

Decades ago the lowland forests of Kimboza and Ruvu were linked by continuous tree cover along the River Ruvu Gorge but the area has since been largely deforested for agriculture. In recent years the land has

been so degraded that most of it is now abandoned. However, much of the vegetation is regularly burnt as fires spread from farmed areas. Our objective is to restore the wooded corridor linking the two forests.



View of the southern part of the recently established Conservation Area from Gumba Hill. To the left, on flatter ground, is Kimboza and the top of the hill on the right is the edge of the Ruvu Forest Reserve. The main Morogoro-Kisaki

road can be seen in the lower center-right foreground. Note that the photo was taken at the start of the rainy season and the brown areas are the result of the extensive fires that devastated all the hills.

Kimboza – Ruvu region update

The Kimboza - Ruvu area was once again afflicted by a drought and a late onset of the short rainy season. As a result much of the region was affected by large fires and these severely impacted the Ruvu Forest Reserve, the Kimboza - Ruvu Gorge as well as the newly established

Conservation Area. Kimboza Forest was not spared, but was less affected. During field investigations Kimboza endemics were found outside the reserve and a species not observed since discovery in 1894 was located in the Conservation Area.



Thilachium macrophyllum

This shrub was first collected in 1894 by a German naturalist and we made the second ever collection of this species in our recently established conservation area. It will now be one of our main conservation efforts.

Forest fires

Not only do fires destroy all ground vegetation, they also affect crowns of small trees. Regular fires, and those burning large amounts of biomass in particular, eventually kill large standing trees. Then, the vegetation becomes dominated by tall fire-prone grasses, usually preventing a shift back to forest unless fires can be prevented.



Forest fires in 2022

Another extended dry season resulted in drought conditions by November 2022. This resulted in a number of adverse impacts on the natural environment including dieback in some woody species, general scarcity of food for wild animals and above all the perfect conditions for the spread of fires. These either spread from the surrounding slash-and-burn agricultural practices or are

sometimes started in the mistaken local belief that fire will attract rain. As a result most of the hills and the Ruvu Gorge were afflicted by massive fires fuelled by areas of grassland occupying abandoned or fallow agricultural land. Due to the steepness of the slopes and strong local evening winds intense fires spread rapidly across the landscape.

Smouldering trees



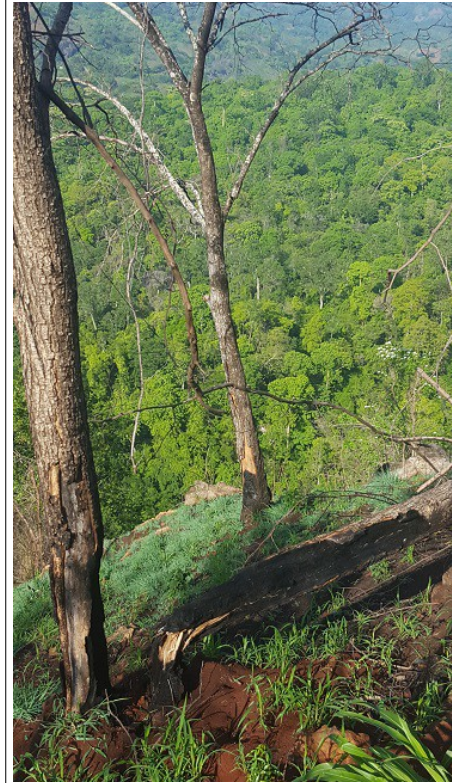
Even small fires can ignite damaged trees that burn on for several days.

Ghost of a burnt out tree



Fallen trees with extremely dry wood just burn out completely.

Basal fire damage to standing trees



Repeated fires attack the tree bases and the trees eventually topple over.

