

# Mount Mulanje

Restoring forests to protect  
water and biodiversity

Yearly Update 2021





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# Summary

Since our project started, we have made great progress towards our goal of restoring the afro-montane forest of Mount Mulanje with the endemic Mulanje cedar.

87% of the seedlings grown in 2021 are ready for planting, which means that to date, a total of 240 330 cedars and their companion species have been raised for ecological restoration. The remaining seedlings from 2021 will mature in the nursery for planting later this year.

Many areas have seen great survival rates, but in some, survival is not as high as we anticipated. 2022 will see a pause in the planting programme while we monitor their success, continue with after-care (like weeding) and see strengthening of law enforcement and firebreak strategies that will protect the cedars as they grow.

A new focus on regenerating the degraded miombo forests that surround the mountain is showing good progress. We are already 15% of the way to our 1319 ha target with 203 ha under restoration on the western side of the mountain, regenerating approximately 210 000 trees through assisted natural regeneration (ANR). 2021 established the foundations for success, including supporting 11 village forest committees, conducting ranger patrols, and hanging hundreds of beehives in the forest that will produce wild honey and create income for local families. A new partnership to regenerate 54.3 ha of miombo forest on the eastern slopes raised 34 000 seedlings and 15 species for planting, and WeForest also began a new collaboration to raise awareness within 11 schools in the local area.

While Europe has been seeing COVID cases on the rise again, the great news is that schools here have reopened and Mount Mulanje is currently not reporting high COVID numbers. This means our project activities continue unhindered as we take sensible measures into account.

## 2021 in numbers

To date, **240 330** cedars/companion species raised to restore montane forests

**257 ha** is under restoration in the miombo regeneration sites

Cedar/companion planting in 2021:

**85 754** cedar/companion seedlings raised in **8** nurseries

**75 000** ready for planting in the 2021-2022 planting season (now)

**7.2 km** of firebreaks established around the cedar planting sites

Assisted Natural Regeneration-related activities in 2021:

**400** new beehives constructed

**54.3 ha** of miombo to be restored with Cedar Energy; **26.5 ha** to be actively planted

**70 551** pines (*Pinus oocarpa*) distributed to tea farmers

**550** trees planted of 13 species with 11 schools, with 57% survival after 2 months

**This report shares an update of our progress during 2021. Thank you for all your support!**





## Planting

### 87% of the seedlings raised in 2021 are ready for planting

Our Mulanje project restores two types of native forests: montane and miombo. In the montane forests the endemic Mulanje cedar, a species that is sensitive to disturbance, is not able to generate quickly by itself. Active planting

is necessary, and the seedlings are carefully grown and nurtured by 8 local community nurseries.

Our original target of 120 000 seedlings was more than enough to meet the on-site suitability, so this year the eight nurseries raised the 85 754 seedlings actually needed, and 87% of these (75 000) were ready for planting at the time of writing (February 2022).

The seedlings are dominated by cedar (96% of the total) and their companion species include *Dodonaea viscosa*, *Cussonia lucida* and *Podocarpus milanjianus* – all good for cedar as they come from the same ecosystem, providing shade while not competing with the cedars for resources.

The remaining seedlings will be planted in the 2022/2023 season that begins in November 2022.

### Monitoring cedar and companion plots

In 2021, 21.3 ha of planting sites from 2020 were monitored. An additional 6524 seedlings to fill gaps in older sites were planted between February and March 2021, and in April, survival rates were a fantastic 94% for cedar and 82% for *Podocarpus*.

