEAs Working for Wetlands assisted you in your field or studies?

DEA Working for Wetlands is the one who has implemented the rehabilitation structures on site and have made it easier for me to work on structures and have information easily accessible.



Ms Mathabiso Letsaba

1. When did you join Working for Wetlands?

In October 2006, I started with Working for Wetlands as a contractor. In 2008, I was promoted to senior contractor and in 2013, I became project manager.

2. What made you join the programme?

After my degree, I could not get a job until I heard of the advertisement calling for wetlands contractors.

3. What made you interested to work with wetlands?

Growing up in a rural area, I was very keen and curious about my surroundings and in particular environmental issues. I led an environmental club which focused on cleaning and school gardening. In high school, I became the Golden Gate National Park representative for the Free State. I carried on the legacy through my university days where I led a successful environmental club.

4. What makes WfW important to you?

Since 2006, I have grown to admire Working for Wetlands as a programme for empowering young people and previously disadvantaged groups of society with extensive skills development. Seeing general workers become supervisors and supervisors becoming contractors is incredible.

5. What are the changes you see in your life since joining WfW?

I get paid for doing what I really love. It's great value for money balancing both socio-economic and biodiversity values in one basket without compromising the other.

6. Would you recommend your career to the youth out there?

Yes, I believe there can never be enough wetland specialists.



About the contributor: Dr Piet-Louis Grundling

Dr Piet-Louis Grundling is a Deputy Director: Programme Implementation under the Working for Wetlands programme in the Department of Environment, Forestry and Fisheries.

Miss Earth Finalist talks about waste management

By Erica Mathye and Georgina Cost
Photos by Miss Earth SA



Effective waste management requires more than just taking out the bin at home. The Good Green Deeds campaign encourages South Africans to keep their neighborhoods clean by picking up litter. The Environment Quarterly spoke to Miss Earth SA finalist Ms Pinky Mokwena (25) from Atteridgeville in Pretoria to understand how better she employs the principles of Reduce. Reuse. Recycle. Recover.

Plastic or paper straws?

Paper straws because they are biodegradable.

How can South Africans, government and private sector work together to eradicate the problem of household waste for good?

I believe the best ways to introduce and reinforce good waste management practices is by encouraging South Africans (from a domestic level to commercial) to separate their waste at source. If all sectors join hands in emphasizing the effect that each individual has on the system, more and more people would be sensitized about how their actions affect the whole system.

I have actually learnt that most of the things that end up in our landfills could be repurposed into valuable resources that could benefit the communities on both an economic and social levels. Therefore, different sectors could be "all hands on deck" by creating platforms for ordinary

citizens to learn new ways and skills of recreating value from waste.

Do you think there is enough education on waste management?

I think we could do more as a society and media culture. Since we have learnt that the media has significant influence in driving public opinion, I believe if we covered waste education more than we are now, we would see a considerable change in the way people handle, generate and think about waste. So, with that in mind, my answer to the question is no.

What has been your experience in dealing with waste in your local community?

I grew up in a community whose indigenous vegetation was lush and green, where rivers were clean and the quality of air good. Whenever I visit the place that I grew up in, it's almost impossible to believe that it is the same place. The plastic, glass and steel litter almost suffocates the environment, and the river that used

to course through the community in Extension 6 of Atteridgeville west is now flowing with plastic and other forms of waste, clogging the natural flow of the ecosystem in the area.

What are some of the environmentally friendly tips that you practice at home daily in line with the principles of Reduce. Reuse. Recycle. Recover?

My family separates their waste at source. We never leave a room with the lights on or the plugs still on the socket when they aren't using them.

We compost all of our organic waste, and use some as part of nurturing our vegetable garden. We grow our own vegetables, and part of our garden we have grown tomatoes, herbs, onions, spinach, carrots and fruit such as apples, grapes, bananas, pomegranates, oranges, lemons and mangoes. We also reuse all containers that are reusable and recycle everything else that isn't. Plastic straws don't exist in our vocabulary.



About the contributor: Erica Mathye

Please change my bio to: Ms Erica Mathye is the Deputy-director: Editorial Services within Communications. She joined the department in 2015 after working at Move! Magazine as Chief Copy Editor.

African Penguins



Fun facts

They're fluffy, cute and wear tuxedos. These flightless birds are a marvel to behold and simply incredible creatures. The world celebrates these beautiful creatures annually on 25 April. There are 18 recognized Penguin species in the world and most of them can be found in the Southern Hemisphere in places like Antarctica, Southern Africa, Chile, Peru, Galapagos Islands, New Zealand, Australia and a number of sub-Antarctic islands.

All about South Africa's most beloved penguin, the African Penguin:

- They are the only penguin species in Africa and are endemic to the southern- Africa (Namibia and South Africa); Their population has decreased since the 1950s.
- The species has declined by over 60% in the last 30 years and by over 50% in the three most recent generations, with the declines continuing;
- They are currently listed as Endangered according to the International Union for Conservation of Nature (IUCN) Red List of Threatened Species and Birdlife;
- Once South Africa's most abundant seabird, the African Penguin population has decreased from more than 1 million in the 1910s to less than 25 000 breeding pairs recorded globally. Currently in South Africa, there are approximately 15 400 pairs in 2018 breeding pairs recorded in 2018.



Breeding

- They breed only in South Africa and Namibia;
- They breed between four and six years of age;
- They usually lay two eggs
- Nests are built by both sexes in either burrows, guano, clefts between rocks or on the surface and vegetation as well as artificial nest boxes. Their nest material includes seaweed, pieces of vegetation, rocks, shells, bones and feathers;
- Penguins rely on their feathers for warmth and waterproofing. Once a year, will need to shed them, a penguin will eat a lot to stock up on body fat. It will then spend up to three weeks on land losing all its feathers and growing new ones;
- Penguins, generally goes through a process called Moulting, a technique that allows them to remain waterproof and insulated when foraging in cold waters;
- African Penguins are good swimmers and may dive up to 130 m but usually forage at depths <80 m;
- In 2013, the Department of Environmental Affairs, gazetted the African Penguin Biodiversity Management Plan which was aimed at addressing threats like anthropogenic impacts, fish and fishing, natural threats, catastrophic events, insufficient research as well as insufficient education and awareness on the African Penguin through an action plan.



Why are penguins important in the ecosystem?

- Penguins are highly adapted to the environment in which they live;
- They are sensitive to ecosystem changes and are vulnerable to threats at and around their breeding colonies;
- This makes them very useful as ecosystem indicators to help provide relevant information regarding the health of marine ecosystem.

Source: <https://www.environment.gov.za/mediarelease/worldpenguinday2017>



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA



EPIP lifeguards to the rescue

By Nomvuyo Mlotshwa

The Department of Environment, Forestry and Fisheries cautions all beach visitors to be responsible in exercising their right to access public coastal property, to maintain beach cleanliness and adhere to safety measures. With many people still swimming outside the designated areas and disregarding instructions, there is an intensified need for lifeguards in the country. This need was addressed by the Environmental Protection and Infrastructure Programmes (EPIP) in the Durban and Scottsburg areas (KwaZulu-Natal) by training 50 surf and pool lifeguards.

A lifeguard is a person who is responsible for keeping people safe in and around water. Lifeguards work in a variety of environments including at public swimming pools, on luxury cruise ships, at hotels, and at public beaches.

To obtain the Surf Lifeguard Award, one must:

- be at least 16 years of age;
- be able to swim 400 metres in the pool under 8 minutes;
- have basic surf swimming experience including swimming 25 metres while holding one's breath; and
- retrieve objects from a depth of 1.8 metres under water and have reasonable water treading and backstroke kicking skills.

The project has 38 youth participants, 12 of whom are women. Some of the participants did not meet the physical fitness for a lifeguard as they had limited exposure to swimming.

"We gradually developed their fitness levels and skills through strict training where they ran daily, basic swimming, water skills training, craft paddling and rescue board training," says project site manager from Lifeguard Academy, Deon Woodley. Project participant, Nosiphiwo Mdutshane conquered her fears. She said the first day at sea was terrible. "I was very nervous thinking the sea would sweep me in but today I'm good at what I do".

Participants were trained on conducting First Aid and Cardiopulmonary Resuscitation (CPR) and they also received non-accredited training on personal facilitation and presentation skills as well as how to train other trainee lifeguards (train-the-trainer). Another project participant, Busisiwe Myeza said she can now interpret the signs of someone who needs rescue assistance. "When a bather lifts up their hands, it means they are in distress and need help", she said. "When you are in the sea and the waves are overpowering you, you need to relax and not panic as waves are able to push you back. Do not fight the water currents as they are too strong, wait for a wave to push you out", she said in sharing her newly acquired knowledge.

