

Project Update: March 2023

This project sought to conserve five threatened plant species namely *Capparis tomentosa* Lam, *Maytenus putterlickoides* Exell & Mendonça, *Dorstenia arachniformis* I. Malombe, *Terminalia brownii* Fresen, and *Fuerstia africana* T.C.E Fries in five study sites within Mukaa and Makueni sub-counties in Makueni county. This was achieved through mass propagation and creating conservation awareness among the local members in the county. Training workshops and seminars were conducted to raise conservation awareness. Sustainable harvesting and propagation of medicinal plants were part of the campaign. Further, the project endeavoured to identify, map and document the population of individual species in designated project sites. This exercise was also extended to other species with medicinal importance. This exercise was conducted with the help of traditional medicinal practitioners. Their knowledge and wide experience on medicinal drug preparation were instrumental in guiding in identification of medicinal plants. Besides, they demonstrated to us medicinal drug preparation methods, dispensing and administration mode. Based on their experience, they highlighted the most used medicinal plants, disease treated, and number of patients treated.

In efforts to restore the decreasing population of the target threatened species, we transplanted the raised seedlings into the designated sites. Apart from the targeted threatened species, other medicinal plants were also propagated and transplanted to increase the entire population of medicinal plants in the designated study sites. A medicinal garden was established to aid in protecting some of these species from going extinct. It was established using dry wood to minimise further destruction of biodiversity and fenced using chain-link to prevent intrusion.

1. Mass propagation of threatened species

We conducted mass propagation to increase the population of threatened species and other species of medicinal plants. Since some seeds exhibited prolonged germination during trial germination exercises, we soaked the seeds in hormone solution to enhance breaking of dormancy and hasten germination. The nursery beds were constructed using polythene lining to maintain high temperature, minimise water loss and enhance germination. To achieve a high number of seedlings for the target species, we propagated cuttings from some species such as *Maytenus putterlickoides* and *Capparis tomentosa*. The cuttings were at first dipped in hormone powder or before planting them in seedling pots.



Figure 1: Locals transplanting seedlings from nursery bed into seedling pots.



Figure 2: Propagated medicinal species. **a.** *Dorstenia arachniformis*, **b.** *Croton megalocarpus*, **c.** *Fuerstia africana*, **d.** *Maytenus putterlickoides*, **e** and **f.** *Terminalia brownii*.

2. Restoration Efforts

Efforts to increase the population of the threatened target species were carried out at the designated study sites and in the established botanical garden in Makueni county, Kenya.



Figure 3: Locals posing for group photo before restoration exercises in designated sites **a.** Kiou, **b.** Nzai and **c.** Kenze.



Figure 4: Ongoing restoration exercises in designated study sites



Figure 5: Restoration exercise of threatened target species in the established medicinal garden Kenze village, Mukaa subcounty in Makueni county, Kenya.

3. Awareness Creation

Four workshops were held to raise awareness and sensitise the local community on the importance of conserving plants. They were conducted in different areas within Makueni County. The local members who were trained were awarded a certificate in encouragement to train others.



Figure 6: Training sessions of locals after which they were all awarded a certificate.

4. Some of medicinal plants found in Makueni County in Kenya

The medicinal potential of a plant remains until it is tested. The knowledge of traditional doctors is primarily important in understanding the use of plants. We engaged with them to understand the used medicinal plants in Makueni county. To ascertain the correct and accurate information from the traditional medicinal practitioners, we prepared questionnaires and only obtained data from those who have practiced for more than 5 years.



Figure 7: Traditional medicinal doctors taking us through preparation of some traditional medicines.

We administered questionnaires to six herbalists at four different study sites namely: Kiou, Kenze Nzau and Nzeuni. The questionnaires were designed to gather information on the doctor's experience with herbal medicine, including the plants used in disease treatment, preparation methods, administration methodology and number of patients treated. Notably, some drug preparation involved use of more than one plant part or another plant part to increase the beneficial healing effects of the drug (efficacy).