More monitoring in sample plots took place in November, in sites approximately 8 months



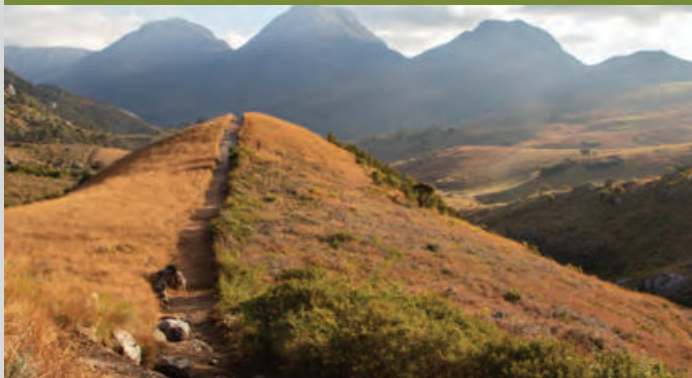




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## Fire management

Fire is a real risk here, and maintaining fire breaks on the mountain is crucial for the survival of the growing seedlings. In 2021, maps were developed with MMCT to determine where firebreaks will be needed to secure the full protection of all WeForest sites. 7.17km of firebreaks to protect specific cedar planting sites were designed, organized, mapped and monitored by our team, and with WeForest's support MMCT put 107 km more in place to contribute to the general firebreak network on the mountain. Altogether every year, approximately 700 km of firebreaks on top of the mountain are maintained.



after planting. An average survival rate of 58% (variance 38% to 73%) was found. Mortality is most likely the result of a combination of frost, drying out (worsened by shallow or rocky soils) and fire. We will be assessing the potential to replant some of these areas after further monitoring in 2022.

## Monitoring cedars planted as hedges

Cedar seedlings are also being grown as hedges around homesteads, which allows them to be protected against livestock and theft. A first assessment in September 2020 of the 18 553 cedar seedlings planted as hedges between February and June 2020 indicated very good survival rates of 87.7%.

More recent survival counts carried out between August and November 2021 show a wide range of survival rates with some very low, and others such as Kadewere and Makolere nurseries as high as 80-85%. For more details about the challenges of growing Mulanje Cedar see the back page.





## Assisted Natural Regeneration

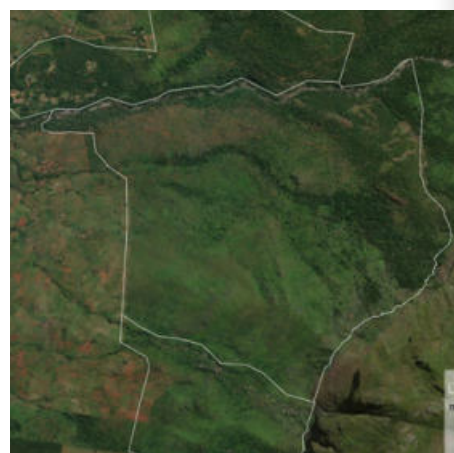
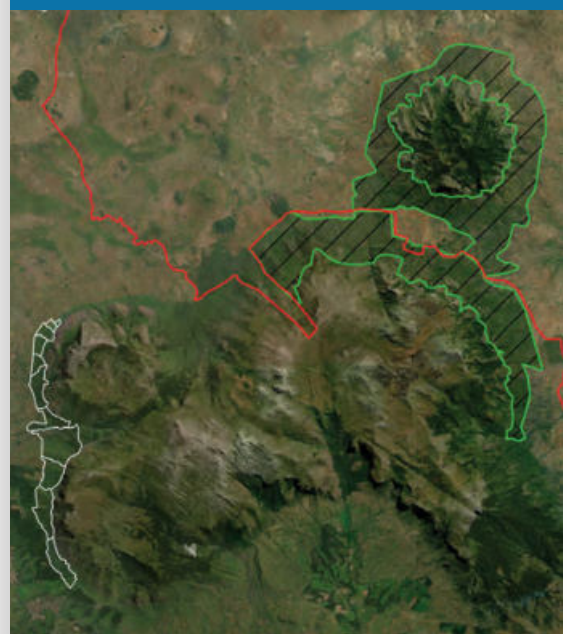
### 15% of our 1319 ha target is under restoration

While the project’s initial focus was on active planting of Mulanje cedar on the mountain plateau, the regeneration of the surrounding miombo forests through Assisted Natural Regeneration is the main objective for the coming years. The miombo woodlands – a dominant forest type able to quickly regenerate from root or seed stock – are being restored with up to 70 tree species typical to the vegetation type.