"Being a lifeguard is a challenging responsibility as you have to keep members of the public safe by risking your own life. The highlight of this project was during the rescue board training," Mr Woodley said. The rescue board is used extensively by both open-water and surf lifeguards in rescue situations. It provides the lifeguard with means to speedily reach a drowning victim as well as an effective floatability aid to assist with getting the victim safely back to shore.



During the school holidays participants were afforded workplace exposure opportunities as they were deployed to the municipality and were allocated to pools, dams and beaches serving voluntary lifeguard hours patrolling these areas. They also assisted in the Learn-to-Swim programme that teaches primary school pupils to swim at the uShaka Marine World Waterpark. Participants attested that through this project they have conquered their fears of the mighty ocean waters. They can now even surf using the malibu surfboard. With the improved health and fitness they are now able to swim faster and further than ever before.

Safety tips in and around the sea

- Swim at beaches where and when lifeguards are on duty
- Swim between the flags
- Don't drink and drown
- Don't swim alone – always swim with a buddy
- Understand rip currents and how to survive them
- As soon as you realise that you are in trouble, signal for help by waving your hands above your head
- If you are not a trained lifeguard, do not attempt a rescue yourself
- Listen to and obey instructions from lifeguards
- Wear a lifejacket when you are on board a boat
- Take care of slippery rocks and changes to tides when fishing



What is a rip current?

A rip is a strong, localized, and narrow current of water which moves directly away from the shore, cutting through the lines of breaking waves, and is strongest near the surface of the water.

Getting out of a rip current

If you do get pulled out to sea by a rip current, stay calm and save your energy. Call and wave for help, and allow the current to carry you for a while and then swim parallel to the shore until such time as you are out of the current. If you cannot swim to the shore, float or tread water until you are safe from the rip current.



About the contributor: Nomvuyo Mlotshwa

Ms Nomvuyo Mlotshwa is the Assistant Director: Programme Publicity and Liaison. She is responsible for managing and promoting the brand of the Environmental Protection and Infrastructure Programmes. She is passionate about community outreach and stakeholder liaison.



Protect our environment

MEASURING HUMAN IMPACT

YOU WILL NEED:



A METRE-RULE OR TAPE MEASURE



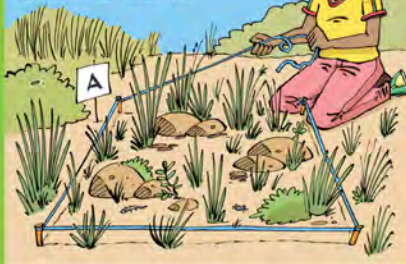
SOME STICKS AND STRING



PAPER AND PEN/CLIPBOARD

1 WHAT TO DO:

LOOK NEAR YOUR HOME OR SCHOOL TO FIND AN AREA THAT HAS NOT BEEN CHANGED MUCH BY HUMAN ACTIVITY. (IT SHOULD LOOK AS NATURAL AS POSSIBLE). CALL THIS AREA **A**.



2

FIND ANOTHER AREA THAT HAS BEEN CHANGED A LOT BY HUMAN ACTIVITY (NEAR A BUILDING, FOR EXAMPLE). CALL THIS AREA **B**.



3

USE A METRE RULE OR A TAPE MEASURE TO MEASURE OUT A SQUARE 1M X 1M IN AREA **A**. USE STICKS AND STRING TO MARK OUT THE AREA. DO THE SAME FOR AREA **B**.

4

MAKE A LIST OF ALL THE DIFFERENT TYPES OF PLANT AND ANIMAL SPECIES THAT YOU CAN FIND IN EACH AREA.



WHAT DO YOU NOTICE ABOUT THE NUMBER OF PLANT AND ANIMAL SPECIES IN **AREA A** COMPARED TO THOSE IN **AREA B**?
WHAT CAN YOU SAY ABOUT THE **IMPACT** OF HUMAN ACTIVITY ON THE BIODIVERSITY OF THESE AREAS?

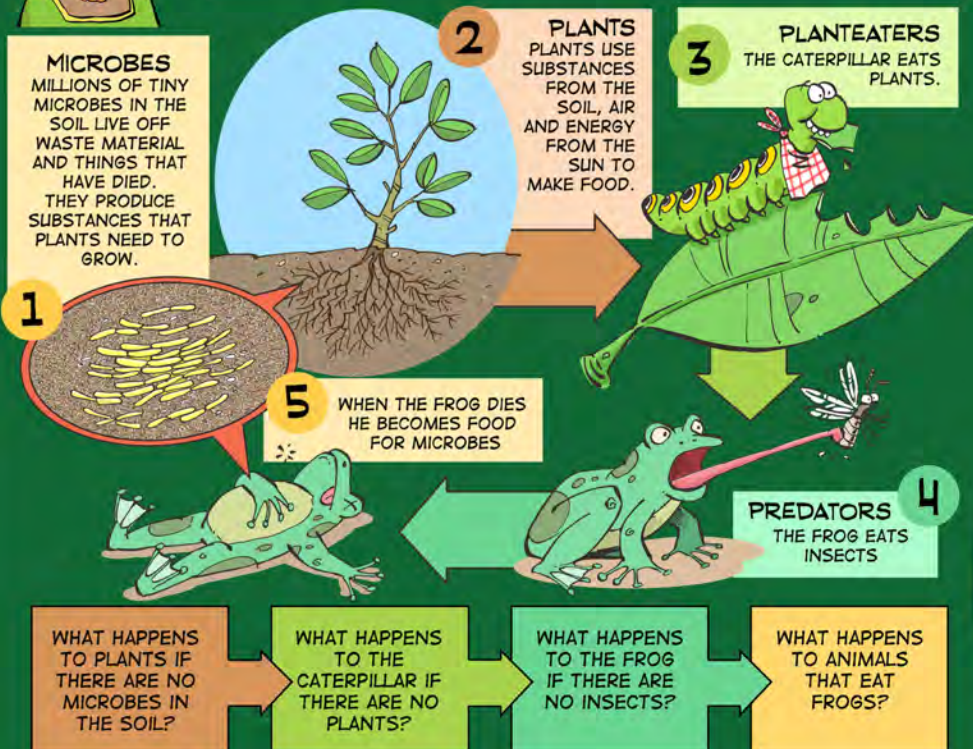


WHAT'S HAPPENING HERE?



YOU PROBABLY NOTICED THAT THERE ARE MORE KINDS OF PLANTS AND ANIMALS IN THE NATURAL AREA THAN IN THE AREA AFFECTED BY HUMAN ACTIVITY.

IN A HEALTHY ENVIRONMENT, MANY DIFFERENT PLANTS AND ANIMALS LIVE TOGETHER AND DEPEND ON EACH OTHER. HERE IS A SIMPLE **FOOD CHAIN**.



IN NATURE THERE ARE MANY FOOD CHAINS LINKED TOGETHER TO MAKE A NETWORK. ALL THE LIVING THINGS DEPEND ON EACH OTHER, SO THE **NETWORK** CONTINUES YEAR AFTER YEAR. WE SAY IT IS **SUSTAINABLE**.

WHEN ANIMALS OR PLANTS ARE REMOVED FROM AN AREA, OTHER SPECIES THAT DEPEND ON THEM DIE. THIS **REDUCES THE BIODIVERSITY** OF THE ENVIRONMENT.



BIO = LIFE

DIVERSE = DIFFERENT

BIODIVERSITY = NUMBER OF DIFFERENT LIVING THINGS THAT LIVE TOGETHER IN A SUSTAINABLE NETWORK

Reduce . Reuse . Recycle . Recover

Are you making a difference?

Section 24 of the South African Constitution states:
"Everyone has the right to an environment that is not harmful to their health or well-being."

Clean up! Pick it up!



NOW THAT YOU KNOW THE 'FOUR R'S' OF RECYCLING, YOU'RE ONE STEP CLOSER TO BECOMING A **RECYCLING SUPERHERO!** SORT EACH ITEM INTO THE CORRECT BIN - THE FEWER ITEMS IN THE LANDFILL BIN, THE BETTER!



Eggshells

Disposable nappies

Meats

Grocery bags

Plastic

Cardboard

Aluminium Can

Vegetable Scraps

Household cleaners

Glass bottle

Newspaper

Paper towels

Bread

Paint thinners

Pie tins

Shoes

Pasta

Cheese

Clothing items

Frozen dinner trays

Paper

Leftover rice

Batteries

Deodorant cans

Magazines



DID YOU KNOW?
YOU CAN HELP CLEAN UP YOUR COMMUNITY TO MAKE MONEY BY BECOMING A WASTE PICKER!

