

Regeneration dynamics and miombo restoration in Tanzania

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Introduction

- Miombo woodlands constitute the dominant vegetation type in the Southern Africa
- About 100mil.people depend on miombo
- Its role range from community livelihoods, biodiversity conservation to environmental services

- The sustainability of miombo woodlands depends on their capability to maintain sufficient natural regeneration
- But the knowledge on the regeneration dynamics for miombo woodlands is insufficient in most cases.
- This knowledge is essential enhanced recovery of the degraded miombo woodlands, and hence its sustainability.

Previous initiatives in Tanzania

- Various studies regeneration for miombo woodlands have been done in Tanzania
- Results are cross-sectional and fragmented , showing regeneration potentials for miombo
- E.g. Luoga et al. 2004, Obiri et al. 2010, Sangeda and Maleko 2018, Myonga 2019, Matowo et al. 2019, Montfort et al. 2021 and many others
- A recently published empirical study (Njoghomi et al., 2020) using empirical and modelling approaches, is a milestone towards integrating silvicultural treatments

- There is a great need for coordination and harmonization of our knowledge regarding miombo regeneration
- From miombo network therefore, Tanzania will greatly benefit by learning what other doing in the region, and also access information regarding
- Funding opportunities to maintain our permanent sample plots, research and trainings

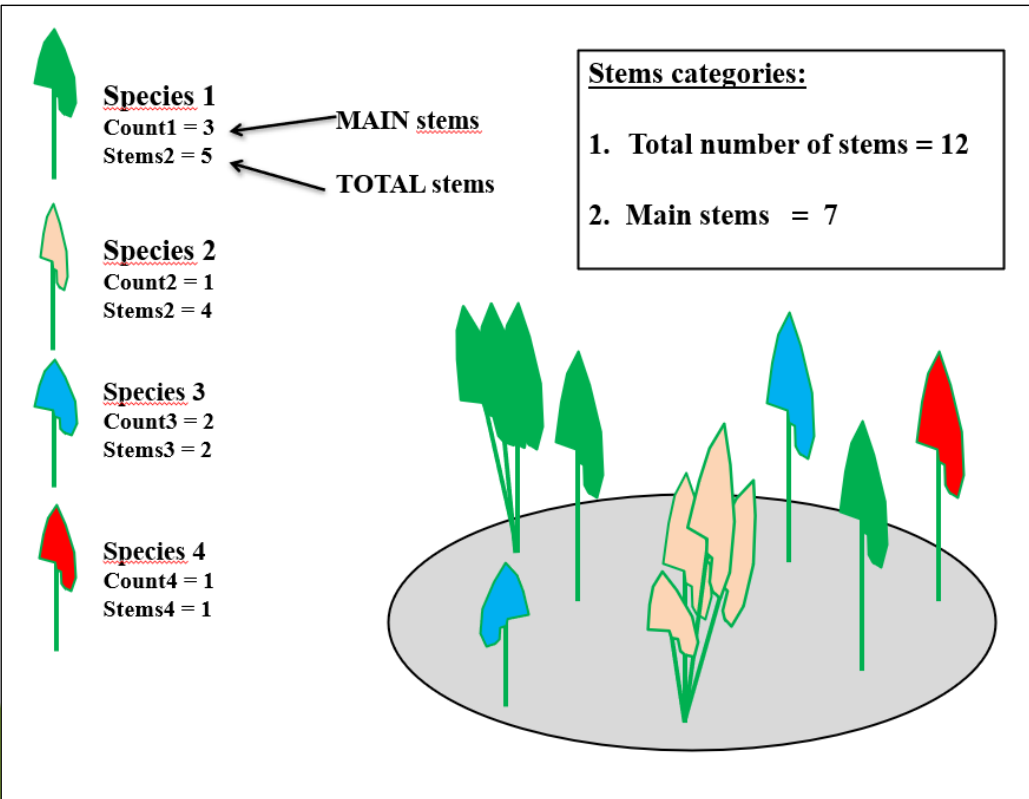
The case from Kitulangalo Permanent Sample Plots, Tanzania

Aim: To evaluate the impact of silvicultural treatments on regeneration dynamics at Kitulangalo PSPs (2008-2016)

- Design: Two stands with 2 blocks 1 block Fenced and 1 unfenced.
- Each block has 3 adjoining plots (30 x 30m), each with a grid of 25 regeneration subplots for monitoring regeneration.
- Other treatments (Thinning, soil tilling & control) were applied randomly

- **Thinning:** Creating canopy gaps to increase sunlight on forest floor, enhance growth, & coppicing
- **Soil tilling:** Enhance seed germination and root suckers
- Control: For comparison with original conditions
- Subplot status (% of empty subplots), sapling conditions were also monitored

Sapling grouping and modelling



- Clusters with similar stems (sp, height, shape) and individually standing stems: counted as 1 main stem.
- The total sum of individually standing, plus all similar stems in a cluster were treated as Total number of stems
- We modelled the change in the number of stems (Main stems and total number of stems)
- Both stand conditions and treatments were applied as model parameters

Results and its implications

- Overall drop in TOTAL number of stems, but, relative increase in main stems (S/ha)
- Sharper drop in fenced plots, and than unfenced ones (Models and basic results)
- More number of main stems in unfenced plots (despite of vulnerability of animal grazing/browsing)
- Fencing resulted into thicker grass cover, thus competition with saplings

- More empty subplots were covered by new saplings (despite of the overall drop in number of stems)
- Significance of other thinning, fencing, soil tilling and time depended on fencing factor
- Number of empty sublots decreased significantly (more plots inhibited by new saplings) indicating ongoing recovery.

Conclusion

- Proper management of miombo can lead to a quicker recovery through regeneration and ingrowth processes.
- Complete enclosure and fire protection may discourage regeneration in the long run.
- The periodical enclosure, and selective harvesting (thinning) can provide new pathways regeneration and recovery in miombo

- Further studies on integrating fire, grazing intensity/carrying capacity are urgent for deeper knowledge on regeneration and miombo recovery
- **More for this study please follow the link**
- <https://doi.org/10.1080/10549811.2020.1789478>



Researcher (Elisha) dressing international visitors at
Kitulangalo Forest Reserve, Tanzania. 25.9.2019

THANKS FOR LISTENING