Bush Babies Environmental Education Program

Term 1 Quarterly Report by Lewyn Maefala – Project Manager

What an honour to write this report, 2020 came with the Covid 19 pandemic which left many of us uncertain and we remained hopeful, only to find ourselves healthy and strong in the New Year and we are blessed to have you read through what we have achieved in this term.

Figure 1: Team building camp set up at Ekuthuleni camp

We started the 2021 academic year with a team building camp at Ekuthuleni farm (Hoedspruit) where the team planned the themes and activities for the schools and the scouts program. The team also worked on the lesson plans aligned with the environmental calendar and school curriculum.The team also looked at the types of methods used on the Balule Nature reserve and Ekuthuleni to eradicate the alien plant vegetation that grows within the landscape, Andy from Transfrontier Africa shared his knowledge with the EMs and taught them how to identify

Figure 2 EMs learning about the prickly pear with Andy at Ekuthuleni

certain alien plant species found and which method is applicable in the eradiation and management method.

We also learnt about the grasses that grow in the landscape with lodge owner and head of research Paul Allin from Transfrontier Africa who introduced the team to grasses in great detail, ensuring that the team were able to correctly label a grass specimen from its roots to the inflorescences refer to figure 4, and were tasked to look for ten different grass species which has to be correctly identified using grass books for referencing see figure 3.

Figure 3 Macdonald trying to identify the grass

Figure 4 Maggy and Portia looking at the grass with the binoculars

The team also participated in bush walks within the area learning about the different plant species found especially surrounding the river and in the riverbed, whilst looking for bird species that occurred in the area bt the team was not lucky, but managed to identify the Wattle lapwing on the flat landscape as they were looking for insects which they had to catch as seen in figure 5 and correctly identify the insects in figure 6, creating a database of the insects that occurred in the landscape, this yielded positive results as each team managed to collect 10 different insect species and a total of 16 insects together.

With all in place the Environmental Monitors (EMs) met with the schools nearest to them to confirm the availability of the learners for the Bush babies program, and collectively we agreed that with the pandemic still in our mists we will only focus on schools nearest to the EMs as we try to engage with a minimum number of learners.

Figure 5 Duncan and Macdonald transferring insects into the insect box

Figure 6 Maggy and Monica using reference books to identify insects

The term has been quite slow as learners were phased into the into the school premises according to their grades and classes, as only 25 learners are allowed to sit in one classroom at a time. The following schools have granted us the permission to educate their learners (figure 8): Mhalamhala primary school in Namakgale, Bollanoto primary in Makhushane, Modume and Mashishimale primary in Mashishimale community, which in total are 386 learners.