FISTOZ NOTYAWA IS A WASTE PICKER. HE LIVES ON A LANDFILL IN MAKHANDA IN THE EASTERN CAPE. FISTOZ COLLECTS RECYCLABLE MATERIAL AND RESELLS IT TO BUYBACK CENTRES AND SCRAP YARDS. HE WORKS EIGHT TO TEN HOURS A DAY, MAKING BETWEEN R60 AND R140 DAILY!



Are you making a difference?

ANSWERS:
Reuse: Grocery Bags, Shoe, Clothing, Paper, Cardboard.
Recycle: Aluminium Cans, Plastic, Glass bottles, Household cleaners, Batteries, Deodorant cans, Pie tins, Frozen dinner trays, Newspaper, Magazines, Paper, Cardboard.
Compost: Vegetable scraps, Egg shells, Paper towels, Leftover rice, Pasta, Bread.
Landfill: Cheese, Meats, Disposable nappies.

Section 24 of the South African Constitution states:
"Everyone has the right to an environment that is not harmful to their health or well-being."

Ms Nonhlanhla Ngcobo

Chief Director: Facilities Management

By Zibuse Ndlovu

A leader should have listening skills and empathy for other people. A leader should be innovative and proactive, that's how Ms Nonhlanhla Ngcobo describes good leadership. Ms Ngcobo believes that leaders should be able to handle pressure and deal with situations in a calm manner.

As the Chief Director responsible for the management of facilities in the Department, Ms Ngcobo's duties include ensuring that the Department occupies suitable office accommodation, has a level of security that makes everyone who works and visits the Department feel safe, ensures that there is effective transport and travel services provided in order for branches to fulfil their mandates, supporting health and safety in the workplace as well as preserving and protecting the records of the Department and the Information of the State.

What, in your opinion, makes a good leader?

A good leader for me is a person who continues to learn from others, someone who appreciates others at work, and just generally a person who strives to coach their team all the way. A leader is not afraid to make mistakes and learn from them. I make mistakes and I look for solutions and ways for not repeating the same mistakes. When my team makes a mistake, I own up to it. Do not run away from challenges, face them head on and bring solutions.

What do you find most challenging and on the opposite end, most rewarding, about working for the Department of Environment, Forestry and Fisheries?

Protecting the environment and contributing towards a better life for all is what I like most about working for the department.

What do you consider to be your single greatest achievement in life thus far?

Completing my higher education studies while working and having to fund my own studies while taking care of the family.

What does going green mean to you and how do you practice it in your daily life?

I use less paper, less electricity/energy, and less water and save the environment. I boil water once in a kettle and keep in my flask to use throughout the day. I only print when absolutely necessary, I save documents on computer for future reading and reference.

What are 3 core tenets of your management/leadership philosophy that you would never compromise?

- I do my work with integrity and I am accountable to the public I serve.
- I am an open book, and I abide by the rules of this Government.
- I strive to make decisions that are of the best interest of the Department and the members of the public we serve, and I accept and learn from my mistakes.

How do you empower your team?

I give an opportunity to my team to learn and develop themselves. I started at the lowest level in Government, and that taught me to give other people a chance. If it was not for guidance and coaching, I would not be where I am.

I therefore believe in mentoring and utilising the various talents around

my space. Trusting your team takes pressure away from the manager and allows the manager to focus on strategies.

Quick facts:

Home town: Pietermaritzburg.

Role model: My mother. She has taught me to be who I am today. As a woman, she always believed in herself and makes things happen. Planning has always been her strongest point and she taught us to plan and see to finish that plan despite any obstacles.

Favourite quote/motto: We can all do better if we stand together and support each other. This is my own.

Hobbies: reading, road running and watching the news channels

I am currently reading: The Power of Your Subconscious Mind by Joseph Murphy.



Nanomaterials in household products need attention

By Reyhana Mahomed

Scientists warn that the environmental release of engineered nanomaterials in household products needs attention

Some of the most common household products, including sunscreens, hair relaxers, lotions and cleaning detergents, contain engineered nanomaterial ingredients that, when released into the environment, have the potential to cause nanopollution, warn studies by local environmental and nanotechnology scientists. Nano simply means small, and nanopollution describes an introduction of nano-sized contaminants into the natural environment, which causes instability, possibly harming the ecosystem. Studies point to sunscreens as the main concern, recording a release factor above 90% due to the likelihood of the product releasing engineered nanomaterials into water systems during bathing and/or swimming.

The release factor refers to the fraction of the engineered nanomaterials contained in the product that can be released, in comparison to the amount of product used. This was the first time that nano-enabled products were identified and prioritised (qualitatively and quantitatively) according to their likelihood for nanopollution in Africa. The studies were conducted by a team of nanotechnology scientists from the CSIR, the University of Johannesburg, the Nelson Mandela University and the Sefako Makgatho Health Sciences University.

"Engineered nanomaterials are considered a case of contaminants of emerging concern because their environmental behaviour differs from their larger-sized counterparts and, thus, their risk management does not fit well into the existing environmental

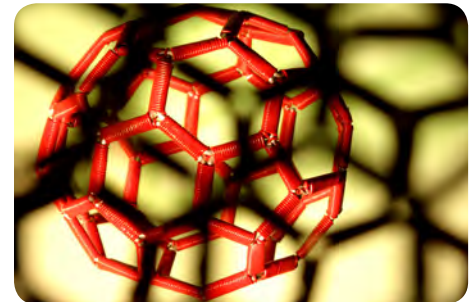
risk assessment frameworks," explains CSIR senior researcher and study leader, Dr Melusi Thwala.

The studies were conducted to improve an understanding of the potential sources of engineered nanomaterials into the environment, under a consortium funded by the Department of Science and Technology. Products included in the study were limited to those containing engineered nanomaterials as indicated on the product label.

A total of 264 nano-enabled products were identified as containing engineered nanomaterials, spanning six product categories, namely health and fitness; electronics and computers; home and garden; appliances; automotive and food and beverage. The health and fitness category dominated, making up over half of the identified products.

Due to their prevalence in the market, sunscreens were analytically examined to determine the characteristics of the engineered nanomaterials they contain. In ongoing studies, the research team is examining beauty care, clothing and paint products. Sunscreen applications were simulated and showed that our wastewater systems are vulnerable to nanopollution.

Production and use of nano-enabled products are increasing, and experts are concerned about the increased likelihood of environmental release across the product lifecycle, predominantly during use and disposal, especially in light of the current information gaps, with respect to the implications of nanopollution.



Overall, the current findings indicate that most identified nano-enabled products, especially those in the health and fitness category, are likely to release engineered nanomaterials into the environment with relative ease, with water resources being the most likely immediate recipient and, thus, are a priority for South Africa.

Concern is also expressed regarding over 90% of the identified products exhibiting a medium to high potential for nanopollution. It is recommended that South African authorities in the environmental regulation sector establish the means through which sources on nanopollution could be identified and their extent established. Where considerable environmental risks are identified, scientists and industrialists need to formulate mechanisms for risk reduction, for instance through safety-by-design approaches for the development of nano-enabled products, where hazardous characteristics of engineered nanomaterials are altered or replaced with greener alternatives.

More details are available in peer-reviewed articles accessible at: <https://doi.org/10.1007/s42452-019-0584-3>, <https://doi.org/10.1007/s42452-019-0329-3>.



About the contributor: Reyhana Mahomed

Ms Reyhana Mahomed is a Communications Manager at the Council for Scientific and Industrial Research (CSIR): Natural Resources and the Environment. Before joining the CSIR, Ms Mahomed was a Deputy Director in the Department of Environmental Affairs' Chief Directorate: Communications.

The National Pollution Laboratory

By Perfect Hlongwane



Above: The National Pollution Laboratory (NPL) is a key part of the operations involved in monitoring oceans and coasts under the Department of Environment, Forestry and Fisheries.

The National Pollution Laboratory (NPL), stationed at the Walter Sisulu University's (WSU) Mthatha Campus, is a key part of the operations involved in monitoring oceans and coasts under the Department of Environment, Forestry and Fisheries (DEFF). Mr Ayanda Matoti, the department's Director of Monitoring Oceans and Coasts, leads us to meet the laboratory's staff and experience an eye-opening tour of this world-class facility.

Dr Motebang Nakin, the NPL's acting Project Manager, informs us that the lab is managed by a steering committee comprised of three officials from the Department of Environmental Affairs, and three scientists based at the Walter Sisulu University. The facility is strategically placed in the Eastern Cape province, which has the highest number of estuaries leading into ocean waters, with important consequences as sites for evaluating coastal water contamination. Dr Nakin reveals that the laboratory is poised to implement phase two of its operations, which will see the expansion of lab space, as well as office space for hosting visiting scientists.

