SANBI
Biodiversity for Life
South African National Biodiversity Institute

SANBI Living Catchments **NEWSLETTER**

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Project overview

The Living Catchments Project is a collaborative project that is being implemented and led by the South African National Biodiversity Institute (SANBI) in partnership with the Water Research Commission (WRC) through funding from the Department of Science and Innovation (DSI). The project was developed in response to the Water Research, Development, and Innovation Roadmap (Water RDI Roadmap), which is a national planning intervention by the WRC, DSI, and the Department of Water and Sanitation (DWS). The Water RDI Roadmap is aimed at addressing water scarcity in South Africa over a ten-year period between 2015 and 2025. The Living Catchments Project responds specifically to the RDI Roadmap's Supply Cluster 3: Improve adequacy and performance of supply infrastructure.

The project is being implemented in four unique catchments across South Africa: the uMzimvubu, Thukela, Berg–Breede and the Olifants catchments. The intention of the project is to create more resilient, better resourced and more relational communities with the ultimate vision to strengthen an enabling environment for catchment governance and the integration of built and ecological infrastructure in support of water security, economic development and livelihood improvement. The project also intends to strengthen an enabling environment for water governance at the nexus of landscapes and water supply in South Africa. The project is centred on co-learning and co-creation, through communities of practice, to enable collaboration, grow the practice of transformative social learning, and strengthen the practice of policy engagement and how biodiversity is mainstreamed into the water sector.

As part of co-learning, the project created a platform to share stories of the work happening at different catchments as newsletter stories. The newsletter has grown to include other catchments.

For further information and story submission please contact newsletter co-ordinator, Namhla Mbona, at SANBI:
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Contents

1. **Berg-Breede Catchment** 2
   i. Empowering communities for climate resilience through citizen science and climate action in Cape Winelands Biosphere 2
2. **Olifants Catchment** 3
   i. Celebrating Indigenous People's Day 3
3. **uMzimvubu Catchment** 4
   i. 40th quarterly field trip of the Umzimvubu Catchment Partnership 4
   ii. Amadiba farmers gear up for sustainable agriculture and business success 7
4. **Upper Thukela Catchment** 9
   i. Field trip for the Northern Drakensberg Collaborative 9
5. **Crocodile River (West) Catchment** 11
   i. Commemorating Mandela Day through river clean-up in Tolwane 11
6. **Vaal Catchment** 13
   i. Walter Sisulu National Botanical Garden invites WaterCan to display a citizen science water testing toolkit on World Water Monitoring Day 13
7. **uMngeni Catchment** 15
   i. Piloting the siltation management models and tools in the Welbedacht and Hazelmere Catchment 15
8. **SANBI** 18
   i. Join southern and central African countries in the Great Southern Bioblitz 18
   ii. National Arbor Week 20
   iii. Catchment Conveners' Forum 21
   iv. Tribute to Michael Malinga 22

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Kruger to Canyons Biosphere Region

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Berg-Breede Catchment

Empowering communities for climate resilience through citizen science and climate action in Cape Winelands Biosphere

By Tara Cathchart

This year's implementation of the UNESCO Be Resilient South Africa Project by the Cape Winelands Biosphere Reserve (CWBR) kicked off in January with a fun team-building picnic at Jan Marais Park, Stellenbosch together with citizen scientists. During the meeting, we reflected on the achievements and challenges faced in 2022. In addition, we identified exciting opportunities for growth and improvement in our continued involvement as community citizen scientists in 2023.

Following our exciting start to the year, we quickly moved to weekly river health monitoring at six sites along the Eerste River and its tributaries. Our dedicated teams of citizen scientists, trained in various scientific techniques, conducted tests to measure pH levels, oxygen levels, turbidity, and the presence of *E. coli.* Additionally, we analysed macro-invertebrates through miniSASS analyses. MiniSASS (Stream Assessment Scoring System) is the simplified version of the SASS5 scoring system. The simplified tool is used to monitor the health of a river and measure the general quality of the water in that river. It uses the make-up of macroinvertebrates (small animals) living in rivers and is based on the sensitivity of the various animals to water quality. This comprehensive approach has given us a better understanding of the river's health and the factors that affect it. Importantly, we are sharing this newfound knowledge with our communities.

E. coli stands for *Escherichia coli*, a type of bacteria commonly found in the gut of humans and warm-blooded animals. *E. coli* in water is a strong indicator of sewage or animal waste contamination. Sewage and animal waste can contain many types of disease-causing organisms.

As we compare the results of our monitoring efforts, we are developing a holistic understanding of the river's journey from its source to the sea. This newfound perspective has profoundly influenced our relationship with the river that flows through our communities.

> *"I have gained so much through this project. I had never heard of citizen science before, but now I can confidently talk about it."*

> *"I love being part of this project. It allows me to learn and experience more, and to embrace the beauty of nature. Many of us have noticed that as our knowledge and understanding expand, so does our self-confidence."*

> *"I have benefited in so many ways from this project. It not only taught me how to be a citizen scientist but also how to be true to myself."*

Inspired by these experiences, one of our youth participants has initiated the development of business plans centred around recycling, food security, and reusable/washable nappies. Moreover, our partnership with Stellenbosch University opens doors for involvement in more formal data collection and research projects

Cape Winelands Biosphere Reserve citizen scientists identifying macro-invertebrates.