Figure 7 Mhalamhala primary bush babies celebrating World Wildlife Day

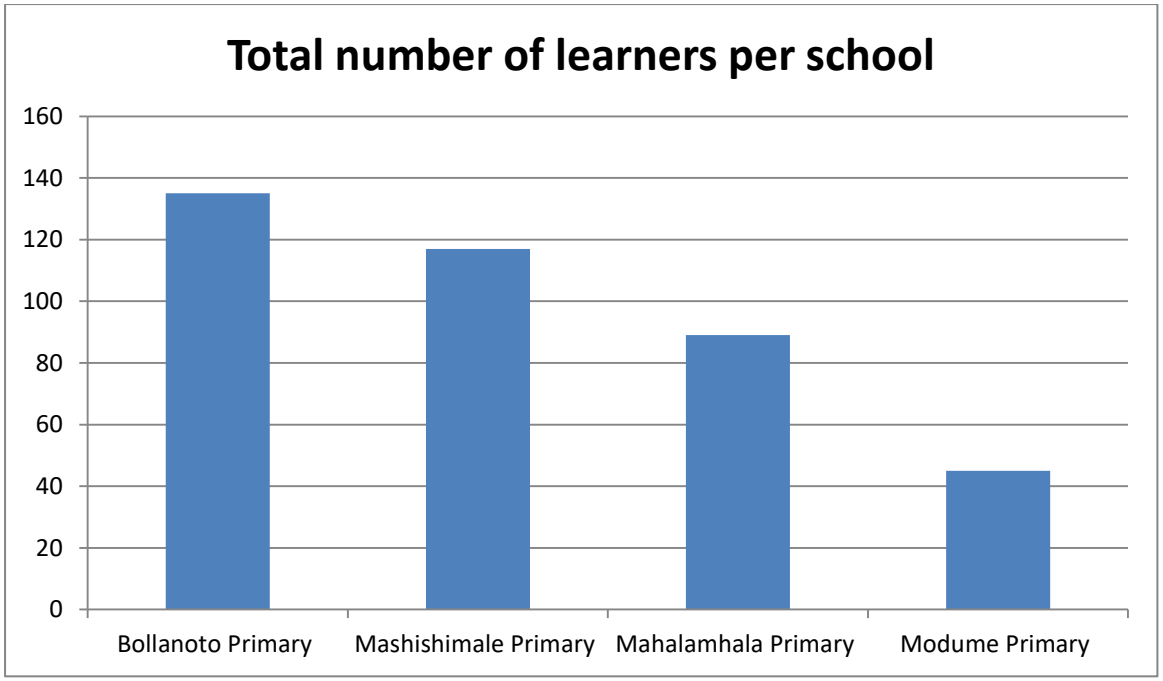

Figure 8 Bush Babies total number of learners per school for the 2021 academic year

With the assistance from Paul Allin a Research technician and intern Silke from Transfrontier Africa, collectively we are looking at methods and techniques that can be used to assess the impact of the Bush Babies program; one of the methods used to evaluate the theoretical component of the curriculum is through the written assignments and tests.

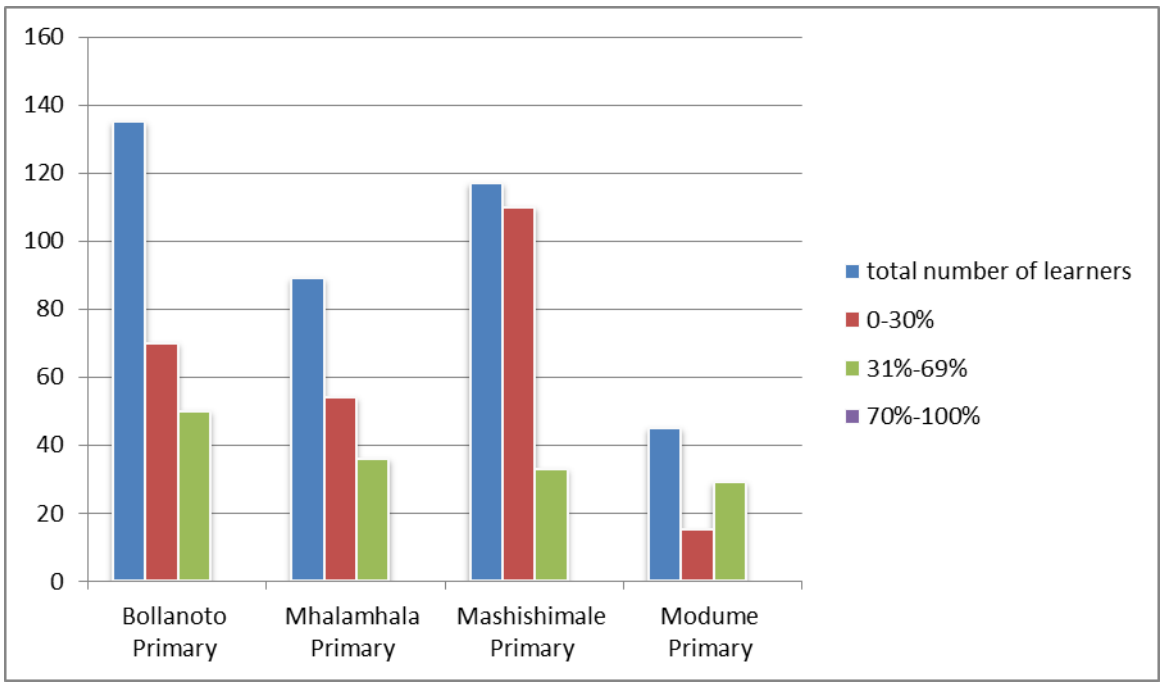

Figure 9 Total number of learners that wrote the test versus the marks obtained from the pre - assessment test

It was agreed that the leaners were to write a pre- assessment test prior to the teachings of the lesson plan and then after three lessons they would write another assessment, therefore allowing us to evaluate the short term understanding of the teachings and lessons presented to the learners. The grading used (see figure 0) were 0-30% as level 1, 31-69% graded as level 2 and 70-100% was graded as level 3., and a majority of the learners from the four schools were classed under level 1 as anticipated, and we await the final marks as we close off the first term.

Figure 10 Sandra with the Bush Babies from Mhalamhala primary school

The following lessons were discussed with the learners as guided by the pre assessment, which was discussed in great detail, allowing the learners to better understand the concept behind the teaching: My environment was the first lesson and the learners had to draw their environment with what they considered as an environmental problem that had to be solved, with the second lesson it was linked to the environment where an introduction to what makes an environment was clearly stated, without addressing the environmental issues that come with it, leading to the introduction of biotic and a biotic factors that are found in the environment, and in the last week of the term, the lesson will focus on our main a biotic factor being water conservation prior to the post- assessment test, which will determine the understandings of the teachings.