This 203 ha (an estimated 210 000 trees) of miombo is being regenerated in two “blocks” – Kazembe and Tchete – on the western flank of the mountain, and are under the management of village committees (7 in Kazembe and 4 in Tchete). This is already 15% of our target of 1319 ha across these two blocks. In September, 5.8 km of firebreaks were established in Kazembe block to safeguard the regenerating forest.

### The project’s miombo co-management blocks

The areas outlined in white show the western blocks (Kazembe and Tchete, divided into 11 sub-blocks) where 203 ha of miombo are already being restored; the areas outlined in green are potential co-management areas.



Significant deforestation since 2018 means urgent action is required. These images show the Gibson sub-block in Tchete in 2018 (far left) and 2021 (left). The deforestation observed is mainly driven by charcoal production. Our work in Tchete started in 2021.





## Law enforcement in co-management blocks

For restoration to be successful, it's important that the project supports law enforcement activities to stop deforestation. In other WeForest projects such as in Katanino, Zambia, we recruit and fund Forest Rangers to carry out patrols and protect the forest. In the Mount Mulanje project's co-management blocks, we plan to set up a similar system by building up the capacity of the Village Natural Resource Management Committees to carry out forest law enforcement and fire management activities.

In the meantime, Galamukani, an independent community group, and the Department of Forestry are conducting regular patrols of the co-management blocks, where they have discovered tree cutting and charcoal making activity and confiscated materials and equipment to protect the forests.

## Restoration to safeguard water supply

In March, WeForest started a partnership with Cedar Energy, a small-scale hydropower company in Muloza, to collaborate on conservation and restoration of the Muloza river catchment area. This area is on the eastern outer slopes of the reserve, the opposite side from our large-scale co-management sites on the western slopes, and restored forests here will support a steady water supply, both for the communities to grow crops and for Cedar Energy to electrify Malawi.

An on-site nursery hosted by Cedar Energy was set up in Muloza and will provide 15 species of miombo and riverine seedlings. 3 permanent nursery staff have been established there, and seeds and seedlings were all collected in the area.

By the end of January approximately 27 000 seedlings out of the 34 000 seedlings in the nursery had been planted.

Galamukani delivered a two-day training session to a community law enforcement team of 10 in Muloza, accompanied by Cedar Energy security guards, to carry out patrols of the area. In October we were thrilled to welcome the Cabinet of Malawi's Minister of Forestry and Natural Resources, Hon. Nancy Tembo – a strong supporter of tree planting – for a [visit](#) to the restoration area and nursery.







## Livelihoods

### Forest-friendly income generating activities begin

The key to successful forest regeneration is to ensure alternative income sources for the communities who have been using the forests around Mount Mulanje for construction wood, firewood and charcoal.

#### Setting the foundations for honey production

Beekeeping is important for revenue generation so that the co-management blocks' Forest Block Committees are able to carry out their management responsibilities and governance.

All 350 top bar beehives distributed to the three beekeeping clubs had been hung by January 2021 in the co-management areas (240 going to Kazembe and 110 to Tchete). However, some beehives were stolen (32 out of 167 we monitored so far), and we are exploring solutions. 400 beehives that were produced in 2021 are expected to be distributed in 2022.

The two beekeeping groups of Kazembe (Nakhonyo and Mangombo) have agreed to 75-25% benefit sharing from honey sales, with 75% going to the Forest Block Committee and 25% to the beekeeping groups. This is yet to be formally signed, but when all the benefit-sharing agreements are made, preparation can be made for the honey harvests.

#### Pine trees can prevent deforestation

Communities cut forests because they have no alternative. When food or money runs out, selling firewood and timber from forests provides what is needed, so planting fast-growing species can reduce pressure on the natural and degraded forests we are working to restore.

In February we organised and supported the planting of 70 551 more pines (*Pinus oocarpa*) by the Sukambizi Association Trust (SAT), a local group of small-scale tea farmers who want more trees in their agricultural landscapes to harvest sustainably for firewood and timber.

Some of the 15 000 planted in 2020 were monitored at the same time. We registered a 48% survival rate in May, 14 months after planting. In another area, we found an improved 63% survival rate in September, 18 months after planting.

