

TOYOTA ENVIRO OUTREACH 2013

Prepared by Chrizelle Beukes

Between 2 and 14 April 2013, Mashudu Nxumalo and I joined the scientific team of the Toyota Enviro Outreach 2013. This outreach initiative brings together a group of scientists, environmental enthusiasts, journalists as well as a group of advanced drivers from Klipbokkop Mountain Reserve. The scientists represented the following institutions - the South African National Biodiversity Institute (SANBI), the African Centre for DNA Barcoding (University of Johannesburg), the Department of Biological Sciences (University of Cape Town), the University of Pretoria, the National Department of Environment and Nature Conservation and CapeNature.

The Toyota Enviro Outreach initiative started in 2009 with visits to Zimbabwe and Malawi. In 2010 three other areas were the focus of this initiative: the Cape Floristic Region, Succulent Karoo and Maputaland-Pondoland-Albany. In 2011 the group visited the iSimangaliso Wetland Park. In 2012 the group again visited the Cape Floristic Region focussing especially on invasive species. The theme for this year's outreach was: "Karoo plants: our treasures, our future" and focused on documenting and DNA barcoding the indigenous plants of the Northern Cape.



Left: **Mashudu Nxumalo** searching for root nodules on one of the northern Cape legumes.

Right: **Mashudu Nxumalo** next to one of the Toyota sponsored vehicles used by the scientific team on their sampling trips.

We visited Klein Pella, Keboes Fruit Farms and Calvinia during this collection trip. The scientific group was divided into several teams with each team focusing on a specific plant family. Mashudu and I joined the team of Dr Marianne le Roux and Ms Salomè Malgas which focused on the legume family (the group containing beans and peas). As microbiologists, we are interested in the bacteria that form nitrogen-fixing root nodules on indigenous legumes. Very little is known regarding the bacteria which associate with our indigenous legumes; especially in those instances where the plants do not have a known agricultural purpose. Unfortunately we did not find any nodules (we hypothesized that this is due to the fact that the plants were entering their seed phase), therefore we collected seed-containing pods and soil from around the root nodules and are performing 'trapping' experiments. In these experiments the collected seed is germinated and planted in the soil from the trip in a greenhouse under nitrogen-free and sterile conditions. This environment should force the plant to initiate the nitrogen-fixing symbiosis in order to survive.

I found the Northern Cape to be a place of unexpected beauty. Mashudu and I feel grateful to have had this experience and to have met this amazing group of scientists and other environmental enthusiasts. This truly was a wonderful opportunity to interact with leading plant botanists in an amazing environment. For more information on this year's outreach the blog at www.toyotaoutreach.com can be consulted.



The 'legume' team (from left to right): Mashudu Nxumalo, Chrizelle Beukes, Salomè Malgas and our driver Hendrick.