Project Update: February 2023

Introduction

African violets are facing imminent threat from increased climate change impacts and destructive anthropogenic activities (recently the threat of limestone mining in the area). Although we have implemented several conservation efforts since the 1st Rufford funding (observed common threats, raised the community awareness, and established a rescue center and propagation mechanisms for African violets), the species far from danger of extinction. Thus, we expanded our conservation efforts by rescuing juveniles from unfavourable conditions, (nurturing them in a rescue centre), improving habitat conditions (propagating indigenous seedlings), and expanding the species distribution.

Notably, we have achieved the following in the last 3 months:

1. Massively propagated the African violets in the established rescue centre.
2. Propagated indigenous seedlings in the established tree nursery.
3. Established the first *in-situ* recovery site.

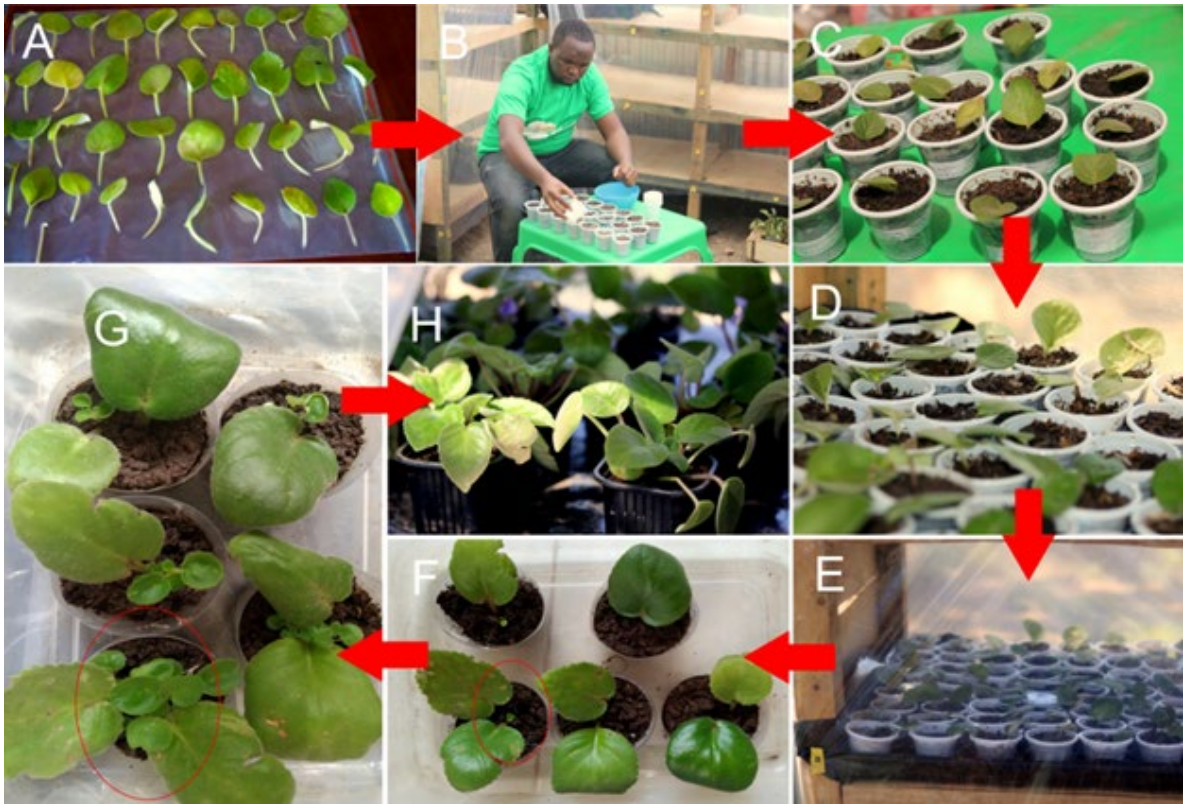

Fig. 1: *Leaf propagation under soil medium. A - Leaves prepared for propagation, B - Project leader preparing propagation cups (soiling and watering), C - Leaves propagated in plastic cups, D & E - Propagated leaves placed inside the shelves, F & G - Resprouting of first leaves, and H - Plantlets transferred into seedling pots and arranged in the shelves.*

Activity 1. Massive propagation of African violets

The growth and propagation of African violets has been reported a challenge in the continued survival and conservation initiatives. As a course of action towards African

violets conservation, we sought to test different methods of propagation (using both seeds and leaves). Mass propagation of African violets was conducted for use in spearheading population expansion and species recovery processes. Although propagation by seeds is the most preferred method (due to genetic diversity), we could not collect substantial seeds due to low reproduction in the last 4 years. This is because the region has not been receiving enough rainfall, depriving the African violets of favourable conditions. Alternatively, we resorted to use largely the leaves for propagation. The leaves were prepared and put in plastic cups (with soil or water), and placed on the shelves, avoiding direct sunlight. While using the leaves, two methods were used to propagate; soil and water media. When using soil, each leaf was solely propagated inside a plastic cup with soil (Fig. 1). Whereas, when using the water method, a plastic dish (clear) was used to propagate approx. 30 leaves (Fig. 2), after which the individual leaves were transferred into single plastic cups after rooting and producing the first 3 leaves.