Figure a1 A Spring of Hope facilitator Trygive and Dr. Allin join the Bush babies team

The team met up with Dr Inez-Allin and Dr. Carmen (figure 12) from the Tsembe foundation in partnership with the Tintswalo hospital in Acornhoek (Mpumalanga) previously discussing how to incorporate health care into the lesson plan, with the focus on primary and basic hygiene. We continued to discuss the correct food types that the learners had to eat at home and at the centre, filling them up and giving them the much needed energy to get through the day.

The team was also educated on the learners weight and body condition, as we record a lot of learners who are underweight by they eat the most at the centre, yet they do not gain weight, with only 3 learners whom according to Dr. Carmen are obese given their age verses their weight.

Figure 1b Trygive showing Esley how to place the mulch on the grow bed.

We then decided to work out a healthy and balanced diet for the learners with the aim to harvest our vegetables from our vegetable garden, this lead to the invitation of Mr. Trygive Nxumalo from A Spring of Hope who deals primarily with permaculture in the Mpumalanga and now in the Limpopo province (figure 10).

Figure 1c: Trygive showing how to use certain gardening tools.

Mr.Nxumalo emphasised on the importance of farming with permaculture as a sustainable way of growing crops on a small scale, as it conserves water and improves the soil condition, and mentioned the types of tools needed in one's garden. We practically joined in and dug a few grow beds which were under the trees and we added some mulch onto the grow bed.

Figure 1d Dr. Carmen sharing sprouts with Monica as they try new food

Trygive continued to explain the importance of keeping the grow bed covered and well maintained at all times as he closed off with his quote that "Gardening doesn't need your time, it simply needs your spare time".

His teachings and guidance were well received as the team immediately went into the garden and started to make the grow beds which will soon feed healthy and nutritious meals to the learners whom visit the educational centre on a daily basis.

Figure 1e Sandra and Bush granny Mashele using a sugarcane to measure the grow beds

Our grannies were more engaged in the first term, getting busy than watching the EMs cleaning their yards, they were more hands on as the EMs shared their permaculture knowledge and they started with their vegetable gardens within their households, teaching and learning from each other on various methods of farming they grannies used previously.

Figure 1f: Monica and bush granny from maseke working together on the grow bed

The seeds of spinach, tomatoes and beans were the most requested from the bush grannies and they were included in their food parcels and again the EMs educated the grannies about the specific vegetable seeds. Some teams decided to sow the vegetable seeds directly into the soil whilst others used old bath tubs as the grow beds.

An introduction to grey water was also discussed with one of the visits, as water is a scarce resource in the local community, it is important to re-use water such as dishwashing water where possible, especially where it will be beneficial to the locals and households as they would harvest from their own vegetable garden.

We used the resource/ education centre to our advantage as we held our first movie night as a fundraiser for our cubs colour t-shirts to group the learners. With no electricity, a campfire and a Pajero we held a successful night under the stars with the bush grannies sharing indigenous stories with the learners.

Figure 1g Bush Babies cubs movie set up, whilst EMs start the fire.

The granny shared a story that taught the learners about being humble and respecting their elders through the queen and millipede story, where she explained why the millipede curls itself in each time it comes across the queen, and that the learners should continue to be like the millipede and humble and bow their heads each time they come across an elder in the community.