Leading the onsite tour is Dr I.J Ntozakhe, the lab's Technical and Principal Investigator. He makes the

point that, although the DEA is funding the facility, it is run independently at WSU, in keeping with the international regulations and requirements for such a laboratory. As a non-profit entity, the NPL is enabled to carry out affordable monitoring of the quality of water and pollution of coastline areas. The establishment of the NPL was a core development of Operation Phakisa initiatives focused on a national ocean and water quality monitoring programme. As such, the lab features state-of-the-art equipment that no other facility in the country has. In addition to carrying out its own sample-gathering activities in coastal areas, Dr Ntozakhe says the lab also allows members of the public, business entities and other stakeholders to bring in samples for testing.

Operationally, the facility contains a micro-biological lab, a chemical lab, a GC-MS Prep Room, an ICP-MS Prep Room, and a cold room where all collected samples are kept. In the micro-biology lab, samples are tested for the presence of bacteria in the water. The chemistry lab analyses the chemical composition of collected samples, determining the quality of the water based on components such as fluoride, phosphates, chlorides, ammonia, nitrates and silica. In the GC-MS Prep Room the

separation of organic materials, compounds and chemicals takes place, where the presence of contaminants such as petrol, diesel or oil can be determined. The ICP-MS Room is where the presence of inorganic materials, such as mercury and metals, is tested.

At present a total of five technicians are working in the different labs, with plans to increase this number as phase two of the NPL expansion programme kicks in. The micro-biology lab, for instance, will soon be split into two different labs, with one focusing on testing for pathogenic (poisonous) and the other for non-pathogenic bacteria.

The current pool of technicians hold degrees and post-graduate qualifications in biology, chemistry and micro-biology, and receive further training in the course of their work at the NPL. For example, Silindokuhle Ndlela, technician in the micro-biology lab, has a BSc in Microbiology, is studying towards an MSc in the same field through WSU, and has received on-the-job training such as how to skipper the boat used by the NPL to collect water samples from estuaries such as the one situated in Qolorha. She encourages young people who have the physical science subjects at High School level

Villagers fight alien plant species

By SANBI



The community of Ga-Ntata village cleared a local dam that was infested by *Ipomoea carnea*, which used to destroy their livestock.

Ga-Ntata is a rural community outside of Tzaneen in the province of Limpopo. It is predominantly occupied by black people, with a total population of approximately 2 000 residents. The community relies mainly on various farming for survival with livestock farming such as goats, pigs and cattle as one of their main sources of income. An average household in the village could have about six goats or four pigs. The community and their livestock are also kept alive by a natural dam nearby.

Villager, Mr Moshobane said, "In 1999, one of our members in the community brought a few twigs of *Ipomoea carnea*. When the plant flowered, he shared it with his neighbours, and they shared it with their neighbours until the plant was found in nearly every household." Today the plant has engulfed about 80 percent of the dam and the villagers are devastated because this has threatened their water security.

Mr Moshobane said the locals in the village call the *Ipomoea carnea* "Motalagohle" because it is found everywhere. *Ipomoea carnea* is a shrub growing one to three metres tall from the family of Convolvulaceae from S. America. Despite having been used traditionally for thousands of years, the plant is considered to be

toxic to livestock. *Ipomoea carnea* is reported to have savaged over 60 goats belonging to 11 households.

The incident was reported to Mr MC Moshobane, SANBI BID during the Greater Letaba Environmental forum, who was presenting on the Impacts of Invasive Alien Species. During the forum, a member of the Ga-Ntata community based organisation cried that goats were dying after eating the *Ipomoea carnea*.

SANBI BID Limpopo led by Mr MC Moshobane coordinated a multi-stakeholder task team to assess the situation and seek a solution. The task team comprised of representatives from Tsogang basadi, a community based NGO, Department of Environment, Forestry and Fisheries, NRM Limpopo province, Limpopo Department: Economic Development, Environment and Tourism, Limpopo department of Agriculture, Greater Letaba Local Municipality (GLM), and CHOICE Trust. The community was equipped to deal with the problem in their community. SANBI BID provided the scientific advice while the department provided training and equipment and the GLM provided support to the task team. The community cleared the plants from the dam and the stream leading to the dam.

To report occurrence and impacts of IAS feel free to contact us at m.moshobane@sanbi.org.za

From small beginnings to global south potential

By Loraine Tulleken



Above: Cape Town's large informal settlements called Siqalo.

The department's Green Fund supports the transition to low carbon, resource efficient and climate resilient projects with social benefits. The iShack Project is a prime example of how innovative thinking can change lives in poor communities. Within eight years the project has evolved from an academic exercise to a large-scale clean-energy service for the residents of the Enkanini informal settlement in Stellenbosch.

The iShack story harks back to 2010 when Mark Swilling, academic head of the Sustainability Institute in Stellenbosch, challenged his students to respond to the needs of between 5 000 and 9 000 shack dwellers crammed together on a hilly site called Enkanini.

The question he asked was "Can new delivery models and green technologies be used to provide incremental services in informal settlements to shorten delays in the provision of conventional municipal services?" With masters and doctoral candidates undertaking research into sustainable sanitation, water, energy and infrastructure, one of the students, Andreas Keller, produced the 'iShack', an ecologically designed informal dwelling, that incorporate a small Solar Home System that could power lights, cell phones and a radio.

Keller's research revealed that the most pressing need, expressed by the community, was invariably electricity.

A combination of illegal electricity cables and heating fuels made for dangerous living, turning single shack fires into major community catastrophes. Residents were also desperate to charge cell phones and have the benefits of communication and access to media, so essential to jobseekers and to improve livelihoods.

The iShack concept attracted significant media attention and the Sustainability Institute was soon given a grant from the Bill & Melinda Gates Foundation to explore sustainable delivery models for the provision of an off-grid solar electricity service to informal settlement residents. This gave birth to the iShack Project which is now run as a project of the Sustainability Institute Innovation Lab (SILL), a social enterprise, set up specifically to develop the iShack service-delivery model and roll-out the service.

The iShack Project installs off grid Solar Home Systems in the shacks of residents who voluntarily sign up for the service. The systems can power lights, television, cell-phone charging and other small media appliances. Over 1700 families now use the service. Maximising local economic development and capacity building are core components of the business model. Thus, selected residents from the community are recruited as 'iShack Agents' to market, install and maintain the Solar Home Systems.



About the contributor: Loraine Tulleken

Ms Loraine Tulleken is a freelance journalist, editor, and author of a mystery fiction series. She has also written a non-fiction, about to be published, book that focuses on indigenous/first nation people and a world once spiritually and environmentally whole.

They undergo a comprehensive training program and are supported indefinitely to deliver a consistently high-quality service to their clients. Sophisticated quality management and IT systems, adapted to the local context, have been developed, and are continually refined to ensure that the service runs efficiently and that the end-user experience is satisfactory. Damian Conway, the director of SILL states: "while the project was established and scaled up with the help of donor

funding as well as a significant start-up grant from the South African Green Fund, our long-term business model is designed to ensure that the energy service is financially sustainable and thus replicable in other municipalities where communities are facing long delays in receiving grid electricity. Stellenbosch municipality provides a 'Free Basic Electricity' subsidy for each household which ensures that our main operating costs are covered. Thus, residents only have to pay for maintenance if and when needed."



Above: The iShack Project installs off-grid Solar Home Systems in the shacks of residents who voluntarily sign up for the service.

Notably, the South African National Energy Association (SANEA) recently awarded Stellenbosch Municipality a Highly-Commended Award in recognition of the subsidy which demonstrates how green technologies can be used to address South Africa's service-delivery challenges and back-logs. In this case, providing a modest but impactful off-grid electricity service while communities wait for grid connectivity, and at the same time providing jobs and building local enterprise capacity and resilience within the community.

The iShack Project is now expanding into new sites and has launched a pilot in one of Cape Town's large informal settlements, called Siqalo, which cannot currently be grid-electrified. This community, of over 1800 households, recently petitioned Cape Town's new mayor for subsidy support for the off-grid service until grid electrification or alternative housing can be provided. The community is now waiting for the city's response to their request. The iShack Project is a 'social' business. All the income from subsidies and from client contributions is invested back into growing and improving the service. Conway adds, "We believe our work has helped to build trust and engaged citizenship in the community via the transactional relationships between the project and our clients - where both sides have responsibilities. As indigent citizens, our clients are entitled to free basic electricity and they know it. And yet they are still prepared to pay something towards a service that they value."