Cape Winelands Biosphere Reserve citizen scientists measuring the clarity of water using a turbidity tube.

this year. It may even pave the way for enrolment of our citizen scientists in higher learning institutions. These opportunities have not only fostered personal growth but also provided avenues for economic and social development for each of us involved in the Be Resilient South Africa project, including two citizen scientists that secured employment since the project began, and as a result, new members have joined the team.

In addition to our youth-focused initiatives, the CWBR team has been diligently working on Step II of the Climate Risk Informed Decision Analysis (CRIDA) process. This involves engaging with experts, stakeholders, and communities along the Eerste River and its tributaries. We have also conducted a comprehensive study to explore potential adaptation options for the Eerste River catchment. Throughout this process, we held seven engagements and listened to the valuable input of 157 community members. We were thrilled to witness the motivation and enthusiasm within these communities as they brainstormed solutions and discussed the support required for their implementation. Recurring suggestions included recycling projects, rainwater harvesting systems for food gardens, and community-wide education campaigns on responsible water use, fire prevention, and littering.

The Be Resilient South Africa project is fostering a newfound interest, awareness, and understanding of climate change within communities.

Olifants Catchment

Celebrating Indigenous People's Day

By Dimakatso Nonyane

The Kruger to Canyons (K2C) Biosphere celebrated Indigenous People's Day on the 6th of September 2023 with an event at the Rhino Convention Centre with special guests, the local indigenous people themselves.

Indigenous communities possess invaluable traditional knowledge, cultural practices, and a deep connection to their lands. Most of this knowledge, however, is unknown to the youth who may need such information to help adapt to the changing environment in the future.

As we celebrate the theme "Indigenous Youth as Agents of Change for Self-Determination" in the year 2023 this really highlighted the importance of the work done by the youth who have been actively involved in the K2C Be-Resilient Indigenous Knowledge Systems (IKS) data collection project for climate risk adaptation.

Young individuals play a crucial role in preserving their heritage and leading efforts towards self-determination and climate resilience. This celebration presented a unique opportunity to showcase the resilience and contributions of indigenous communities. The presence of our Traditional Authorities, and participants who shared their indigenous knowledge, were the highlights of the day.

Attendees of the Indigenous People's Day celebration on 6 September 2023.

Acknowledgements to United Nations Educational, Scientific and Cultural Organisation (UNESCO) for making this event possible; Department of Forestry, Fisheries and the Environment for giving feedback on the White Paper; South African National Parks (SANParks) for the donation of Pepper-Bark trees and to everyone who made the event a success.

uMzimvubu Catchment

40th quarterly field trip of the Umzimvubu Catchment Partnership

By Megan Deckford

Members embarked on a six-hour hike in the Drakensberg mountains.

In honour of closing off this year's quarterly meetings of the uMzimvubu Catchment Partnership (UCP), for our 40th encounter, we embarked on a journey that pushed us all to the limit. In mid-September this year, the UCP partners gathered at Madlangala in the southern Drakensberg foothills in an effort to introduce ecotourism into our spaces. Ecotourism, by definition, is 'the responsible travel to natural areas that conserves the environment, sustains the well–being of the local people, and involves interpretation and education' (TIES, 2015). Embodied in that definition are the theoretical elements of ecotourism, which encompasses the 4C's – Conservation, Community, Culture, and Commerce. With it being our first ecotourism trip we found it important to include experiences that will enrich the appreciation for nature while also creating personal memories for individuals through exploring traditional activities in homesteads.

We started the six-hour round hike with a very steep incline which challenged us all, having some people even climb up on their knees. Once at the top of the mountain, we were able to see our national flower, the protea, and what harmful effects wildfires have on preserving our landscapes and their biodiversity. We also identified the threats to ecotourism, and one of them was invasive alien plants (wattle) infestation that has become a huge challenge to biodiversity and to livelihoods. Also, waste (disposable nappies) is part of the threats that are imposed on the landscape.

A Protea tree damaged by wildfires.

Learning about traditional medicinal plants.

The implementation of rangeland management is an opening for opportunities for eco-tourism. Linking rangeland management to ecotourism will result in improvement of rural livelihoods and developing the local economy.

Thabatani Tshaka from Tshaka Tours kept us up to speed with the different types of birds and traditional medicinal plants we saw. At the very top of the mountain, we entered a cave 'Iliwa la bantu' where the war within the village occurred nearly a century ago, the tour guides of the village narrated a story of how the blood from the wars used to flow downstream and they also managed to show us the imprints of bullet holes. Later that hike we made it to a cave of rock paintings where they analysed and narrated the stories told within those drawings. Exploring the attractions within the community restores the dignity of the people in that community.

Finally, once down the mountain, we proceeded to engage in cultural and community-based activities where we were welcomed into a 94-year-old man's homestead. He told us

ILiwa la bantu cave.

uMzimvubu Catchment Partnerships members with local tour guides.

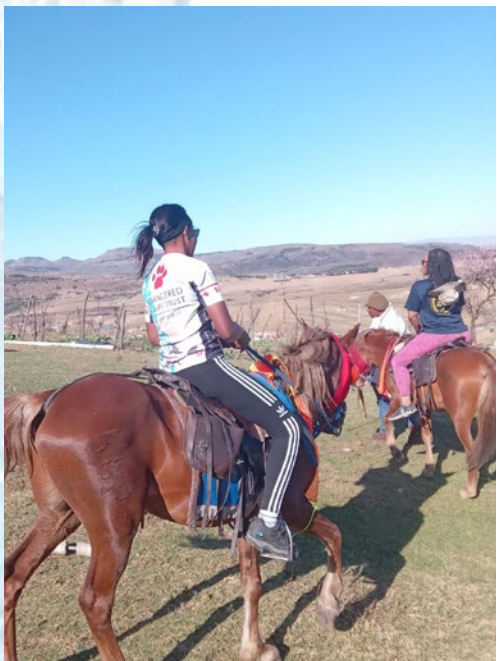
A traditional dish cabinet in a local homestay.

stories of the 1940s and invited us to try traditional foods such as umgqusho, inkobe, and ingqondi. We concluded the day by looking at the possible commercial links to ecotourism in the Madlangala community, we sang and danced and some of us rode horses for the first time.