Kimboza news

As in the previous year devastating fires have affected the region and Kimboza Forest has also been affected. Although the fires were limited in extent, one managed to spread into an area of endemic species rich forest. The key issue is that at the end of the dry season teak, planted

as a boundary marker, loses its leaves and these are highly flammable. Unless the boundary is cleared every two or so weeks during the late dry season, fires are likely to cross the firebreaks. Limited funding in 2021 did not allow sustained boundary clearance.

Road

Starting from Kisaki, the road is being upgraded all the way to Morogoro. Work in the Kimboza area has yet to start. Although the road through Kimboza has a tarmac surface, some areas are likely to be upgraded to remove bends and narrow passages. If that were to occur, as well as the removal of overhanging and roadside trees, this would severely negatively impact on this unique site.

Camping site

A few years ago a small building with a toilet and a shower was built at the camp site. Now a large 10,000 l tank, rather unsightly perched on a concrete frame, has been installed. It came with a pipe stretching all the way to the natural surfacing water which is pumped into the tank. This camp site has now a basic water supply.

Litter

As highlighted in *Kirugo 2* discarded plastic bottles, chucked out of passing buses, litter the roadside throughout the reserve. This rubbish is slowly building up and will require some serious clearing in the not so distant future. A new type of litter has now appeared in the form of a soiled nappy underlining the rapid changes occurring in Tanzanian society.

Kimboza-Ruvu Gorge and Conservation Area discoveries and management



New gecko populations

In 2022 much time was spent exploring the River Ruvu Gorge between the Kimboza and Ruvu reserves. Two areas containing the endemic gecko, *Lygodactylus williamsi*, were found on the hillsides. These sites (left) have been protected from deforestation and fires as they consists mostly of massive rock outcrops preventing access to both humans and fires. Right: spot the gecko on its habitat, the *Pandanus* tree.



Inflorescence of *T. macrophyllum*. The flowers remain open for just one day and flowering lasts just a few days at the start of the short rains.

Botanical discoveries

Thilachium macrophyllum Gilg was discovered in the Conservation Area and it turns out to be only the second collection of the species since its discovery in 1894. *Cola quentinii*, a Kimboza endemic, was located in three surrounding forest remnants. Two other endemics, *Dorstenia* sp and *Impatiens cinnabarina*, were found in the Ruvu Gorge. These discoveries highlight the importance of forest remnants and of secondary vegetation to the unique biodiversity of the Kimboza-Ruvu region.



The unripe fruit of *T. macrophyllum*. There appears to be an association with a species of ant that requires further investigations.

Cedrela odorata control



Tens of thousands of individuals of the invasive *Cedrela odorata* were uprooted or ringbarked in half a dozen hectares of the Conservation Area.

Firebreaks



Firebreaks were established in key areas of the Conservation Area. The 2.5 m high grasses result from just one season's growth!

Trail building



A number of trails have been built on the hill, that is part of the Conservation Area, to facilitate access to visitors and conservationists.

Kimboza-Ruvu Plant Guide

The very diverse and often unique nature of the flora of the Kimboza-Ruvu region poses challenges to all people interested in the area, including researchers, foresters, and visitors. We are producing a guide to help with not only the identification of this unique biodiversity, but also to provide a background tool to the conservation and management the local natural resources. It is not a flora, but a guide that provides simple descriptions of species

found in the region and is illustrated by photographs and line drawings. It also provides basic information on the distribution, habitat requirements, uses by local people as well as key references that allows people to look into more details the scientific descriptions of the respective species. It is specifically designed so that it can be used on a mobile phone, so making access to relevant information possible in the field.

A guide to the common and noticeable plants of the Kimboza-Ruvu region



In the guide we ultimately intend to deal with all plant species known to occur in natural and semi-natural habitats in the region. Each species is dealt with individually and produced as a separate file. This way it allows more flexibility in updating the profiles as well as producing documents including specific species or dealing with particular habitats or locations. For instance, compilations including endemics and near-endemics species have been produced. As the area is very heterogeneous one could envisage producing files referring specifically to particular habitats. Rock outcrops, for instance, have a very specific complement of species.