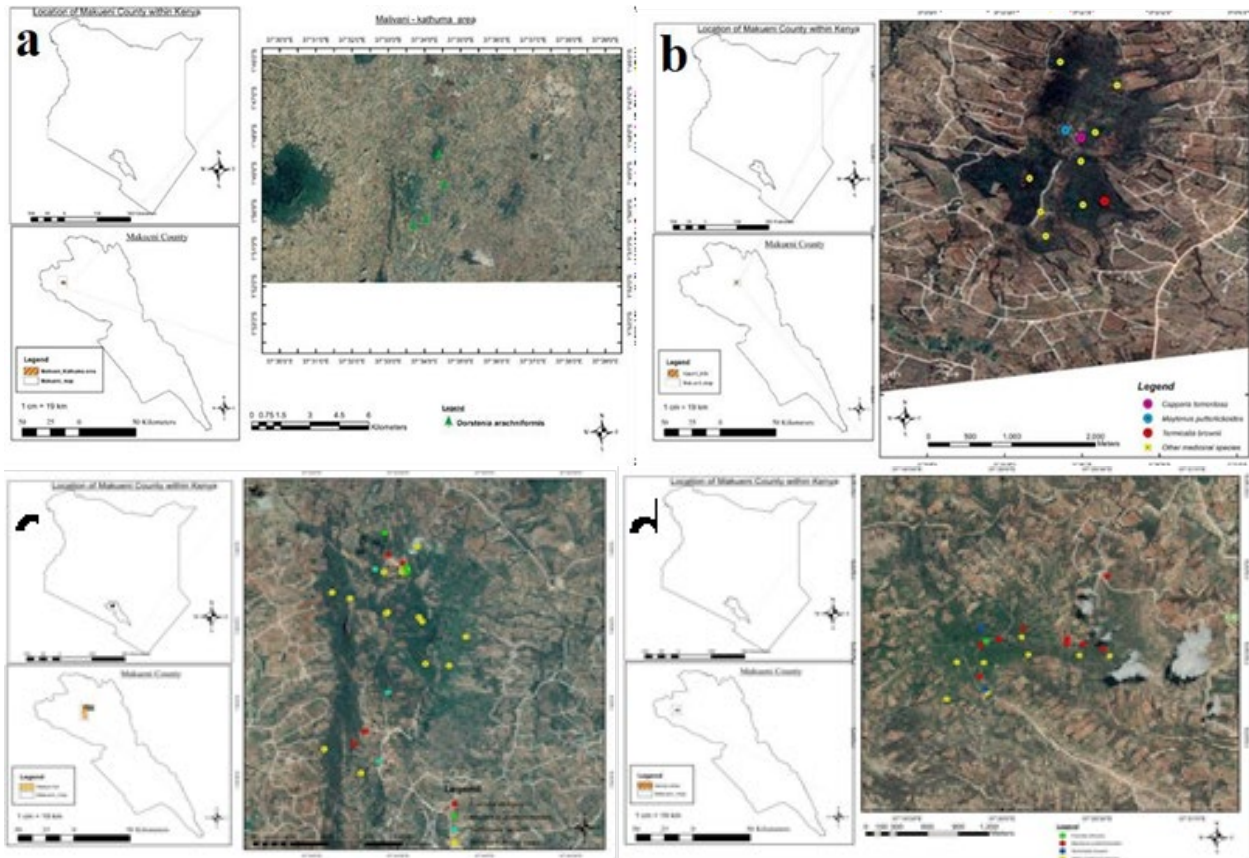




Figure 8: Interaction session with traditional medicinal doctors.

5. Mapping of threatened plants and other medicinal species in the targeted study sites

Our team conducted a botanical survey to identify, map and estimate the population of the target threatened medicinal plants and other medicinal species in designated study sites. We physically counted and documented the individual species. Photos were also captured for further identification. The distribution of these species in all sites is represented below.



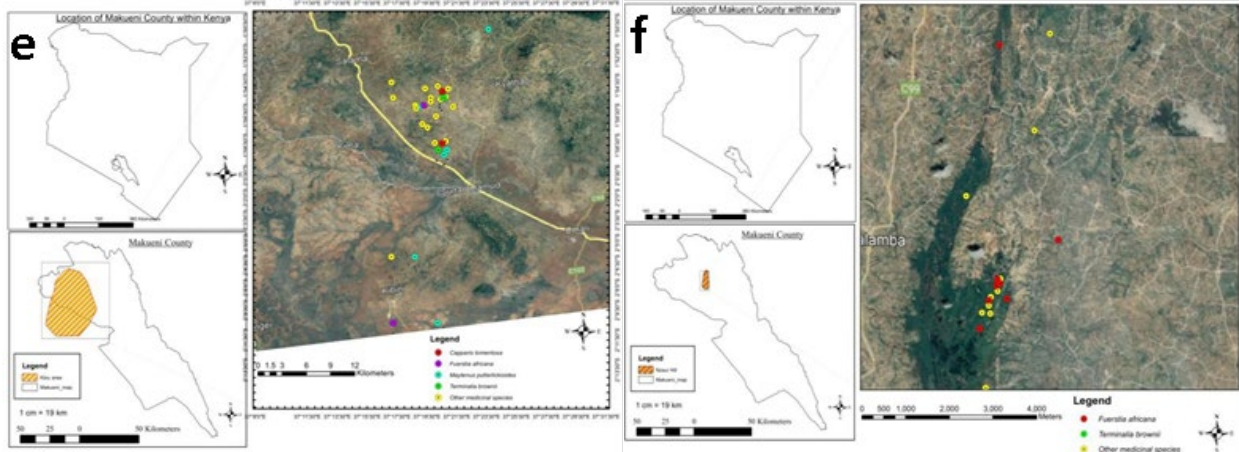


Figure 7: Geographical distribution of the target species in different study locations.