For the 2021 plantings, there was a 55% survival rate in May, 2 months after planting, across 10 fields and an impressive 88% survival rate in September, 6 months after planting, across 6 other fields. We will be working hard to support the farmers to achieve a 90% survival rate after six months and 85% after one year so that we can scale up the programme.





## Education

# A renewed programme to support environmental awareness in 11 schools

In June a Memorandum of Understanding was signed with our new partner, the Wildlife and Environmental Society of Malawi (WESM), to deliver the school tree planting and environmental awareness programme. Mulanje and Phalombe district education offices both welcomed the initiative and gave the go-ahead to select and engage 11 schools.

50 fruit and non-fruit seedlings were planted at each school 550 in total. The 13 species included 9 bearing edible fruits (mango, orange and guava), two timber species and one multipurpose tree (moringa). Species were selected based on their compatibility with the microclimatic conditions of each school.

Tree planting took place at the end of July and start of August, and overall tree survival stood at an average of 80% after 1 month and 57% after 2 months after planting. Overall survival rates after 2 months were highest in Mpata (92%), Nyezelela (84%), and Kabichi (80%).

The survival rates per species after 2 months across schools was highest for sweet apple (86%), peach (80%) and guava (78%). The two most popular tree species had lower survival rates – mango (55%) and orange (66%). The main challenges to the survival of the school trees are theft, animal encroachment or the lack of sufficient after-care for

trees (which was especially hard in the months following COVID-19 school closures).

As well as the tree planting, environmental education talks were given in all 11 schools.

## The forest guardians of the future

The support of local people in combating deforestation and conserving forests is crucial for success. By engaging schools in establishing orchards or woodlots, the project nurtures a sense of responsibility in students from an early age towards environmental management and protection. With talks, demonstrations and field walks, the environmental education curriculum emphasizes the effects of climate change and biodiversity loss, and the need for urgent appropriate action.







# What's Next?

## Restoration

- Continue nurturing the 50 000 cedar and companion seedlings to be planted in already identified plots at the start of 2023.
- In Kazembe/Tchete co-management blocks, support all forest management activities in 1300 ha, governance strengthening, training and equipping community law enforcement teams. Hang beehives and monitor performance.
- Continue restoration activities with Cedar Energy in Muloza; support law enforcement and bylaw development; scope for agroforestry potential and develop agroforestry plan.
- Formalize the Cedar Energy initiative (either as a 'concession' or with a Forest Management Agreement).
- Continue planning and progress for the scale up to 7500 ha of miombo woodlands under restoration in the Mt Mulanje Forest Reserve.

## Livelihoods

- Assess beekeeping integration and sustainability in Kazembe and Tchete blocks as a model for expansion.
- Initiate feasibility assessments in Mulanje and Phalombe districts for expansion of co-management in new blocks.
- Integrate agricultural interventions into miombo co-management, preferably through agricultural partnerships.

## The challenges of growing Mulanje cedar

Cedars grow from cones that are produced on mature trees (think of pine cones), but they don't produce them reliably each year so seed collection is unpredictable. There are currently two sites in Malawi, far from Mount Mulanje, where cedars have been planted and which have stands of mature cone-producing cedars suitable for seed collection. Germination from cedar cones is also affected by soil type and condition, watering regime and even the depth at which the seeds are sown.

After germination, handling during transplanting can also affect the sensitive seedlings. Growing cedar on top of Mulanje poses additional challenges: fire and frost. Continuous maintenance on the mountain to maintain fire breaks and carry out weeding and companion planting to offer protection is crucial for the survival of the growing seedlings.

WeForest is partnering with the Mulanje Mountain Conservation Trust, the Forestry Research Institute of Malawi and Botanical Gardens Conservation International on a research programme on cedar propagation. Together with a team of ecologists and plant specialists from around the world, we have devised an extensive, controlled trial to test the variables that influence cedar survival. As this research goes on, we use the results to inform the sowing and planting strategies in the nurseries and on the mountain.



Stay up-to-date with your interactive **Mulanje map**, and check out the **photo album** of the project on Flickr.

*Thank you for supporting the Mount Mulanje project!*