

Project Update: June 2018

1. Literature review and reconnaissance (May, 2018)

During our literature review we used published articles, books, field reports and grey literature obtained from the botany departments of the National Museums of Kenya (NMK).

Summary of the literature review

A succulent is any plant containing succulent tissue, defined as “a living tissue that, besides possible other tasks, serves and guarantees an at least temporary storage of utilizable water, which makes the plant temporarily independent from external water supply”. Succulence is therefore an adaptive response to drought, rapid drainage in rocky and sandy soil, high evaporation in windy, hot environments and in salty or alkaline habitats. Succulent plants evolved from other related plants growing in a normal environment by adaptations; the common adaptations includes water storage in enlarged leaves and /or stems, a waterproof outer covering often enhanced by a waxy coating, the presence of hairs or spines and a specific biochemical process called crassulacean acid metabolism(CAM).

With a relatively dry climate in much of the country, Kenya’s natural vegetation includes over 400 taxa of succulent plants belonging to 21 families and representing 51 genera and 370 species. Some species are very widespread while others are restricted to a very limited area. Exotic succulent plants originating from South Africa, Madagascar and Central America have also been introduced to the country. Some of these exotic succulents have escaped cultivation and become naturalised with a few such as *Opuntia* becoming serious invasive species of conservation concern.

Succulent plants have outstanding biological, cultural, and economical importance. They are used as ornamentals and in pharmaceutical and cosmetic industries. Many species are grown in outdoor and indoor gardening at various places like malls, industries, colleges, hospitals and gardens because of their intriguing shapes, colourful flowers and simple care. Because of the pharmaceutical and cosmetic applications, the Kenyan succulent plants especially aloes are exploited for illegal international trade (Bjora et al.2015). Many succulents are therefore in danger of extinction. According to Newton, 2018 some Kenyan succulent species are already extinct at their type localities (the localities where they were first found and described). However, all the Kenyan *Aloe* and *Euphorbia* species are listed in Appendix II (whereby trade must be monitored and subjected to licensing) of the CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). It is therefore important to study, conserve and rescue the rare and endangered succulents, and to protect the already abundant ones.

Reconnaissance

On 14th June, 2018, I visited the Kenya Forestry Research Institute (KEFRI) Baringo sub-centre to introduce the project and solicit their collaboration and support. I was cordially received by the KEFRI Director Mr Simon Choge and after a brief discussion I was introduced to the centre technician Mrs Salina Chesang who took me briefly through tree nursery management skills and introduced me to the centre’s tree nursery where a number of succulent plants were propagated (Fig 1).

With the permission from the chief, we held a meeting on 15th June, 2018, with Chelaba Women Community Based Organization (CBO) at their office. The aim was to introduce the project and discuss about the establishment of the succulent plants nursery. The project was well received by the CBO and they were grateful to Rufford Foundation for the second grant. They assured us of their support and participation (Fig 2).

On 16th and 17th June 2018 we visited the field to familiarise ourselves with the sampling sites and the succulent plants. During the field pre-visit we came across a number of succulent plants (Fig3).



Fig 1: Joylene Kanyaris, left (The principal investigator) and Salina Chesang, right (KEFRI technician) at (left) KEFRI tree nursery and (right) KEFRI gate.



Fig 2: Meeting with Chelaba Women at their office, at the very front is Joylene Kanyaris (the principal investigator) from left front; Esther Sote, Teriki Kibon, Linah Karato, Cecilia Cherutich, at the back from left Elizabeth Koros, Magret Bogoria, Miriam Kimugon, Salina Cheron, Toyoi Kipsarmat, Miriam Chepkuto and Sote Kipsarmat.



Fig 3: Succulent plants observed during our field pre-visit. Top left: *Aloe secundiflora*. Top right: *Adenium obesum*. Top/Middle left: *Kalanchoe* sp. Top/Middle right: *Aloe* sp. Bottom/Middle left: *Opuntia* sp. Bottom/Middle right: *Sansevieria fischeri*. Bottom left: *Agave* sp. Bottom right: *Euphorbia forolensis*.



Left: Joylene Kanyaris (Principal investigator) at a site near Lake Bogoria. Right: *Euphorbia tirucali*.



Left: *Euphorbia candelabrum*. Right: Project team members from left; Joylene Kanyaris, Kiburo Carson and Barturo Timothy.