The department has allocated R1.3 billion for its Green Fund and appointed the Development Bank of Southern Africa (DBSA) as the implementing agent. As Dr Jeniitha Badul, the DEA's Senior Policy Advisor for Sustainable Programmes and Projects explains:

The Fund responds to market weaknesses currently hampering South Africa's transition to a green economy by:

- promoting innovative and high impact green programmes and projects;
- reinforcing climate policy objectives through green interventions;
- building an evidence base for the expansion of the green economy, and
- attracting additional resources to support South Africa's green economy development.



Above: The iShack Project expanded into new sites and has launched a pilot in one of Cape Town's large informal settlements, called Siqalo.

Green tips for green fingers

By Gaopalelwe Moroane



Above: The Senecio Tamoides is an indigenous climber that is a great alternative for popular climber, Hedera Helix(Ivy) which has recently been listed as an invasive species.



Above: The Cape Honeysuckle (*Tecomaria capensis*) is an attractive ornamental garden plant commonly used for screening and decorative purposes, and can also be trimmed to form a hedge.



Above: The Cape Honeysuckle (*Tecomaria capensis*)(INSERT) is an attractive ornamental garden plant commonly used for screening and decorative purposes, and can also be trimmed to form a hedge.

In this edition we take our readers on a virtual nursery tour of the types of plants they can keep in their homes that are not alien invasive plants and are water wise.

Alien Invasive plants are described as invaders which have been introduced into South African parks and gardens but do not originate here. Most of these plants are beautiful to look at but can cause agricultural/horticultural production losses, harm biodiversity and in some instances adversely impact human health. They grow and reproduce rapidly and are able to flourish in a variety of conditions, and are thus able to invade new habitats and out-compete indigenous plants.

In South Africa, invasive species are regulated through the National Environmental Management Biodiversity Act, 2004 and its associated Alien and Invasive Species (AIS) Regulations.

South Africans have been encouraged to plant indigenous plants in their living and working environments as a practical and symbolic gesture towards the conservation of the country's diverse biodiversity and this article seeks to guide readers as to which types indigenous plants they can look out for to heed this call.

We spent an afternoon in Stodels Nursery, with horticulturist, Virginia and she showed us which plants avid and beginner gardeners can pick that are indigenous as well as waterwise.

Asked what are some of the popular invasive plants that customers at the nursery request, she says they get a lot of requests for the Hedera helix commonly known as the ivy. The plant is loved for its climbing capabilities. Gardeners seeking an alternative to the ivy that is an indigenous also a climber is the Senecio Tamoides which also known as Canary creeper.

Another water wise indigenous plant is the Strelitzia reginae, which often called the crane flower because of its shape and colour. The Strelitzia is a type of shrub and occurs naturally only in South Africa along the eastern coast from Humansdorp to northern KwaZulu-Natal in coastal bush and thicket. It grows along river banks in full sun, however sometimes it occurs and flowers on margins of forest in shade.

Another popular waterwise shrub that we came across, that adds a beautiful purple colour to any garden is the 'Southern Shores' or polygala as it is scientifically called. It flowers almost throughout the year depending on how one takes care of them. A characteristic of all polygalas that makes them easily distinguishable is the brush-like tuft on the lower, keel-like petal.



About the contributor: Gaopalelwe Moroane

Ms Gaopalelwe is an Assistant Director: Internal and External Communications in the Chief Directorate: Communications of the Department of Environmental Affairs. She joined the department in 2012 as an intern after completing her studies at Rhodes University.



Above: The *Strelitzia reginae* is one of the most popular horticultural perennials and is not only indigenous, but a water savvy plant.

We also came across the *Salvia Africana*, also known as the African sage, which is not only waterwise and indigenous but packs medicinal properties also. The *Salvia Africana* have long been used as medicinal plants and to add flavour to food. A remedy made by mixing *Salvia africana* tea with Epsom salts and lemon juice was used by the early settlers in South Africa to treat stomach troubles, including colic, diarrhoea, flatulence, heartburn, gripes and indigestion.

One of the more popular waterwise types of plants especially during drought periods are succulents. There are a wide range of succulents and gardeners wishing to have a water savvy garden have many options to choose from when it comes to this type of plant. We came across the stunning *Senecio cineraria* which is popularly known as the Silver Dust. All plants with grey leaves are automatically waterwise plants and the *Senecio cineraria* is a stunning example.

Tip for gardeners during seasons:

Asked if she would recommend using grey water for watering plants Virginia advises that you only use grey water with plants that have been planted for over a year. "Plants are like babies, the same way you would not give dirty water to a baby- you wouldn't give dirty water to a young plant," she said.

Landowners and gardeners can familiarise themselves with the listed invasive species in the link below or contact the details below:
<http://www.invasives.org.za/legislation.html>

E-mail: AIScompliance@environment.gov.za

Tel: (012) 3999679 or (021) 4412816/2789

Sources:

www.sanbi.org

Mariane Alexander: Garden and Home

A full list of water wise types of plants can be found below:

- **Shrubs:** Frangipani, cistus, dodonaea, plumbago, rosemary, westringia, strelitzia, *Carissa* spp., coleonema (confetti bush) and buddleja.
- **Groundcovers:** *Arcotis*, gazanias, *Plectranthus neochilus*, vygies, silver carpet (*Dymondia margaretae*), lamb's ear (*Stachys byzantina*), everlastings like *Helichrysum petiolare*, blue daisy (*Felicia amelloides*) and *Erigeron karvinskianus*.
- **Bulbs and corms:** *Agapanthus*, dietes, tulbaghia, asparagus fern, pineapple flower (*Eucomis* spp.), clivia, *Gladiolus dalenii*, watsonia, dianella and renga-renga lily (*Arthropodium cirratum*).
- **Perennials:** *Echium candicans*, salvia, pelargoniums, blue statice (*Limonium perezii*), Mother-in-law's tongue (*Sansevieria* spp.), achillea or tansy, bromeliads, *Ballota africana*, *Euphorbia* spp., *Gaura lindheimeri*, Dusty Miller and verbascum.
- **Succulents:** Aloes, crassulas, agaves, kalanchoe, echeveria, *Senecio* spp., *Bulbine frutescens*, century plant (*Agave attenuata*), *Aeonium* spp. and vygies like *lampranthus*, ruschia, *carpobrotus* and *drosanthemum*.



Above: Southern Shores or *Polygala*.



Above: *Salvia Africana* is a decorative, aromatic shrub with medicinal properties. Popularly known as the African sage, it produces flowers from midwinter to midsummer (June to January) peaking in spring to early summer (August-December).

Shark dissector fights marine pollution

By Siziphiwe Maxengana

Steven Mabungana is a popular educational shark dissector and entrepreneur from Durban in KwaZulu-Natal. Mr Mabungana has been assisting the department to raise awareness in schools and outreaches about the negative impacts of marine pollution on marine life.

Steven has participated in numerous events such as World Oceans Day and National Marine Week to raise awareness on marine pollution to the youth.

A child of domestic workers, Steven was forced to quit high school and look for a job in order to assist his family financially. In 2006, Steven started working as a cleaner at a company called Sharks Board in Durban. This is where he took an interest in shark dissections. "As a cleaner, I used to get opportunities to clean the venues where the dissections and presentations took place. This gave me a chance to listen to the presentations while cleaning, and I was able to ask questions about the dissections to the presenters backstage" he explained.

One of his managers, Mr Harry Mlambo, urged him to finish high school and provided him with training and exposed him to more shark dissectors that he could learn from.

Steven's love for sharks motivated him to start his own shark dissection company called Aqua Amazing, where he provides knowledge and awareness to young people about marine science and matters related to sharks. Aqua Amazing is a black-owned company that specialises in shark dissections with the aim of educating young minds, especially from rural areas, about the dangers that pollution poses on marine life. "The use of sharks as a tool to create attention has a great impact when educating the youth about pollution" he said.

"One of my goals is to see more young black people taking an interest in Marine science and biology" he added. His advice to young people who might be interested in pursuing a career as an educational dissector is to add communication to their studies. "Good communication skills help to build character." he advised.

Steven's shark dissection presentations include:

- Taking out the liver - which weighs 25% of the total weight of the shark. The liver tells a lot about the state of the shark. If the liver is small, the shark was not eating healthily.
- Taking out the heart to educate the audience about the size of a shark's heart.
- Taking out the stomach: this is where the content of the presentation comes from as the stomach holds all that the shark has eaten, including paper and plastic.
- Taking out the intestines to show the digestive system of a shark.
- The presentation ends with an explanation of a shark's reproduction system.



Above: Mr Steven Mabungana is about to begin his dissection with the assistance of a learner from Pietermaritzburg in KwaZulu-Natal during the National Marine Week.



Above: Mr Mabungana giving a demonstration of different kinds and sizes of sharks.