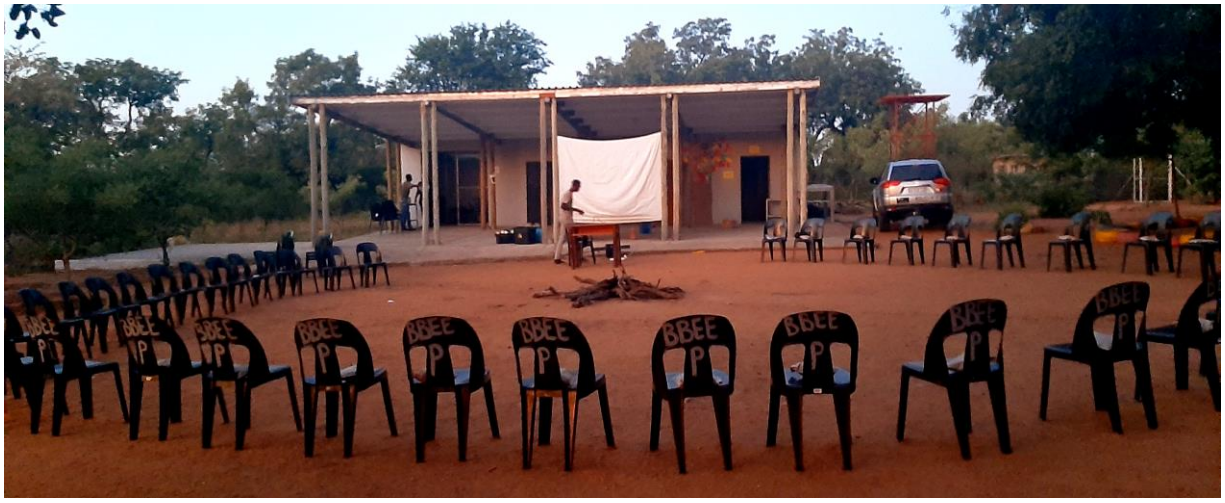

Figure 1h: Movie night set up before the cubs arrive.

The second movie night took place in the first week of April where the learners watched the Lion king, learning about the survival skills and how the animal kingdom is self-sustaining and functioning. The learners left the education centre at 21h00 just after the movie had finished, a positive feedback was given that the learners had enjoyed the movie and the fresh popcorn.

The education centre has been blooming with wildlife sightings of the creeping critters which the cubs have made themselves familiar with over the term, from the bats, Violet backed starling, Common Mynas, Foam nest frog, Large rock Scorpion, Giant land snail, to the very late comers of the Mopani worms. It is always great to teach the learners about the animals that occur naturally within our education space and to interact with most of the organisms as most of them are identified by the learners and with some adult assistance and supervision they are relocated to a place of safety, and seeing them understanding the concept of all animals matter irrespective of the size or type of animal.

Figure 1i Schlegels blind snake

Figure20: Foam nest frog

Figure 21 Hawk moth caterpillar

Figure 22 Maphalle with the giant land snail

The cubs rescued a Grey go away bird (grey Lourie) which seemed to be abandoned by the mother and couldn't fly, the young chick was safely placed in a box and taken to the local rehabilitation centre called ReWild where injured birds are taken care of, we have had a positive feedback that the chick is still recovering and has gained its strength but not yet ready to be released into the wild, but soon it will be.

Figure23 Grey go away bird after pick up

Figure24: Grey g away bird at the rehabilitation centre

The cubs program had a high number of learners participating in the scouts program from Maseke Primary school, how joins every Thursday and Friday for a duration of 6 hours per day, As the school phases in their learners due to the limited number of learners per classroom as per the regulations.

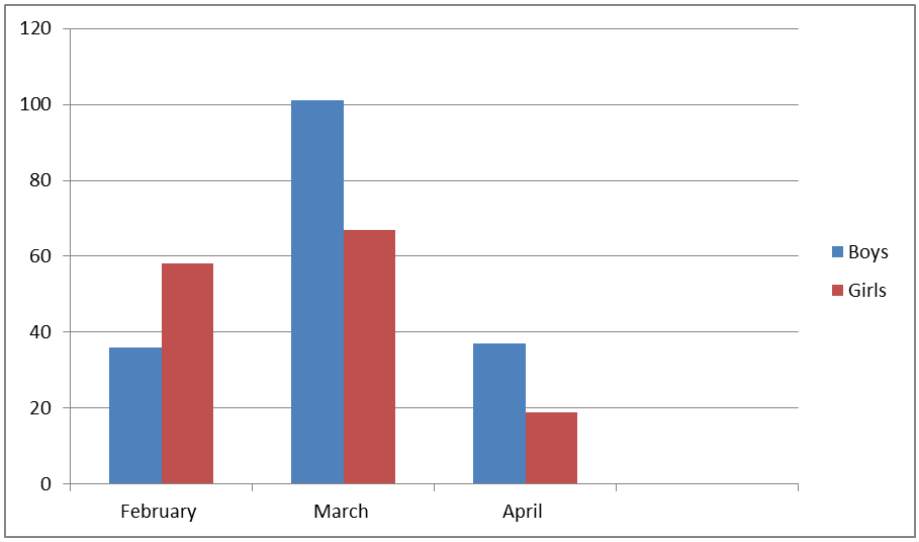

Figure25:Total number of boys versus girls visiting the education centre.

The lessons covered in term one at the education centre were in line with the World Scouts movement guidelines, with some environmental education incorporated where they learnt about the African elephant, Insects, Birds, Trees and Forests, Rhino conservation, living things and non-living things, Water conservation and had a visit by the Elephants Alive team (figure 26)that educated the learners about domestic animals with the focus on dogs..

Figure 26 Guest speakers from Elephants Alive educate the Bush babies.