September is the most valued month across the country especially in Matatiele because it reminds people about their roots and cultural traditions. The 40th UCP field trip was one enriched with great knowledge and brought many people back to their roots. We look forward to exploring the possibility of ecotourism and creating a love for nature among everyone.

The hike created a safe learning space, building relationship and collaboration for stakeholders especially

Horse riding in Madlangala community.



the merging of scientific knowledge together with indigenous knowledge. The partnership of WWF SA and Environmental and Rural Solutions on this ecotourism project is the beginning of restoration of better rural livelihoods to restore landscapes by providing capacity building.

Amadiba farmers gear up for sustainable agriculture and business success

By Mxolisi Ngongoma

The Amadiba people of the Eastern Cape are one of the few communities in South Africa that managed to resist colonial and apartheid land dispossession. For this reason, their attachment to land is very deep and many Amadiba residents continue to practice traditional methods of agriculture. Young people in Amadiba are now building on their deep foundation of traditional knowledge with training in agroecology and permaculture.

Agroecology and permaculture are two approaches to agriculture that focus on working with nature to create sustainable and resilient food systems. Both agroecology and permaculture can help farmers to produce food in a way that is environmentally friendly and economically viable. The Siyazisiza Trust is a non-profit rural development organisation in Mtunzini, KwaZulu-Natal. It works with smallholder community farmers and agricultural enterprises in South Africa to improve rural livelihoods and levels of food security with farming methods that are environmentally sustainable. Their training programme is focusing on enabling young people to learn the best, most affordable ways to farm. Such agricultural methodologies are more relevant to the people of Amadiba because of their struggles to protect their land. This training promotes sustainable use of the land, protecting the integrity of ecosystems and the provision of ecosystem goods and services. Good farming techniques ensures delivery of clean water in streams, clean air, and soil, as well as healthy food products. Working with the environment ensures farming that stabilises the soil and prevents erosion. All of these are vital for human and ecosystem well-being. Biodiversity also contributes significantly to rural livelihoods through pollination.

Young farmer training at Siyazisiza Training Centre

In the last six months (May to September 2023) sixty farmers from KwaMadiba villages (Mtolani, Mdatya, Bhekela, Gobodweni, Phandulwazi, Nyavini and Mpindweni) have attended two week-long training courses at the Siyazisiza Training Centre in Mtunzini. The training is aimed at encouraging people to increase the food sovereignty and well-being of their households and communities by learning to grow nutritious food for their own family's consumption and to share and trade surplus locally. This training clearly demonstrated how permaculture site design makes use of site resources to lower input costs and avoid the damage that is caused to humans and the environment using expensive and harmful inputs such as chemical fertilizers, herbicides and pesticides.

One of the young farmers participating in the training, Vuyokazi Nzimakhwe from Mtolani village is very interested in the production of healthy food for her home and community:

> *"The training helped me to discover many ways to use the land to produce healthy crops for our livelihoods and to support the many ecosystems around us. I learned about composting and how it can retain nitrogen and phosphorus in the soil. And it costs nothing. I discovered that making a swale helps to reduce and delay stormwater run-off and costs nothing. I will continue to produce vegetables, sweet potatoes, and yams, but I will now add the knowledge gained from the training."*

Another participant in the training, Mzwandile Hagile from Gobodweni village says that one of the things he took from training is being unapologetic about farming without disturbing natural ecosystems.

> *"I gained a lot of information and inspiration in phase one of the programme which focused on food sover-*

Amadiba young farmers at Siyazisiza Training Centre in Mthunzini learning about permaculture techniques.

Amadiba young farmers posing for a picture at Siyazisiza Training Centre.

Farmers learning about harvesting methods.

eignty. Part of what I took from the training is being unapologetic about farming without disturbing the ecosystem. I have discovered different ways to save water on the ground for a very long time and those are swales and mulching. There is a lot that I am taking home from this training, and I am going to apply all of it."

Nolufefe Mqanana appreciated the emphasis on growing healthy organic food:

"The training made me realise that people get sick because they buy food that is not healthy. I plan to make a difference in my community by planting different varieties of vegetables and selling them to local people. However, I will only produce organic produce as I have been doing, and supply some to local spaza shops to reach a wide range of customers, including those who do not reside in my village. This will help to reduce illnesses that are caused by the food we buy in town."

The Siyazisiza training does not just focus on food production, it also focuses on knowledge needed to run agribusinesses. Topics included:

- Distribution and consumption of food
- Sustainable and resilient food supply chains
- Marketing principles
- Financial management
- Communication skills

The training gave learners valuable knowledge needed to establish successful and sustainable agricultural enterprises which can enable them to make money to sustain themselves and their communities. They are ready to expand their farming activities and ensure that they produce quality products for the benefit of their communities and South Africa's economy.

Quotes from young farmers

"The training was very important to me as I discovered the importance of budgeting before starting a business. Doing research into the potential business that I wish to start is very key in making sure that success will be achieved." – Sinowethu Mlobothi, Maqongwane village.