Above: Mr Mabungana showing learners different things that are found inside the stomach of a shark.



About the contributor: Siziphiwe Maxengana

Ms Siziphiwe Maxengana is an intern: Internal and External Communication in the Directorate: Communication Services in Cape Town. She holds a BA Communications Management Degree and has passion for writing.

Improving ocean governance in the Benguela

By Tshego Letshwiti



Above: Pollution in the Swartkops Estuary in Port Elizabeth.

The Benguela Current Convention (BCC) Secretariat alongside the Department of Environment, Forestry and Fisheries (DEFF) is launching and implementing an exciting water quality testing project titled "Improving Ocean Governance in the Benguela Current Large Marine Ecosystem" (BCLME III Project). This is in partnership with the United Nations Development Programme, funded by the Global Environment Facility and BCC Parties with an estimated budget of R7million. The project will run for a period of three years in the Swartkops area, Port Elizabeth.

DEFF is leading this project in association with the Department of Water and Sanitation, Department of Agriculture, Forestry & Fisheries, Eastern Cape Department of Economic Development, Environmental Affairs and Tourism, Nelson Mandela Bay Metropolitan Municipality and other government stakeholders and entities.

The BCLME III Project has implemented demonstration projects in each of the three BCC countries (South Africa, Angola and Namibia) on different focus areas. South Africa's demonstration project is investigating the causes and

impacts of impaired water quality on the living marine resources and associated dependent communities. In order to develop/improve national standards and guidelines for water quality maintenance in line with Strategic Action Programme (SAP) implementation and domestication of the Convention, in Swartkops as the country identified project pilot site.

The site(s) selected for investigation were chosen based on a number of reasons as agreed by the responsible agencies. In developing the criterion, the following concerns were taken into consideration. A number of mariculture operations are currently undertaken in estuaries, these include mussel farming, oyster farming, commercial harvesting of seaweed, and commercial harvesting of wild mussels. Additionally areas have also been earmarked for future mariculture operations as well as some having been identified as 'hot-spots' for targeting economic development.

A number of primary sources of pollutants are affecting the marine ecosystem around South Africa and also potentially impacting on the 'users' of the coastal and marine

environment. The demonstration aims not only to develop water quality monitoring standards and practices to maintain such quality as 'fit-for-purpose' but also to improve the operation of wastewater treatment and to improve the environmental practices of industries and commercial establishments. The overall intent is to mitigate or remove the effects of impacts on water quality through 'concrete' stress reduction activities such as recycling of wastewater, removal of pollutants before discharge, better management practices by industry and commercial interest.



Above: DEA officials alongside the National Pollution Mobile Laboratory during the BCLME III project mobile training lab.

ENVIRONMENTAL PROTECTION AND STRUCTURE PROGRAMMES (EPIP)



Indigenous Setsong Tea to showcase in Paris

By Salome Tsoka

Living in a culturally diverse country like South Africa, it only seemed natural for young entrepreneur Ms Retang Phaahla to co-establish Summer Trading 87, manufacturers of Setsong Tea products that not only use the country's biodiversity but also celebrate the Sepedi culture. As winner of the first Business Pitching Master Class and Breakfast held at the Hilton Hotel in Sandton in March, Ms Phaahla will be attending the Union for Ethical Biotrade Conference in Paris, France.

The Business Pitching Master class and Breakfast was organised by the department and SEDA and hosted entrepreneurs in the biodiversity and bioprospecting sector and gave them an opportunity to win a full sponsorship to participate and exhibit at the Africa Bio Convention 2019, custom made capacity development programme and a full sponsorship to attend the Union for Ethical Biotrade conference in Paris, France.

Following her win, Ms Phaahla said she's hoping to learn a lot about the European market from attending the conference.

"I'm hoping to learn a lot from this and also look forward to networking because we really want to get our product in Europe. We think there's a big market for this type of tea there, so I'm hoping to learn more on how to access that market," she said.

Speaking at the breakfast, Chief Director: Biodiversity Economy and Sustainable Use Mr Khorommbi Matibe said the global market on natural products has been growing over the last century.

"South Africa's market share in the space has been very minimal, despite her vast richness in biodiversity offerings. This can be attributed to many factors including the fact that majority of the South African population is still trapped in the fringes in as far meaningful participation in the natural product sector is concerned and there is an untapped innovation capacity of South Africa's smart young populace in the space," he said.

He also added that for this to change, entrepreneurs needed to work together with government to better change the future of the bioprospecting industry. "Our generation has an opportunity to change the status quo and transform the natural product sector of South Africa for the future generation. We can benefitiate our products locally, build a sustainable domestic consumer market whilst growing a global supply of proudly South African finished high quality, world standard products," he said.

"I'm hoping to learn a lot from this and also look forward to networking because we really want to get our product in Europe. We think there's a big market for this type of tea there."



Above: Mr Khorommbi Matibe and Ms Preshanthie Naicker stand next to winner of the Pitching Master class Ms Retang Phaahla co-founder of the Setsong Tea brand.



Above: The Setsong Tea herbal infusion is a perfect remedy for the cold season as it supports the respiratory, circulatory, and digestive systems.

Setsong tea products are made from the diya and tepane tea leaves harvested from villages of Ga-Phaahla and Ga-Matlala in Sekhukhune, Limpopo. For centuries the Sepedi people had been consuming the teas for their various health properties including improving the digestive system, eye sight and sinuses as well as lowering blood pressure and cholesterol.

According to Ms Phaahla the tepane leaves were tested and found to have vitamins A, C, E and Zinc. The tea acts as a natural multivitamin while diya is more of a detox tea that cleanses your body.

“Even though the teas are a health product, they can be an everyday beverage. We’ve created a number of flavour variations including lemon ginger and cinnamon, orange ginger and turmeric, strawberry and tynol, lemon ginger and berry to make them more enjoyable,” she said.

Since the inception of the company in 2016, Setsong teas have been steadily growing in the South African tea market.

“The reception for the tea has been great. A lot of people especially Africans identify with the product. They like the story behind the brand and they also like the flavours and they enjoy it. We also get a lot of testimonies about what it’s doing for our customers from a health perspective. People are sharing their testimonies with those around them and our client base is growing organically,” she said.

During a discussion on the trends in the industry, South African National Biodiversity Institute (SANBI) Professor Neil Crouch said that the consumption & usage of biodiversity is not bad however unsustainable consumption is problematic.

“We need to not disrupt the natural environment. There are currently trends looking into using science to promote sustainability and in ensuring the space is protected for future generations,” Professor Crouch said. Co-establishing and working on the business with her

mother as well as the villagers in Sekhukhune, Ms Phaahla hopes to create a long lasting future for Setsong tea products.

“Our country is only really known for producing one type of tea which is rooibos. We want to show the world that there’s more to offer in terms of South African tea. In ten years’ time, I’d like to see Setsong as a household name across South Africa and Africa. We’d like to see it grow with families and to develop a lasting presence in the market for generations to come,” she said.



Above: Ms Retang Phaahla co-founder of the Setsong Tea brand will be heading off to Paris for the Union for Ethical Biobrade Conference.

Waste pickers must be integrated into SA's economy

By Veronica Mahlaba



Above: Stakeholders engage at the workshop held at Sierra Burgers Park Hotel.



Above: Some of the waste pickers that came to engage at the workshop.

The Department of Environment, Forestry and Fisheries (DEFF) partnered with the Department of Science and Technology's Waste Research Development and Innovation (RDI) Roadmap led by Dr. Melanie Samson of the University of the Witwatersrand to host the National Workshop on Waste Pickers Integration on 09 April 2019 at the Sierra Burgers Park Hotel in Pretoria.

The 2011 National Waste Management Strategy included a commitment that the DEFF will provide guidance to municipalities and industry on measures to improve the working conditions of waste-pickers. As part of DEFF's work to fulfil this commitment, it held this workshop to present the draft National Guidelines on Waste Picker integration to relevant stakeholders. The workshop was attended by representatives of various national, provincial and local government departments, industry stakeholders, academic researchers, civil society organisations and waste picker associations.

Deputy Director-General: Chemicals and Waste Management, Mr Mark Gordon noted that in the 25th year of democracy there are still many people making a living out of waste. "This project is about integrating policy to see how waste can attain its best value and people can get the best for their livelihoods through beneficiation," he said.

Chief Director: General Waste and Municipal Support, Ms Mamogala Musekene said the importance of the

“Municipalities will have the added benefit of engaging these waste pickers to understand what type of support they need.”

workshop on waste picker integration is because they want to recognise the contribution of waste pickers in the South African Waste Management System. Most of the recycling that happens linked to the packaging sector is because of the contribution of waste pickers.