In the Scouts lessons the cubs learnt about renewable resources, looking at ways of saving energy within their households, this was followed by the water safety lesson as most of our cubs cross the Selati river to access the education centre, and in the same week they learnt about fire as a fuel source, which is used in and at the centre for cooking.

The cubs had to start their own fires using only natural things such as grass and dry leaves, tasked with only one match stick; they had to consider many abiotic factors such as the wind direction. The cubs also learnt about fire safety and how to kill a fire where there is no water, and they demonstrated this using soil.

The EMs were tasked to draw up management plans as they address environmental issues within their communities, included in the plans was ways in which they would combat the issues at hand. Usually the teams would walk grids given by the data capture staff member, now each member has a set of 6 grids which he or she walks once a week to constantly observe the changes within the same area over time.

The team only started with the village patrol in March as they were busy with the year plan and preparations in January. With a total of 36 grids walked, and 12 representing each community the following sightings were recorded as we start our monitoring plan.

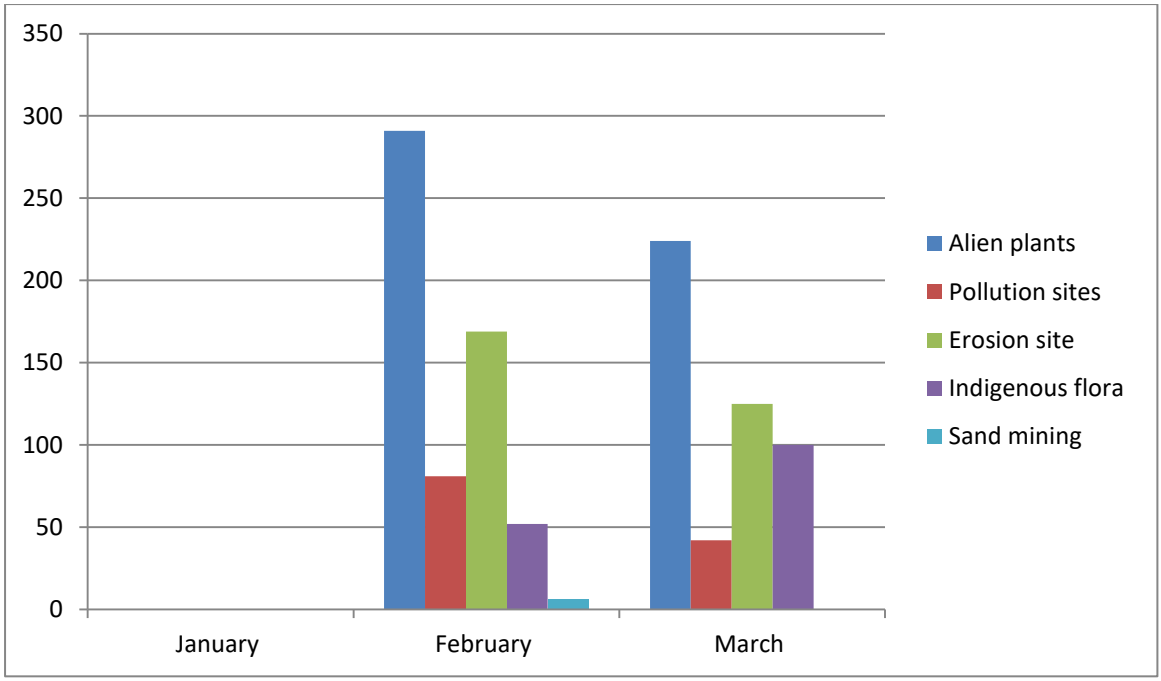

Figure27: Environmental issues capture in February and March 2021.

From the above data the most recorded environmental issue is the occurrence of alien plant species within the local communities, ranging from the prickly pear to the Madagascar rubbervine.

Figure28: Selati River overflowing as the water flows from bank to bank after the rains.

In January 2021 we prepared for mother nature's great events in history as we prepared for the Tropical Cyclone Eloise which caused flooding in Mozambique's coastal city of Beira, the cyclone was downgraded to an overland depression as we braced strong winds and flash floods. This lead to a whole lot of the top soil to wash away with the heavy rains experienced hence the high number of soil erosion sites were identified by the EMs.

Figure 29 Donga erosion formations

Figure: Donga erosion formation

Figure 30 Sheet/Donga erosion formations.

Another success of using the grid method is seen in the indigenous plants captured in February we had only 50 sighting and in March we had double the number, showing that the team are actually capturing all the plant species in their grids, and the ones not previously captured were captured in the second month, this proofs the grid method works as team members can now identify new occurrences over time.