"The agri-enterprise training made me discover the importance of packaging when selling garden produce. Clean and attractively packaged products attract good customers." – Nompumelelo Fana, Nyavini village.

The Amadiba trainees have received their certificates of participation and completion of training, and we are now awaiting the selection of these trainees to participate in specialisation training such as poultry production, nursery management or advanced crop production. The selection of these 24 trainees is being made through a process of visiting the gardens of all the young farmers, and evaluating who has best applied the knowledge gained in the first phase of training.

Farmers wearing their hairnets and aprons while handling crops.

Two of the 60 farmers who received certificates.

Health, nutrition and home agro-processing training in Amadiba

Siyazisiza also ran a four-day training for 30 residents, young and old, in Mtolani Village, Amadiba focussing on health, nutrition, and simple agro-processing using home grown produce. The training was led by experienced facilitators from the Siyazisiza Trust, and it covered a wide range of topics, including:

- The importance of a healthy diet
- How to grow and prepare nutritious food
- How to process food in a safe and sustainable way
- How to market and sell processed food products

The training was well-received by the participants, who learned valuable skills that will help them to improve their health and nutrition, and to generate income for their families and businesses. The participants were given time to cook and pickle vegetables such as onions and beetroot, and to make tomato sauce from their organic home-grown tomatoes. Tasty new dishes using familiar vegetables such as traditional crops of sweet potatoes and amadumbe, and less familiar ones such as eggplant and kale. Everyone loved the eggplant burgers!

Siyazisiza Trust is doing great work in training young people how to create and manage thriving businesses in agriculture. There are many challenges ahead for the agricultural sector but if young people are offered education in agriculture, a voice at policy level, and in the media, and are engaged with innovations, then the agriculture industry can attract youth again. By empowering young people to become farmers, the Siyazisiza Trust is helping to create a better future for everyone.

Upper Thukela Catchment

Field trip for the Northern Drakensberg Collaborative

By Brigid Letty

Through the SANBI-funded Living Catchments Project, a multi-stakeholder partnership was initiated in the upper uThukela Catchment in 2021. Building on this, WWF-SA has supported the strengthening and expansion of the partnership to include other stakeholders within the Northern Drakensberg Strategic Water Source Area (SWSA). This partnership is now known as the Northern Drakensberg Collaborative (NDC). Over the last two years, face-to-face and online meetings of partners have taken place and have allowed for sharing of experiences as well as discussions around the vision and functioning of the partnership. After the last workshop that took

Visit to the spring-based water supply system.

place at Alpine Heath in August 2023, the conveners felt that there would be value in arranging a field trip to Stulwane community outside Winterton, to allow for some learning and reflection around real-life cases of spring protection, community action, climate smart agriculture and environmental rehabilitation. One of the intended outcomes of the field trip was to take the partnership forward towards establishing themes of communities of practice that have more focused interactions.

On 27 September 2023, a group of about 45 people met at the community hall in Emmaus. The group comprised farmers supported by Mahlathini Development Foundation, staff from Ezemvelo, Maluti-Drakensberg Transfrontier programme, the Expanded Freshwater and Terrestrial Environmental Observation Network (EFTEON), Institute of Natural Resources (INR), Endangered Wildlife Trust (EWT), African Conservation Trust (ACT), Agricultural Research Council (ARC), WILDTRUST, members of clearing and restoration teams working with WILDTRUST and INR, and a representative of the local No-till Club – who is a local commercial farmer. The event was hosted by Mahlathini, which is the main organisation working with the Stulwane community. A presentation was made by Temakholo Mathebula, a Project Officer with Mahlathini, to provide context for the field visit. The participants then travelled through to Stulwane, where community members, supported by Mahlathini staff, explained their activities to visitors.

Mrs. Nelisiwe Msele explained the process that has been taken to protect springs and improve access to water for households, which is currently being expanded to include additional households. This process is led by the locally elected water committee and is community driven, managed and owned. Ms. Lizzy Dlamini, a young eco-champ from the village, explained the nature of the restoration activities and how some of the interventions have been taken forward through community action that is undertaken on a voluntary basis. Back at the home of Mrs. Msele, where lunch was served, there

Lungelo Buthelezi explains about the climate smart food security system.

Valuable informal exchange took place over lunch.

was opportunity for more discussion as well as a demonstration of some of the agricultural technologies being promoted by Mahlathini, such as the two-row minimum tillage planter, the agro-ecological and water conservation practices and the micro-tunnels for intensive vegetable production. We look forward to future activities of this nature, which allow for effective multi-stakeholder engagement and learning. We would like to inform members of the partnership and broader catchment communities of the death of Michael Malinga since the event. Malinga had worked in the catchment with Mahlathini for some years, was central in facilitating and supporting the development of the partnership process and had recently taken up a position with EFTEON.

Crocodile River (West) Catchment

Commemorating Mandela Day through river clean-up in Tolwane

By Lucy Ngubeni

The South African National Biodiversity Institute (SANBI) participated in a river clean-up in Tolwane River. The Tolwane River catchment is located in Winterveldt, Gauteng. The site is surrounded by a newly established informal settlement with a cemetery in the vicinity. The settlement does not receive solid waste services from the municipality, and experiences water supply challenges. The residents mainly collect water from the stream for their domestic use. Furthermore, the stream is used for ritual purposes, livestock drinking, and as a dumping site for general waste (mostly nappies and plastic bags).