<i>Cola quentinii</i> Cheek	Sterculiaceae
<p>Status global: Endemic (CR) Status local: Common</p> <p>A shrub or small tree endemic to Kimboza and two other locations. It is locally common in unburnt <i>Cedreia</i> free forest.</p>	<p>Striking identification features</p> <ul style="list-style-type: none"> - often multi-stemmed - large leaves with basal pubescence - red-purple/yellow flowers on stems - fruit with up to 5 follicles
<p>Description</p> <p>Shrub or small tree, often multi-stemmed.</p> <p>Shrubs to 6-15 m tall.</p> <p>Bark:</p> <p>Leaves: large, but variable in size (14.52 × 7.5-27 cm), dark green below, petiole (0.9-2.7 cm long), basal pubescence (0.8 mm wide).</p> <p>Flower: unisexual occurring on the same individual on 1-4 flowered woody burrs of the main stem or branches. Flowers (ca. 2 cm across) on short stalks are red-purple with yellow anthers or yellow stigmas.</p> <p>Fruit: large fruit (6.5-8.5 cm across) consisting of up to 5 mouthful follicles.</p> <p>Seed:</p> <p><i>Left:</i> As a result of the 2011 drought there was a lot of damage to the Kimboza Forest Reserve but affected the lower forest only. Some multi-stemmed individuals which may arise which may arise as regrowth after fire. Right: male (top) and female (bottom) flowers.</p>	
<p>Status and distribution: This species is endemic to the Ugungu mountains and found at only three sites, including Kimboza. It has been assessed as Critically Endangered.</p> <p>Habitat requirements: In Kimboza it is locally dominant in the shrub layer of steep slopes on shallow soils. Much of its habitat has been burnt by fire spreading from outside the reserve. These burnt areas from a mosaic with 'unburnt' forest and are dominated by the invasive <i>Cedreia odorata</i>. <i>Cola quentinii</i> has not been observed to recolonize these near monotypic young stands <i>Cedreia</i>.</p>	<p>Phenology: Observed to flower in September to early November and fruits in December.</p> <p>Reproduction: Flowers of separate sexes on the same individuals.</p> <p>Uses in East Africa: None are known.</p> <p>Locals uses: None are known.</p> <p>Sources and further information</p> <p><i>Botanical description:</i> Cheek & Dyer (2007) <i>Herbarium specimens:</i> Lake T1 (A.K.NIY28), 1987-11-04, G Lake 10 (A.K.NIY28), 2000-09-19, G, type</p> <p>Cheek, M. & Dyer, L. (2007) <i>Shrubland in Tanzania: A Field Manual</i>. In: A. J. H. Ross (ed.) <i>A Field Manual of East Africa</i>. New Publishing, Royal Botanic Gardens, Kew.</p> <p><i>Left:</i> the first ever collection of the fruit.</p>

Species profiles can be downloaded from: <http://www.mikepalmer.co.uk/WoodyPlantEcology/tropical/Kimboza.html>
So profiles for 2/3rds of the species thought to occur in the Kimboza-Ruvu region have been produced.

Background information - Kimboza-Ruvu Region

The Kimboza-Ruvu region lies at the base of the Uluguru Mountains that are part of the Eastern Arc Mountains in Eastern Tanzania. It lies 60 km from Morogoro on the main road to the Selous Game Reserve. The area is inhabited by the Waluguru people.

The Kimboza and Ruvu Forest Reserves are managed by the Tanzania Forest Service Agency (TFS) based in Morogoro. In 2019 the TFS produced a management plan for Kimboza Forest.

The Kimboza-Ruvu Gorge project is managed by Dr Charles J. Kilawe from Sokoine University of Agriculture in collaboration with Pierre Binggeli, the local communities and TSF.
e-mail: ckilawe@sua.ac.tz
website: https://www.rufford.org/projects/charles_kilawe

Right: Location of the forests in the Morogoro Region with A. Kimboza, B. Ruvu