"Last month when the President launched the Good Green Deeds programme, he was very clear that we are trying to attend to a problem of littering and illegal dumping. When you talk littering most of the time, what we see out there is the packaging material, so waste pickers contribute towards addressing the problem of littering. Most of those packaging materials that become waste can be recycled. They have value. So waste pickers are diverting those materials away from land-fills," explained Ms Musekene.

She further explained that it is critical for national government and local government to recognise the value and integrate them into the system of municipal waste management. It is critical that national government has engagements with municipalities, where there are existing waste pickers.

“We are trying to ensure that the country benefits from those livelihoods, we don’t want to disrupt an economy that is working. We are encouraging municipalities to engage waste pickers so they know how to support them in the end. We know we are faced with unemployment and are saying there are jobs that can be created and we want to support that.

“As national government, we are trying to ensure that the policies we put in place, in this case the Guideline, will influence the decisions that municipalities make. First and foremost we want to see engagement. Municipalities need to know who the waste pickers are operating in their space. Hence the registration that is critical as part of the component of the Guideline. Once you get to know who is critical, you will get to understand how much recyclables they are diverting away from your landfill,” she said.

The country has a challenge that landfills are very expensive to operate and maintain. The work that waste pickers are doing is saving the municipalities in terms of that landfill space aside from the transportation of the additional waste that could have been if waste pickers did not collect.

“Municipalities will have the added benefit of engaging these waste pickers to understand what type of support they need. They don’t necessarily have to be the ones providing the support, municipalities will act as facilitators to bring in those key government departments that will bring the necessary support for the SMMEs. Waste pickers as they stand are SMMEs, there are informal some of them. They might just need support to access certain support programmes of government, hence it is critical for municipalities to get involved and facilitate that process,” Ms Musekene concluded.

Chairperson of the South African Waste Pickers Association, Mr Simon Mbatha said this workshop is about recognising and respecting the role that is played by waste pickers within waste management. “This process for us will bring better working conditions and it will also expand the economics of waste picking. The economy of recycling and the backbone of recycling comes from waste pickers, 80 – 85% of materials that are recycled in South Africa go through the hands of waste pickers,” Mr Mbatha said.

Deputy Director-General, Mr Gordon visited landfill sites recently and experienced first-hand the work of the waste pickers. He emphasised the need to improve their conditions of work and their livelihoods, by increasing beneficiation of waste. “The waste sector already contributes 1.6% to South Africa’s gross domestic product, but it could contribute more. With waste picker integration the waste sector can contribute to the GDP of South Africa while mainstreaming and ensuring inclusive growth,” said Mr Gordon.



Above: Deputy Director-General: Chemicals and Waste Management, Mr Mark Gordon.



Above: Chairperson of the South African Waste Pickers Association, Mr Simon Mbatha.



Above: Established waste businesses offered to assist waste pickers to formalize their work.



Above: Delegates were divided into groups to discuss matters and possible solutions to the waste pickers sector.

Top Predators protect ocean life

By Benedict Mlaba

Photos by Deon Kotze and Sarikha Singh



Above: The Top Predators Team during the 2018 International Indian Ocean Expedition 2.



Above: Top Predator Production scientist Sarikha Singh helping an entangled shark of the coast of the Western Cape.



Above: Over 22 marine mammals' entanglements were recorded in 2017 alone, due to abandoned fishing gear and other debris.

Ocean life is important as it directly and indirectly impacts on human life, food security and agriculture, trade and industry.

The Department of Environment, Forestry and Fisheries' Top Predators team plays a crucial role in protecting and observing the behaviour of South Africa's oceans. The research team, which is under the Directorate: Biodiversity and coastal research is a significant support function for policy making and a custodian for ocean life.

The Top Predator team has contributed to the development of several Environmental Laws. By collecting data, they help policy makers in making informed decisions when developing and implementing policies, such as, the policy for best Practises in Marine Tourism Management, Policy for Best Practises in Fisheries, as well as, identifying and recommending Marine areas that requires protection, i.e. Marine Protected Areas (MPAs).

The team also conducts constant monitoring of these MPAs. According to Senior Production Scientist Mr Mduduzi Seakamela, the Top Predator team generates information towards better governance of the oceans.

Their research is conducted throughout the coasts of South Africa, and in the several surrounding Islands, such as Gough, Robben and Marion Island, as well as, Antarctica.

“When an area in the ocean has a flock of birds circling it, for instance, it usually means that productivity in that particular area is high.”

The research conducted by the team includes, observing the distribution and the diversity of Sea-Bird and Marine Mammals such as Whales, Sharks, Turtles, Seals, Penguins, etc. which are all regarded as Marine Top Predators.

Dr Makhado explained the importance of marine Top Predators for general livelihood. “Marine Top predators are generally good

indicators of global change, as well as, areas of high productivity, and are also used to better understand ecosystem changes”, he said.

He went on to say that, “when an area in the ocean has a flock of birds circling it, for instance, it usually means that productivity in that particular area is high. And where there is high productivity, it is where you will find many of the Marine Top Predators, such as, sharks, whales, turtles, sea birds, amongst others feasting in a harmony”, said Dr Makhado.

As custodians of ocean life, the team have responded to several calls to help stranded marine animals that are regularly entangled and even killed by abandoned fishing gear, and other marine debris. According Marine research assistant Mr Deon Kotze, animal stranding and entanglements have increased over the years. “Between 1997 and 2006, 5 whales stranded on average per annum, but this increase to 17.8 per annum during the year 2007-2017, an increase of 369%. In 2017 alone we recorded around 34 stranded and 22 entangled sea animals,” he said.



About the contributor: Benedict Mlaba

Mr Benedict Mlaba is an intern: Internal and External Communications in the Directorate: Communication Services in Cape Town. He holds a BA Communications Science Degree.

A dream destination for whale watchers

By Tshego Letshwiti

Photo by Alan Starton and AB Marine Charters

South Africa is among the best and most exciting destinations in the world to watch whales and dolphins in their natural habitat. Annual visits from southern right and humpback whales and the presence of enormous pods of dolphins all year-round, provide amazing viewing opportunities both on land and from boats. Although at least 37 species of whales and dolphins can be found in the South African waters, whale watching has traditionally focused on the migration of spectacular species such as humpback and southern right whales.

Since the 1970s, South Africa has had strict legislation in place for the conservation of whales within the Exclusive Economic Zone (EEZ) and on the high seas in the Indian and Southern Oceans. The species enjoy protection in terms of numerous national legislation (i.e. in terms of the Marine Living Resources Act, 1998 (Act No. 18 of 1998); National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004); Threatened or Protected Marine Species Regulations Government Gazette 40876 of 30 May 2017) and international conventions such as the International Convention for the Regulation of Whaling.

In an effort to support the growth of the sector and its contribution into the ocean economy; the South African government recently concluded a process which saw long-term Boat-Based Whale and Dolphin Watching permits allocated along the coast. The permits allocated are valid for a period not exceeding 10 years and renewable annually subject to performance monitoring and adherence to permit conditions and the established code of conduct.

Boat-Based Whale and Dolphin Watching in South Africa has grown significantly from an ad hoc activity to regulated commercial operations across 28 designated areas, which stretch along the coastline and sheltered

bays from Port Nolloth on the west coast to Sodwana Bay in the north east coast. Considering that this activity does not remove the natural resources from the ecosystem, it is timeously conducted without adversely influencing the population size, behaviour and migratory trends of targeted whale species.

Every year between May and December, the southern right and humpback whales can be seen along the coast from Cape Town to Sodwana Bay. In the west coast; feeding humpback whales (of approximately 20 to 200 individuals) have been observed to aggregate across a 220 nautical mile region of the southern Benguela System between October and December. During this period, both species are frequently seen rearing their calves. The inter-annual visits are predictable with the whales often coming close to shore in areas such as Hermanus, De Hoop, Plettenberg Bay, Tsitsikamma, Cape St Francis, Pondoland and Sodwana Bay. As a result, the coast is also referred to as the 'whale route' with whale festivals held annually in a number of towns. The South African coast also offers a spectacular scenery of natural pristine coastal forests, recreational fishing, birding and vulture colony experience.

Acknowledging that biodiversity has globally been identified as the cornerstone of economic growth and sustainable development; if properly supported, whale watching in South Africa, as a pioneer marine sector, can assist in contributing towards accelerating youth and Previously Disadvantaged Individual (PDI) inclusivity as well as addressing unemployment, poverty and inequality.



DEFF spreads Good Green Deeds on Easter Weekend

By Veronica Mahlaba

The DEFF embarked on a national roads petroport activations on 19 – 22 April 2019 to encourage people across South Africa to stop littering during the Easter weekend and promote Good Green Deeds. The #GoodGreenDeeds campaign is aimed at behavioural change and seeks to galvanize individuals, private sector, labour, NGO's, interfaith formations and society at large to clean South Africa.