On Mandela Day the Department of Water and Sanitation (DWS) organised a river-cleanup campaign, to celebrate Mandela Day and teach the surrounding community about their impact on the environment. This initiative was a part of the Global Environmental Facility-funded project that aims to strengthen capacity for management

River clean-up at Tolwane.

Invertebrates collected through MiniSass

of invasive alien species in South Africa to enhance sustainable biodiversity conservation and livelihoods improvement. Members of the community came together to clean, pick-up litter, learn about citizen science, and celebrate Mandela Day.

Through the project, DWS also demonstrated citizen science tools to members of the community. This was done in order to raise awareness about the impact that citizens have on their environment. While the stream biodiversity is disturbed by anthropogenic impacts, there is an abundance of macro-invertebrates, and indigenous wetland plant species worth protecting before they completely disappear as the negative impacts on the stream increases. The biota recorded instream using citizen science monitoring includes minnow mayflies, crabs, damselflies, dragonflies, snails, and true flies.

Namhla Mbona teaching species identification using MiniSASS.

Tolwane River.

This site accommodates a high diversity of macro-invertebrates that require protection from the negative impacts occurring on the site. The team also assessed the state of the wetland surrounding the area using the wetland assessment tool. Aquatic vegetation found on the site includes diverse species of wetland plants such as *Cyperaceae*, *Typha capensis*, and *Phragmities australis*.

These species are of high importance as they offer a means of protection against moisture loss during droughts and protect the riparian zone from soil erosion. Furthermore, they provide shelter and nesting opportunities for numerous bird species. Despite the presence of native species, it is worth noting that a diversity of invasive alien species is present on the site.

Vaal Catchment

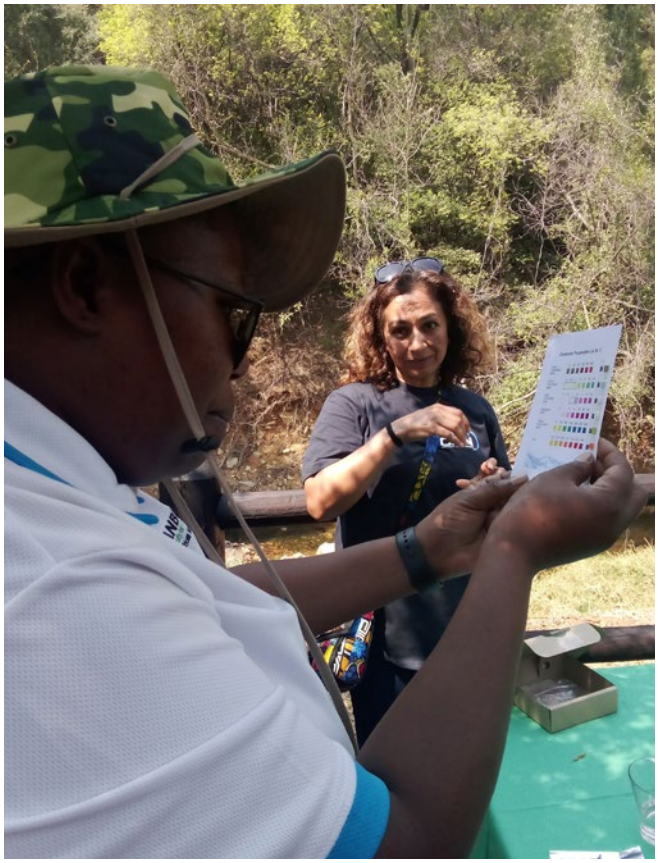
Walter Sisulu National Botanical Garden invites WaterCan to display a citizen science water testing toolkit on World Water Monitoring Day

By Serole Angela Chokoe

On the 19th of September 2023, WaterCan launched Water Testing Week, setting the stage for an essential environmental campaign amidst the serene beauty of the Witportie Waterfall at Walter Sisulu Botanical Gardens. The waterfall is active all year, and the stream (Crocodile River) feeds into Hartbeespoort Dam. The setting echoed the urgency of addressing water pollution and its impact on communities. The ideal setting was to underscore the importance of biodiversity preservation, the urgency of addressing environmental threats, and the critical interplay between biodiversity and water quality.

Dr. Ferrial Adam, Executive Manager of WaterCAN, underlined the importance of water testing as the first

Dr. Ferrial Adam conducting water testing with a sample of water from the Crocodile River.



Analysing the chemical parameters chart.

step in holding those responsible for water pollution accountable. She did, however, emphasise that the efforts should not stop there. Instead, the findings must be disseminated, more people must be mobilised, and a broad water protection movement must be launched.

The event shed light on the critical state of water quality, emphasising its profound influence on the health and well-being of communities nationwide. Water Testing Week aimed to empower citizens to embrace the role of stewards for their local water sources. By actively participating in this initiative, individuals gained a deeper comprehension of their surroundings and contributed to the overarching efforts dedicated to ensuring clean and safe water for all. It highlighted the importance of citizen science tools in this initiative. Through the use of these tools, committed supporters aimed to gain a comprehensive overview of the quality of water throughout the country. The significance of understanding the entire scope of the issue is to prevent the deterioration of South Africa's precious water resources and ensure their long-term sustainability.

WaterCan Water testing Toolkit.

The South African National Biodiversity Institute (SANBI) played an important role in the proceedings, underlining the importance of water quality and biodiversity conservation. SANBI's participation emphasised the crucial need to maintain ecological balance in the context of water management. The conversations focused on the need to preserve and protect the different ecosystems that rely on clean water, emphasising the critical role that each individual plays in protecting the region's natural heritage.