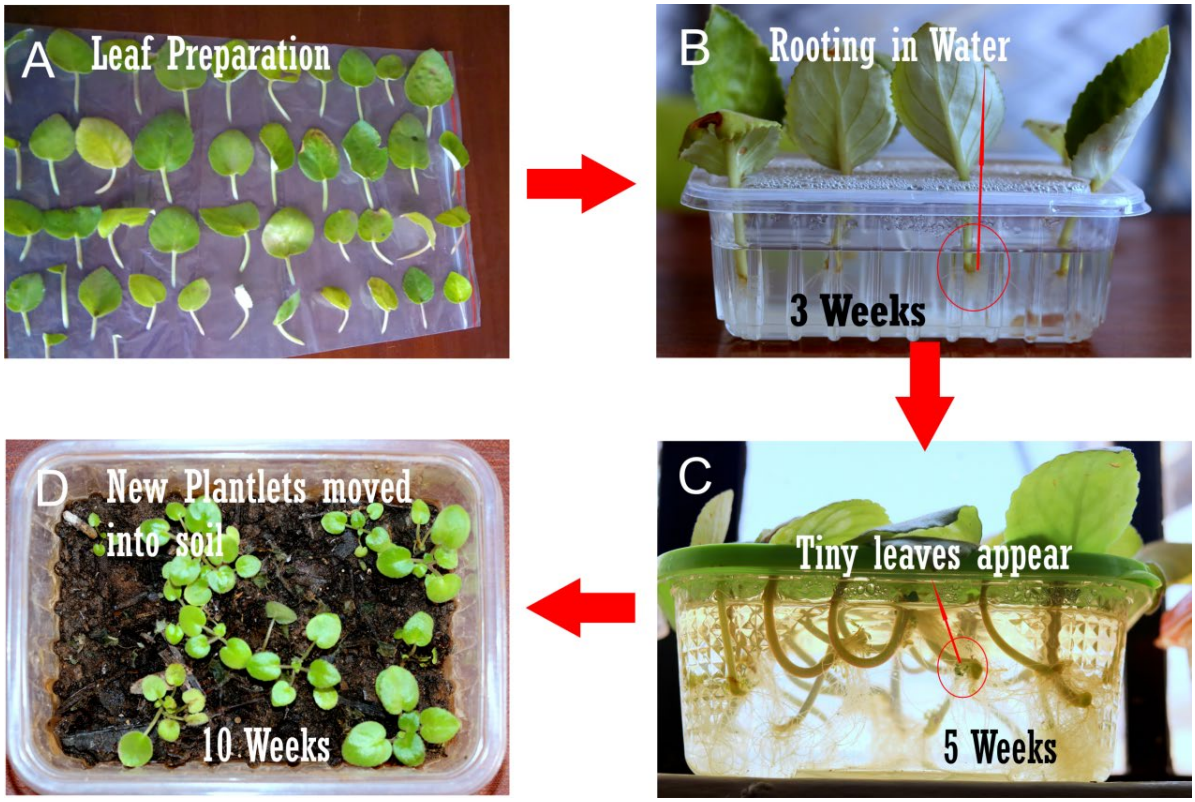

Fig. 2: Leaf propagation under water medium. *A- Leaf preparation, B - Rooting under water, C - Re-sprouting of leaves, and D - New plantlets moved into soil awaiting individual re-potting.*

During the field investigations, we also collected new recruits of African violets (individual juveniles growing in unfavorable conditions such as exposed to sunlight, on soil media in the forest, re-sprouts in dense clusters (to ease competition), on footpaths, etc.) and transferred them for nurturing in the propagation centre. It is expected that upon improvement of habitat conditions, we will take them back into the wild after attaining a size able to withstand wild conditions.

Activity 2. Indigenous seedlings propagation & Transplanting

African violets have been reported to survive under narrow ecological requirements, wet and shaded conditions. However, the present distribution is characterised by

fragmented, dry habitats and intense human encroachment. For instance, during the dry seasons (the area has not received substantial rainfall between 2015-2023), the populations lose a larger percentage of its natural vegetation (Fig. 3), exposing African violets to direct sunlight and dry conditions.

In the last decade, vegetation cover in all populations has greatly degraded due to various factors; drought, crop farming (extension of farmlands), creation of grazing fields, and charcoal burning. Although the threats facing these habitats are manageable, land ownership status makes it a challenge to save the habitats. For instance, all habitats are owned by the community, fueling competition by locals to maximumly use the resources (resulting in the tragedy of commons).