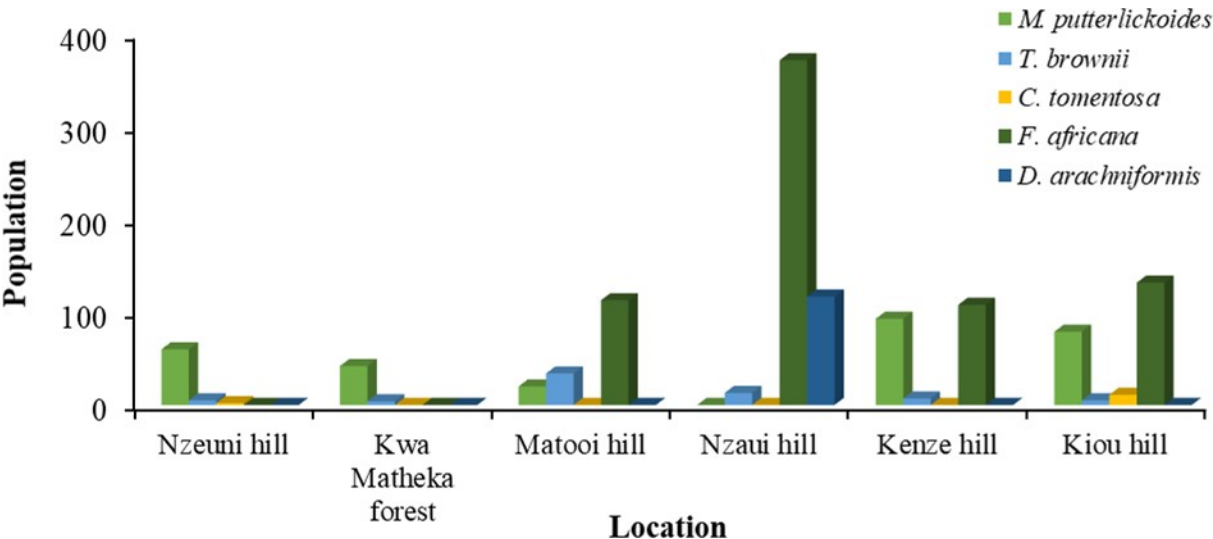


Figure 8: A graphical representation of the distribution of target medicinal species in study sites.

Table1: Some of used medicinal plants in Makueni County

Species		Parts used	Preparation method	Administration method	Disease treated	No of Patients treated
Scientific name	Common/ vernacular name					
<i>Euclea divinorum</i>	Mukinyai	Stem bark	Crushed	Soft-paste	Snakebite	2
<i>Senna siamea</i>	Mukengeta	Roots, leaves	Crushed	Soft-paste	Snakebite	3
<i>Terminalia brownii</i>	Muuku	Stem bark	Decoction	Oral	Yellow fever, arthritis	24
<i>Pappea capensis</i>	Kiva	Stem bark	Decoction	Oral	ulcers	11
<i>Lannae schweinfurthii</i>	Kyulasi	Stem bark				
<i>Fagaropsis hildebrandtii</i>	Muvindavindi	Roots bark	Decoction	Oral	arthritis	13
<i>Steganotaenia araliacea</i> Hochst	Muvuavui	Leaves, stem bark	Decoction	Oral	obesity	3
<i>Uvaria scheffleri</i>	Kikukuma	leaves	powder	Inhalation	Mental disorder	1
<i>Plectranthus comosus</i> Sims	Mwoya	stem bark	Decoction	Oral	obesity	6
<i>Dalbergia melanoxylon</i>	Muingo	leaves, roots, stem bark	Decoction	Oral	body pain	17
<i>Zanthoxylum chalybeum</i> Engl.	Mukenea	roots, Stem bark	Decoction	Oral	Fever, malaria, nose bleeding	34
<i>Securidaca longipedunculata</i> Fresen	Muuka	bulbs	Decoction	Oral	Seizure, mental problems, spiritual cleansing	2

Some of the medicinal plants identified during botanical survey.



Left to right, top to bottom: *Warbugia ugadensis*, *Carrisa edulis*, *Ficus glumosa*, *Zanthoxylum chalybeum*, *Maytenus putterlickoides* and *Acokanthera schimperi*.



Left: *Terminalia brownie*. Right: *Dorstenia arachniformis*.



Left: *Zanha Africana*. Middle: *Osyris lanceolata*. Right: *Searsia natalensis*.