The primary objectives of Water Testing Week were to raise awareness about the implications of water pollution, encourage active community involvement, and facilitate a comprehensive understanding of water quality issues. By fostering a sense of collective responsibility and encouraging collaborative efforts, the event exemplified

the spirit of co-operation and shared commitment to preserving the country's invaluable water resources.

Overall, the launch of Water Testing Week at the Walter Sisulu Botanical Gardens served as a reminder of the need for co-ordinated efforts to protect and preserve South Africa's water resources, emphasising the importance of collective action and community involvement to ensure a sustainable and thriving environment for all. Through this concerted effort, WaterCAN and SANBI demonstrated their dedication to fostering sustainable practices and promoting a holistic approach to environmental management, ensuring the protection of South Africa's precious water resources for generations to come.

uMngeni Catchment

Piloting the siltation management models and tools in the Welbedacht and Hazelmere Catchment

By Nomaswazi Nhlabthi and Nonjabulo Tshabalala

Soil erosion and subsequent siltation of water infrastructure pose a threat to our sustainable use of soil and water resources. This threat is more serious in a largely semi-arid country, such as South Africa, where high soil erosion rates are inevitable. To address this issue, the Department of Water and Sanitation (DWS) through the Water Research Commission (WRC), has initiated a programme to target the source and impact of the problem.

The National Dam Siltation Management Programme has developed a draft strategy with tools and models, protocols and guidelines that guide and ensure effective siltation management. The strategy also contributes to improved soil conservation and approaches to stimulate local economies and improve cost recovery through the selection of appropriate siltation management methodologies for dams.

The project will apply the tactical approaches and techniques that had been developed by Phase 1 of the NatSilt Programme, as well as other siltation management interventions, to two contrasting catchments, the Hazelmere catchment on the eastern seaboard in KwaZulu-Natal and the Welbedacht Dam in the Free State. The project is a move towards a systemic approach to Integrated Water Resource Management as we will target the challenge from a socio-ecological systems perspective.

The project has also considered the communities and their dynamics in the two catchment areas that are

Contour brush-packs from the use of invasive alien plants.

The use of sandbags as one of the erosion control measures in our Hazelmere sites.

Community outreach initiative on the importance of replanting trees for climate change resilience as part of Arbor week celebrations, conducted in Clarens.

earmarked for the application or testing of the effectiveness of the techniques and tactics. Firstly, we consider the effectiveness relating to the environmental impact of erosion and siltation mitigation on the ecosystem itself, and secondly, on the livelihoods of the targeted communities. The project will also consider possibilities on how to equip the communities to be climate change resilient and contribute more towards better management of the respective catchments and dams. In the context of the Hazelmere catchment, floods have recently affected the catchment and appear to be more frequent.

The aims of the project are to:

- Test implementation of tools in catchment rehabilitation, and recommend refinements for the rehabilitation of ecosystems
- Implement practical interventions to stabilise and monitor riverbanks
- Contribute to the protection of biodiversity
- Contribute to the reduction of siltation in the Hazelmere Dam and Welbedacht Dam catchment areas
- Contribute to the restoration and conservation of the agricultural production potential of the soil

Contour brush packs from the use of Popler invasive alien plants in Clarens.

Stone-packing as an erosion control method to slow and divert water flow.

Growing grass-plugs initiative by one of the local community members, that will be sold back to the project for rehabilitation and restoration work.

- Contribute to the improvement of the livelihoods of the local communities

The current interventions of the project include:

1. Land restoration and erosion control measures: The erosion control measures are contour based and involve the establishment of brush-packs. Brush (smaller branches and leaves) from invasive alien plants is secured between a series of pegs along a contour in denuded and eroded areas. Contours are a fundamental requirement for restoration – they are very effective in slowing runoff speed and spreading sediment laterally along the contour. The drainage lines fill up first and then sediment is pushed laterally along the contour line with subsequent rainfall events. The brush-packs are the first lines of physical defence and last for 2-3 years before breaking down (also contributing to soil health by adding important nutrients and carbon into the soil through this process). The role of the brush-packs is to capture sediment in the short term which provides a substrate for other plants to grow. Trees will be planted close together along contours directly behind the brush-packs and will form a 'living hedge against erosion' and effectively take over the role of the brush-pack. The final element in this restoration process is the planting of indigenous grass seed mixes in the denuded areas.

Capacity development on the use of citizen science tools for water monitoring.

2. Community and school awareness and development: The graduates along with the local enviro-champs participate in door-to-door surveys within their local communities to capture local knowledge and their perceptions of their environment. This allows the exchange and co-learning between the project of the various environmental issues that could have detrimental effects on the livelihoods.

3. Sustainable livelihood initiatives: As part of the project, and how to advocate sustainable livelihoods and how local communities can derive benefits from landscape management, a local community member was given seedling grass mixes to grow them as grass-plugs. The project will then purchase back the grass plug at a market price to use them for rehabilitation and restoration work in our sites (revegetation of the grass-plugs and replanting of vetiver plants).

What needs to be done going forward?

The next steps are revegetation of the grass plugs and grass seeds where brush-packs are currently implemented and within household yards where issues of soil erosion

are occurring. The local team will continuously engage with the community through door-to-door surveys; school environmental education on various environmental issues, and maintain the rehabilitation sites. There will also be more community workshops as part of project updates and local land user inputs.

Local teams demonstrating the use of the tools to local community members.