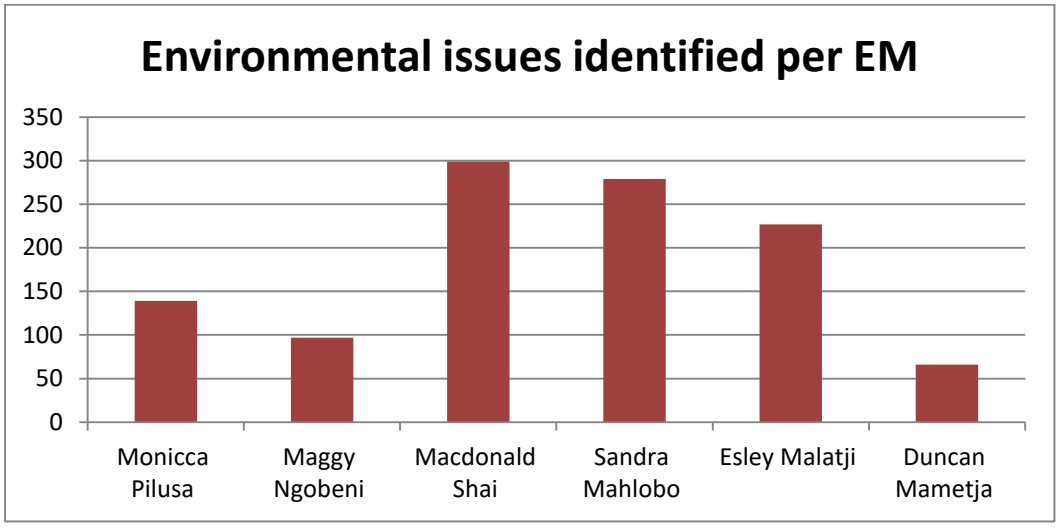

Figure 31: Data captured per EM for the months of January, February and March 2021

We are very much grateful for the effort and hard work put in place by the EMs, we are waiting for the winter months to start where we anticipate less rainfall to start with the eradication and treating of the alien plant species identified. The following EMs have out done themselves with capturing the most qualitative data over the past two months, in first position is Macdonald Shai from the Mashishimale community, Sandra Mahlobo and Esley Malatji both representing the Makhushane village.

Figure 32and 33: Jaco Snake handler and makhushane residents looking at the captured cobra.

Over the months we have had locals ask us what it is that the EM project is about and why are they constantly walking in the village, at first it raised eyebrows as to why the community were so curious, recently we understood why they kept asking when Esley Malatji EM from Makhushane village called to notify the office that his neighbour saw a long black snake climb up a mango tree at 21h00 in their yard.

With no snake identification background and capture methods Esley being a helpful neighbour and EM went to investigate and confirmed it was indeed a black long snake, Jaco Genick a snake expert in the Phalaborwa area was called to assist at the scene which he arrived at 22h00 and started looking for the snake. With the assistance of Esley and the other bystanders Jaco was able to catch the black long snake, it's a Snouted cobra he said, highly venomous he added as he handled it down to the ground.

Jaco had so much confidence in Esley just as his neighbour did, and together they tried to put the 2m long Snouted cobra into the capture box the easy way, which the snake did not agree too, making it a bit tricky but eventually managed to safely capture the snake, locals within that hour were still educated about the snake behaviour and what could have brought the snake to their environment, it was discovered that the house

were selling chickens and that attracted the snake.

Figure 34 Snouted Cobra about to be safely placed in the relocation box

For the first time in the presence of our staff member a wild animal was saved in the local community, given that it was a highly venomous snake the locals managed to get some assistance instead of killing the snake, the presence of the EMs in the local community is seem and locals know where to go when they have an encounter with wild animals. We were so grateful for the swift response of Jaco whom at 03h00 managed to safely release the snake into the wild far from human inhabitants.

Figure 35 Duncan and his co students at Campfire Academy

I Duncan never thought of becoming a field guide, but going to Campfire Training Academy for my online training in July 2019 which opened my eyes and my passion for nature grew from one level to another and I liked the experience.

It was when we went on our Scouts training at Ekuthuleni and one of the activities for the day was a guided bush walk in a big 5 conservation area, and after our walk I was told about the NQF2 Apprentice field guide course and I was very much interested.

I enrolled for the course, though it needed much of my time and I had to balance my work and learning, simultaneously, and there was time when I thought I couldn't go on, to an extend that I almost drop out due to pressure, because it's not easy to work while learning believe you me.