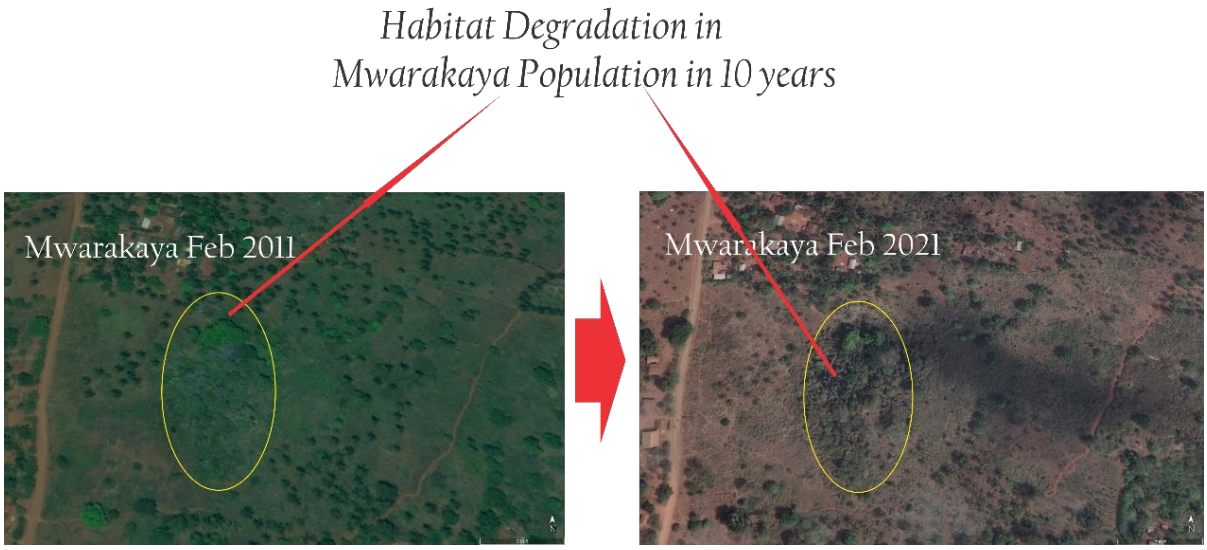

Fig. 3: Habitat degradation in one African violets habitat (Mwarakaya) in the last decade. *The maps were derived from Google Earth satellite database.*

For example, although Kachororoni is considered the largest habitat in which the African violets occur in Kenya, the population is quickly becoming unsuitable for the African violets. This is because the area has attracted unsustainable human activities; cattle grazing (creates paths and destroys vegetation cover), and charcoal burning. This has led to reduced area under constant shade and wetness, and it is hard to spot an African violet individual. Contrary to normal observations, during our recent visit, no single juvenile was spotted, bringing to doubt the recruitment rate of this population.

Therefore, community-based restoration of the habitats will make them suitable for African violets. In line with this understanding, we established two tree nurseries to propagate indigenous tree seedlings that will be transplanted in the degraded patches. During the short rains in Nov-Dec 2022, we transplanted the first batch of seedlings in Chasimba habitat (approx. 200 seedlings) (Fig. 5). However, the survival rate is minimal due to extremely hot conditions and the rains did not last long. The propagation targets local plant species (especially endangered, rare, useful tree species) since they are adapted to the local environment, are useful and returning them may rebuild the wild habitats for long-term conservation. To achieve local support and involvement, we involved the communities in the process of seed collection, propagation and nursery establishment. Some of the collected/propagated seeds include *Milicia excelsa* (drought-resistant and rare timber species), *Melia volkensii* (a fast-growing drought-resistant tree indigenous to

East Africa drylands), *Vangueria* spp., *Vitex payos, Moringa oleifera* (drought-resistant and economically important plant), among others.

Fig. 4: *Propagation of indigenous tree seedlings. A - Collection of seeds, B,C,D - Collected seeds being dried, E,F - Seedlings potted in tubes, and G - Team members arranging seedlings in the nursery.*

Fig. 5: Indigenous tree seedlings being prepared/selected for transplanting in the wild.

Activity 3. Established the first in-situ recovery site.

As a recovery mechanism, we have planned a translocation plan to return some plants back into the wild. However, our efforts to improve the habitats reveal it will take some years to create the preferred conditions. Thus, as we continue to plant indigenous trees and lobby for protection of the original sites, we are working to identify other suitable and secure sites/habitats in Kenya to establish *in-situ* recovery sites. Positively, towards the end of last year during the short rains, we established the first *in-situ* nurturing/recovery site and transplanted 50 African violet plants (Fig. 6) from the propagation center. Two months down the line, all plants are doing well and getting acclimatised to the new environment. Although the site is housed on private land, we selected it since its well secured (no more logging), has ideal conditions for African violets (shade and rocky habitat under a giant *Ficus glumosa* tree), and the owner is willing to take care and nurture the plants for the long-term (we plan to fence the habitat once funds are available).

Fig. 6: *First in-situ recovery site for African violets. A - The rocky habitat, B, C, D, & E - sample individuals transplanted in different corners of the habitat.*