SANBI

Join southern and central African countries in the Great Southern Bioblitz

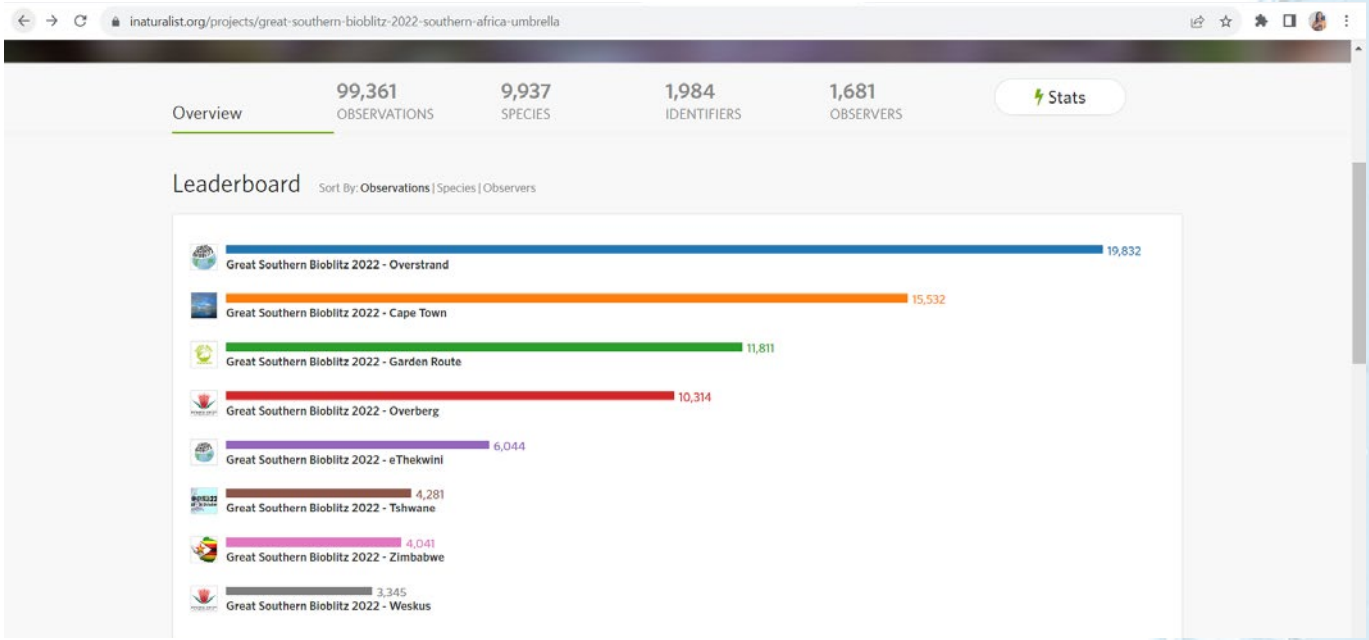
By Namhla Mbona and Lucy Ngubeni

The 'Great Southern BioBlitz', or 'GSB' for short, is an international period of intense biological surveying in an attempt to record all the living species across the Southern Hemisphere in Spring. The purpose of the event is to highlight both the immense biodiversity spread across the Southern Hemisphere in the flourishing springtime, as well as to engage the greater public in science and nature learning. It is a BioBlitz-style competition where cities around the world are in a contest against each other to see who can make the most observations of biodiversity, who can find the most diverse species, and who can engage the most people. GSB23 will be held from 24th of November until the end of 27th of November 2023, incorporating different communities, areas and regions across the Southern Hemisphere.

Through participating in the GSB, we hope to create extensive community awareness of local biodiversity and promote further exploration of local environments. We join as citizen scientists to bring effort to record as many species within a designated location and time period as possible. This is a great platform for naturalists, scientists and curious members of the public to meet in person in the great outdoors and have fun. As a result, allowing citizen scientists to participate in research procedures can increase discovery opportunities that would otherwise be impossible. These datasets are used to gain a better understanding of biodiversity, including monitoring population trends, influencing conservation priorities and land-use decision making.

In 2020 across the Southern Hemisphere the first GSB attracted over 3 000 participants in 157 local areas across 12 countries over 3 continents. More than 91 000 observations of species were uploaded of more than 12 000 species. The second GSB in 2021 attracted 5 789 observers in more than 180 local areas across 19 countries

Participating cities for GSB2023.



Results of 2022 GSB.

over 3 continents. In 2022 the third Great Southern Bioblitz, attracted 99 361 observers across 10 countries in Southern and Central Africa. #GSB23, is shaping up to be bigger and better than before as places such as the eSwatini and uMzimvubu expected to join the list of participating areas and countries.

The African countries and areas that will be participating are as follows: Maputo; Northern Botswana; Botswana Central; Botswana South; Central Namib; Gaborone & SE; Kenya; Maganizo Nomoto, Zomba, Malawi; Rwanda; Zambia and Zimbabwe. The South African cities that will be participating this year are as follows: uMzimvubu Watershed; Bloemfontein; Cape Town; Garden Route; Joburg; KZN South Coast; Limpopo; Lowveld; Nelson Mandela Bay; Overberg; Overstrand; Pietermaritzburg; Potchefstroom; Tshwane; Weskus; eThekwini and iLembe.

SANBI's citizen science team and other partners will be participating in the GSB representing the different cities within the country. The organisers of each participating area may specify one or more local government areas as the observation parameters if they so choose. Anyone can organise an area, including the local council, youth organisations, environmental organisations, Landcare groups, "Friends of" organisations, etc. The GSB actively encourages community collaboration and participation. Everyone is encouraged to participate. It's as easy as following these three steps.