The DEA employees & Billy Bin were situated at Engen garage in Cato Ridge, KZN, Shell Montrose in Harrismith, Free State, Shell Ultra City in Midrand and Shell Ultra City in Middleburg, Mpumalanga giving away mini refuse bags to travellers.



Above: Parents teaching their young ones the value of cleaning after yourself at Cato Ridge, KwaZulu-Natal. **Image by Anben Pillay.**



Above: Minister in the Presidency, Mr Jackson Mithembu also received mini refuse bags from DEAs Fhatu Mulaudzi at the Shell Ultra City Middleburg. **Image by Tinyiko Tshabalala.**



Above: The kids who are our future waste champions were really enjoying Good Green Deeds Billy Bin at the Shell Ultra City, Middleburg and collecting refuse bags for the road. **Image by Sibusisiwe Nxumalo.**



Above: DEAs Gabriel Dlamini passing out refuse bags in the taxi, encouraging passengers to keep the roads and communities clean at the Shell Ultra City, Midrand. **Image by Sindiswa Duma.**



Above: Motorists and travellers expressed their gratitude as they receive their refuse bags for the road at the Montrose Shell garage. **Image by Veronica Mahlaba**



Above: Motorists and travellers expressed their gratitude as they receive their refuse bags for the road at the Montrose Shell garage. **Image by Veronica Mahlaba.**

Gauteng Department of Agriculture and Rural Development and others VS Interwaste (PTY) LTD and others



This case was an appeal brought by the Gauteng Department of Agriculture and Rural Development (GDARD) against an earlier decision of the Gauteng High Court setting aside a Compliance Notice (CN) issued by an Environmental Management Inspector (EMI) for non-compliances detected at Interwaste's FG landfill site in Midrand.

At the centre of this case was condition 3.1 (h) of the Waste Management License that states that, "This WML must be renewed within a period of 4 (four) years from date of issue". Interwaste argued, inter alia, that this condition was vague and did not comply with section 51(1)(e) of the National Environmental Management: Waste Act 59 of 2008 (NEM:WA) which sets out the mandatory requirements of a WML, including the period for which the licence is issued as well as the period within which any renewal must be applied for. The High Court agreed with this contention and ordered that both the decisions to issue the CN; and reject the objection to the CN; be reviewed and set aside.

The Supreme Court of Appeal (SCA) disagreed with the High Court's interpretation of condition 3.1 (h) of the WML. Although the court accepted that this condition was "not elegantly framed", it found that the proper interpretation was that the licence is valid only for a period of 4 years; and that renewal must take place before the expiry of that period. In coming to this conclusion, the SCA stated that condition 3.1 (h)

should be interpreted in the context of section 51(1) (e) of NEM:WA, which is written in pre-emptory terms, providing a mandatory requirement for licensing authorities to include specific conditions in their WMLs. In conclusion, the SCA found that the WML, issued to Interwaste in respect of its FG landfill site, had expired on 26 November 2015, due to the effluxion of time, after which Interwaste had no statutory authority to continue operating the FG waste disposal site.

Navsa, Acting Deputy Judge President of the SCA, concluded the judgement with the following noteworthy remarks:

"When the licencing authority and officials entrusted with the management and enforcement of the provisions of NEMA and NEMWA are rightly concerned about the issues of public health and safety and environmental rights, they should be given their due. In the present case, they were fulfilling their statutory and constitutional duties. A waste disposal licence had expired or was otherwise invalid. There had been no other authorisation for the continued operation of the FG site. In light of what is set out above, the high court ought not to have granted Interwaste any relief at all and ought to have concluded that there was no purpose or profit to be gained in dealing with the question of the propriety of the compliance notice. The application by Interwaste should have been dismissed with costs, including the costs of two counsel."

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SOS - SAVE OUR SEAS!



LESS LITTER ... MORE BIODIVERSITY

ALL THE VARIETY AMONGST THE PLANTS AND ANIMALS IS CALLED THE **BIODIVERSITY** OF AN AREA. RIVERS, ESTUARIES AND THE OCEAN HAVE A LOT OF BIODIVERSITY - WHICH MEANS THERE ARE A LOT OF DIFFERENT PLANTS AND ANIMALS. **POLLUTION** - SUCH AS LITTER - KILLS PLANTS AND ANIMALS, WHICH MEANS **LESS BIODIVERSITY**.



An **estuary** is where a river empties into the sea and where the salt water from the sea mixes with the fresh water from the river.



environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Knowledge is Ncah!



ACTIVITY TITLE

YOU WILL NEED:

- A BOWL
- SOME CLEAR PLASTIC
- SOME STRING
- SELLOTAPE
- WATER
- A 500ML PLASTIC SODA BOTTLE
- SCISSORS

1 CUT THE LID AS WELL AS THE SIDE OFF THE PLASTIC BOTTLE.



2 MAKE HOLES IN THE BOTTLE AND THREAD STRINGS THROUGH THEM.



3 ATTACH THE BOTTLE TO THE BOWL SO THAT IT SLOPES TOWARDS THE OPEN END. PLACE WATER IN THE BOWL.



4 COVER THE BOWL WITH THE CLEAR PLASTIC AND ATTACH IT WITH EITHER SELLOTAPE OR STRING.



5 PLACE A SMALL STONE OVER THE OPEN SIDE OF THE BOTTLE AND PLACE IT IN A SUNNY SPOT.



WHAT'S HAPPENING HERE?

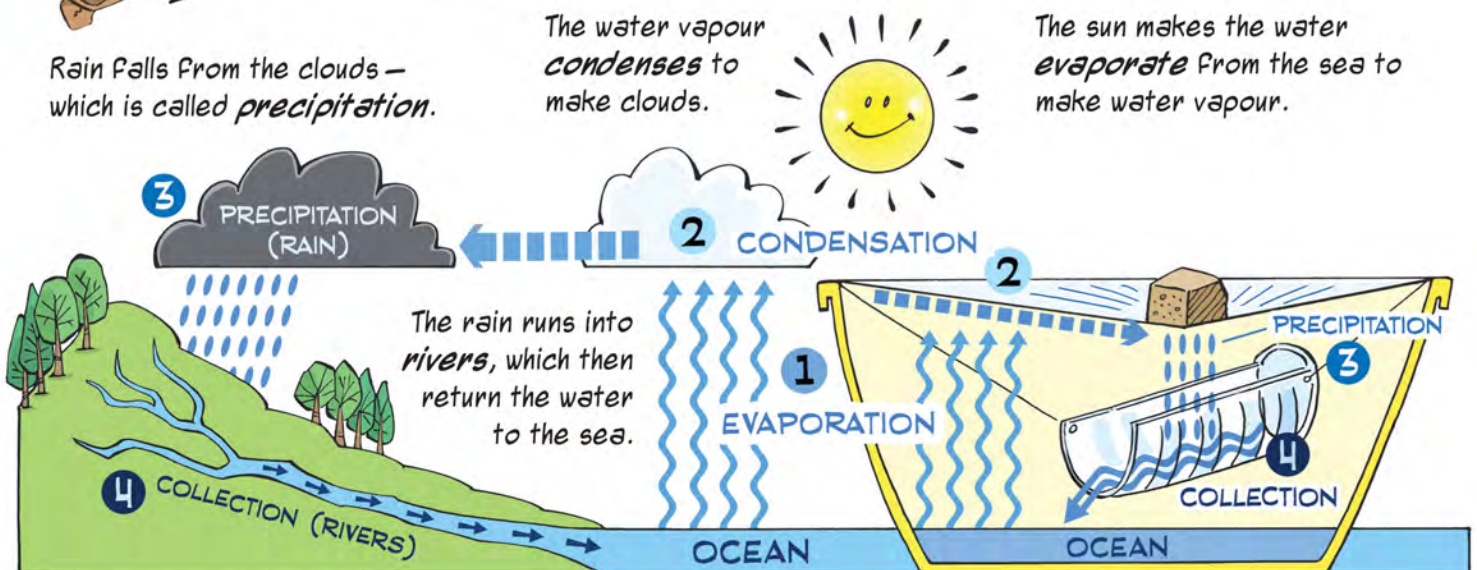


IN THE ACTIVITY YOU MADE A MODEL OF THE **WATER CYCLE**.

Rain Falls From the clouds – which is called **precipitation**.

The water vapour **condenses** to make clouds.

The sun makes the water **evaporate** from the sea to make water vapour.



The rain runs into **rivers**, which then return the water to the sea.



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