Figure 36: Duncan and co-students on a bush walk in the Balule Nature Reserve

Online learning for was very challenging and costly because I didn't have internet access at the time I enrolled for the course, I thought it would be just easy, but I suffered a lot financially as most of my money was spent on airtime and data to further my studies. At times when I was busy trying to study, with all my efforts and dedication, there would be load shedding, which meant that I couldn't continue to study or in the midst of my zoom meeting it would shut off, but instead of giving up I had to adjust with the situation.

Through the study tutorials from Campfire, I used them to study and prepare for my exam and I passed my theory exam, and early this year I went to campfire for my practical assessment which added a lot of knowledge.My stay at campfire and every moment was beneficial, I learned a lot from the best under supervision of Laetitia Cronje, and I successfully completed my practical's, I still share moments when we walked in the African bush, and encountered lions on foot for the first time.

Either I sleep or find an alternative to help myself out or I started to use a candle and light to study, though load shedding was bad, but it worked in my favour especially because I reside closest to taverns and neighbours that enjoy high volume of sound when playing music. Apart from everything, the support i received from my family, the bush babies and my church was outstanding and for their effort, they're appreciated.

Figure 37: Duncan and team at the Letaba elephant museum.

Campfire academy has planted knowledge, which is rooted in my life and conscious, and I've been exposed to variety of vegetation types, like when I was in tropic of Capricorn, and the Support I received from Transfontier Africa was beyond my expectations.

Figure 38: K2C PRIDE members at the Swadini forever resort.

The K2C Progressive,Resilient,Initiative,Driven and Elevators (PRIDE) previously known as the Maebas of the K2C EM program are project representatives whom collectively come together to share ideas, and learn together. As all the participants in figure 38 they have been registered with the Rhodes University where a short course on Facilitation and stakeholder engagement in resource management.

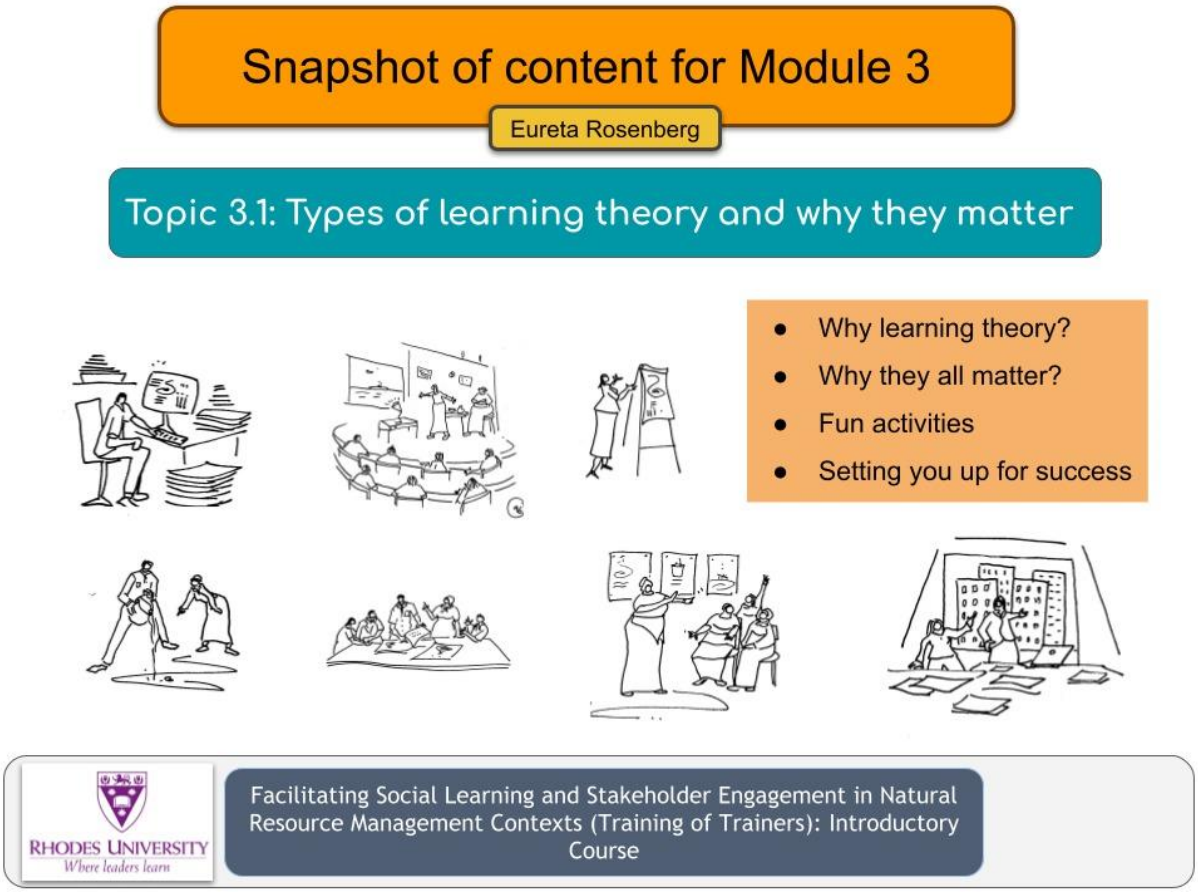

Figure 39: Snapshot of Module 3 on Stakeholder engagement.