1. Download the iNaturalist application to your device, create an account, and get familiar with the app in your backyard or local area.
2. Join the GSB2023 project page on iNaturalist: https://www.inaturalist.org/projects/great-southern-bioblitz-2023-southern-africa-umbrella
3. Record observations of nature on these dates.

National Arbor Week

By Ntswaki Mokheledi and Dipuo Nxumalo

South Africa celebrates Arbor Week in the first week of September annually. The Department of Forestry, Fisheries and the Environment (DFFE), as the custodian of forestry in South Africa, is responsible for the campaign. National Arbor Week is an opportune time to call on all South Africans to plant indigenous trees as a practical and symbolic gesture of sustainable environmental management. It affords the government, the private sector, non-governmental and community-based organisations and the public a chance to be involved in "greening" their communities. Planting trees and greening human settlements takes place in communities. Greening in the South African context takes place in towns, townships and informal settlements specifically because in the past the latter areas were disadvantaged in terms of planning for parks as well as tree planting in streets and open spaces (DFFE, 2023).

On the 13th of September 2023, SANBI's Biodiversity Education and Public Engagement (BEPE) in partnership with DFFE, hosted Grade 7 learners from KwaZulu-Natal Phalane Primary School for Arbor Month celebrations. The learners were welcomed and introduced to SANBI and what it is that SANBI deals with. The team took learners for a Biodiversity Learning Programme that educated the learners about diversity and evolution of plants, and plant-pollinator relationships. After the learning programme, the learners were taken to do a planting activity with the garden horticulturists, where they taught the learners about the importance of trees in the environment, what is needed for plants growth and demonstrated how to plant *Sclerocarya birrea* (Marula tree). The learners were given Marula seeds to plant inside the planting pots provided and they also watered the seeds.

Learners from Phalane Primary School for Arbor Month celebration.

Ntswaki Mokheledi teaching learners about diversity and evolution of plants.

Catchment Conveners' Forum

By Uyanda Zembe

The 1st Catchment Conveners' Forum under the newly re-envisioned living catchments movement was held in October 2023 in Muldersdrift, Gauteng. Five catchment partnerships were present at the forum: Greater uMngeni, uThukela, Berg-Breede, Olifants and uMzimvubu. These were represented by organisations that act as convenors in their respective catchments, including Kruger to Canyons Biosphere, Institute of Natural Resources, Environmental and Rural Solutions, Duzi-Umngeni Conservation Trust and Liberty NPO.

The forum was also attended by representatives from the Department of Forestry, Fisheries and the Environment (DFFE), South African National Biodiversity Institute (SANBI) and Department of Agriculture, Land Reform and Rural Development (DALRRD) whose work at a national level has strong linkages with work in catchments. SANBI is the facilitator and convenor of the forum.

The living catchments movement is an initiative that arose from the Living Catchments Project, which was

Attendees of the Catchment Conveners' Forum.

implemented by SANBI between 2020 and 2023 under the Water Research Commission. The movement responds to the challenges of collaborative water governance in South Africa. It involves key role-players that include, but are not limited to, local, provincial, and national government, farmers, water sector agencies, non-government organisations, and research institutions. It prioritises stakeholder and community engagement and mobilisation through citizen science.

The forum kicked off with discussions around key issues that the catchments are currently experiencing. Some of the emerging themes that were raised by participants included:

- Partnerships are not easy, but together stakeholders have to make the effort to understand the work that is required and be aware of potential hindrances within institutions.
- Partnerships require nurturing of new and existing relationships to progress into active collaborations, with objectives that are shared collectively.
- There are similarities and differences between catchments that reflect the unique context of the catchments.

Participants discussed how important it is to provide meaningful, sustainable economic opportunities for communities, while at the same time not creating dependency and vulnerability. A factor that kept being raised was that local economic development training should bring long-term community involvement that will be sustainable and therefore ensure longevity. One way of creating longevity is through green jobs. These need to be steered by conveners who have the right expertise to build these relationships with communities.

Another barrier that was identified was the ability to integrate collaborative learning (such as citizen science) within communities, while taking into consideration demographics and psychographics of each catchment community. Projects need to incorporate and integrate indigenous knowledge, engage with the youth and community leaders to ensure they address community needs. The process must be about genuine information exchange and not knowledge extraction.

Participants also discussed the processes of convening. It was noted that a good approach towards convening is the simple "5W and 1H" – which signifies the questions to be asked. To ensure that targets are achieved, it is important to ask who is responsible for what, where, when, why and how. Used in that order it makes executing projects much easier for project conveners.

On a personal level as the administrator the Catchment Conveners' Forum, the event reiterated the co-ordination and organisational skills that are needed to bring people together. An administrator as part of the planning team opens the lines of communication and improves productivity. They also are able to handle the logistical issues, so that participants can concentrate on the discussions.

I took home many lessons from this forum and found it empowering to participate in the discussions, because catchment issues are things that we can all relate to and we all have a story to share that connects us to the environment and to each other. I also learned the importance of forming collaborations, partnership, value of communities and creation of sustainable small business opportunities. Convening is about making sure that the space for these discussions is comfortable.

Tribute to Michael Malinga

SANBI would like to convey our heartfelt and deepest condolences to the Malinga family and friends as we learnt about his passing recently. He was a member of the catchment conveners of the SANBI Living Landscapes Project in partnership with the INR and UKZN as a representative of Mahlathini Development Foundation for the Thukela catchment.

Michael Malinga.