The camp was scheduled for two days where each member had to give feedback and introduce their research topic to everyone. Lewyn looked at a topic in which she was familiar with; with the research question can we use environmental education as a tool to help identify environmental issues, such as alien plants?

She engaged her stakeholders which are residents of the local communities from which she runs the bush babies program, which included 8 bush grannies and 8 environmental monitors. Due to the environmental monitors job description and background they were the relevant stakeholders to engage as they acquire scientific knowledge verses the bush grannie that are still practicing according to their indigenous knowledge and cultural beliefs.

The engagement process allowed her to learn in more depth the environmental issue at the local communities being the prickly pear and looked at the social, economic, political and the biophysical. She discovered that her social aspects were not only restricted to

the bush grannies and environmental monitors but rather the Kgoshi (Chief), Ndunas (local head men), the Ba-Nakome tribe of Maseke community, Di-Tlou Shai tribe of Mashishimale and Di-Noko tribe of Makhushane and thei the Ba-Phalaborwa local municipality and the Waste management department, and noted the link between the social and the economic aspects of her research, with the focus of this “problem the prickly pear” EMs are employed and earn a living by combating the alien plan.

Figure 40: Prickly pear in full fruit in the Makhushane village.

Another economic benefit from the prickly pear is that locals sell the fruits and earn an extra income, yet it is costly on those that are combating the alien species problem both in the reserve and outside the local reserve. As one of the methods to control this alien plant is the use of biological control methods such as the cochineal bugs and sourcing them to a non-infected cladode is often costly.

The political aspect introduced the law makers and decision makers with the correct procedures and protocols. She discovered that the prickly pear under the Conservation of Agriculture Resources Act 43 of 1983, prickly pears are categorized as category 1 tanks which should be removed from the environment, this is ensured by the Department of Forests and Fisheries and with the assistance of decision makers in the local community such as the chief, Ndunas, Ward councillors, and the Department can aid in the decision making.

For the biophysical aspect she looked at the impact of the prickly pear on the environment and biodiversity, with the focus on the spread of the prickly pears, their medicinal properties and cultural belief if any, the introduction of the Cochineal bugs in the environment.

Figure 41: Prickly pear in the Maseke community captured by Maggy.

According to the guidelines provided the purpose of her engagement was to generate information from the stakeholders regarding the prickly pear, learning and knowledge production, stakeholder mapping and gather information through a set questionnaire and theoretical knowledge.

She also selected transformative social learning as her method and focused on the Social learning as acquisition, where we learn from what other already know, especially the bush grannies with their experiences and indigenous knowledge. Experts were also engaged to teach about their alien invasive plants knowledge as Transfrontier Africa's Andy Verzmoter joined the team to discuss alien plants and the best control method of each alien plant species. The EMs also learnt a new skill using an app called Avenza maps as a method of correctly capturing the data in real time. This was possible through the visit to Ekuthuleni as an experiential learning tool, and visiting the actual site to see how to do things practically.

Lewyn also used the social learning as a participation and co-creation tool as one of her methods where she was guided by the same short questionnaire from which all her stakeholders engaged had to answer to, and allowed for the involvement and opportunity to reflect using their previous experience.

Lewyn and other PRIDE members are now on their last module which looks at the various evaluation process as to whether her research question has been answered or not, as she took all aspects into considerations from the questionnaires asked, and stakeholders engaged, she feels that both parties are correct according to their indigenous knowledge or scientific knowledge, therefore yes environmental education does help in the identification of environmental issues.

Figure 42: Lewyn giving a presentation on her research to other PRIDE members.

Taking into considerations that as all stakeholders are correct and looking at their mutual benefits, it is important to consider the environment as a first priority, therefore the removal of the prickly pear as classified as a Category 1 should be removed and an indigenous alternative should be used as they use the prickly pear for some medicinal value. Lewyn believes that this course was of true value and benefit to her personally and for the program all together, she noted that it is critical to consider the views and inputs of all stakeholders involved without treating every situation as a fair and learning process for both you and your stakeholders.

Against all odds and uncertainties we remain tall and strong, and we anticipate that term two will be even better with more fun and learning activities that include development and growth.

Thank you.