

A savanna landscape featuring several acacia trees with flat tops scattered across a field of tall, golden-brown grass. The sky is filled with soft, grey clouds, suggesting an overcast or late afternoon setting. A large, gnarled tree trunk is visible in the foreground on the right side.

Why do some African acacias have a flat top?

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Jeremy Midgley & Michael Cramer

PhD Thesis - **University of Cape Town**



I just want
to feel understood...



Atwood



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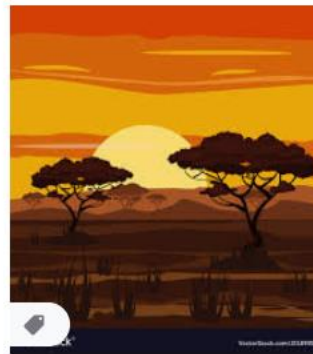
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Vachellia tortilis



Vachellia nilotica

*Vachellia
sieberiana woodii*





Often much wider than they are tall.

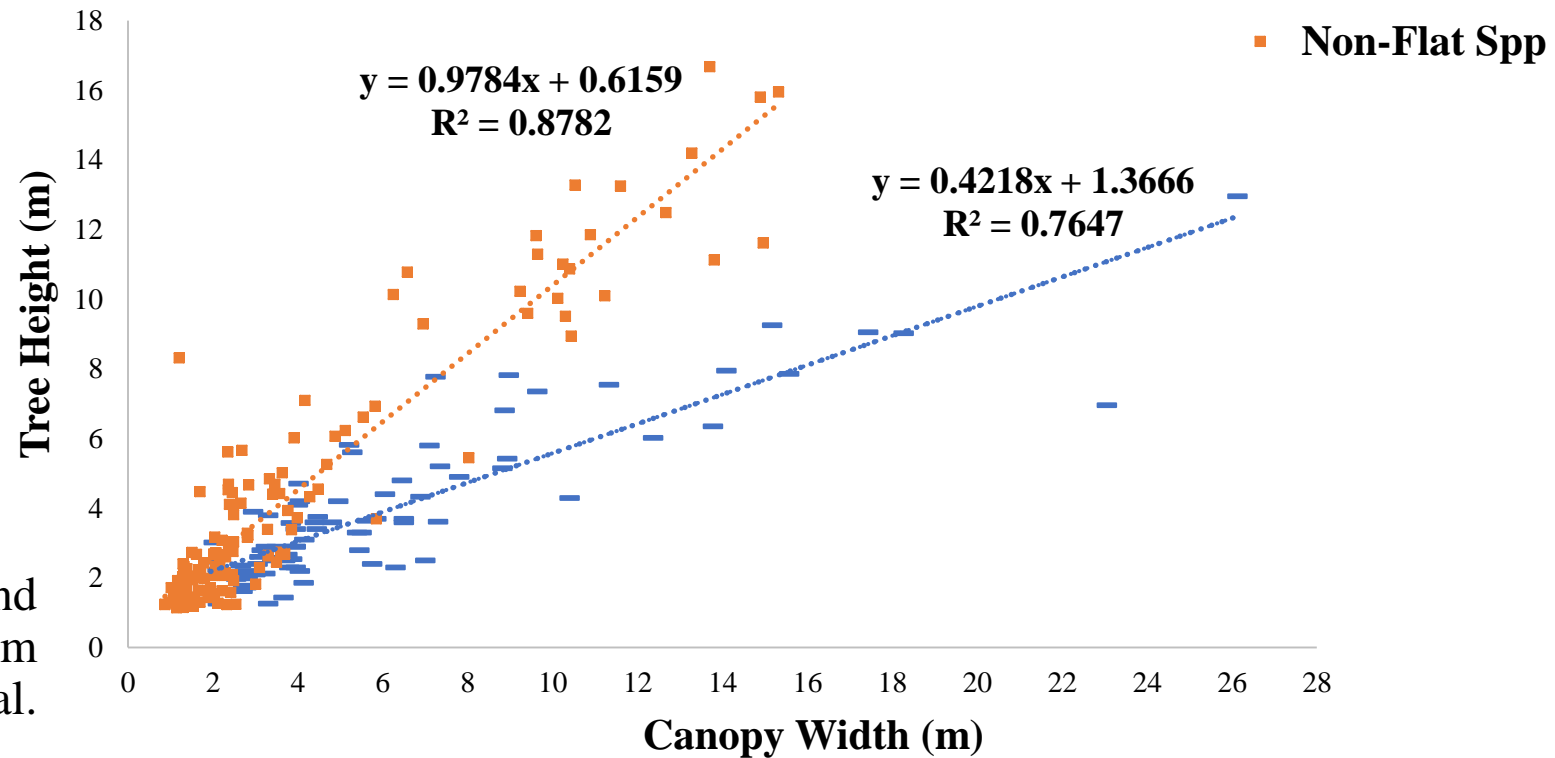
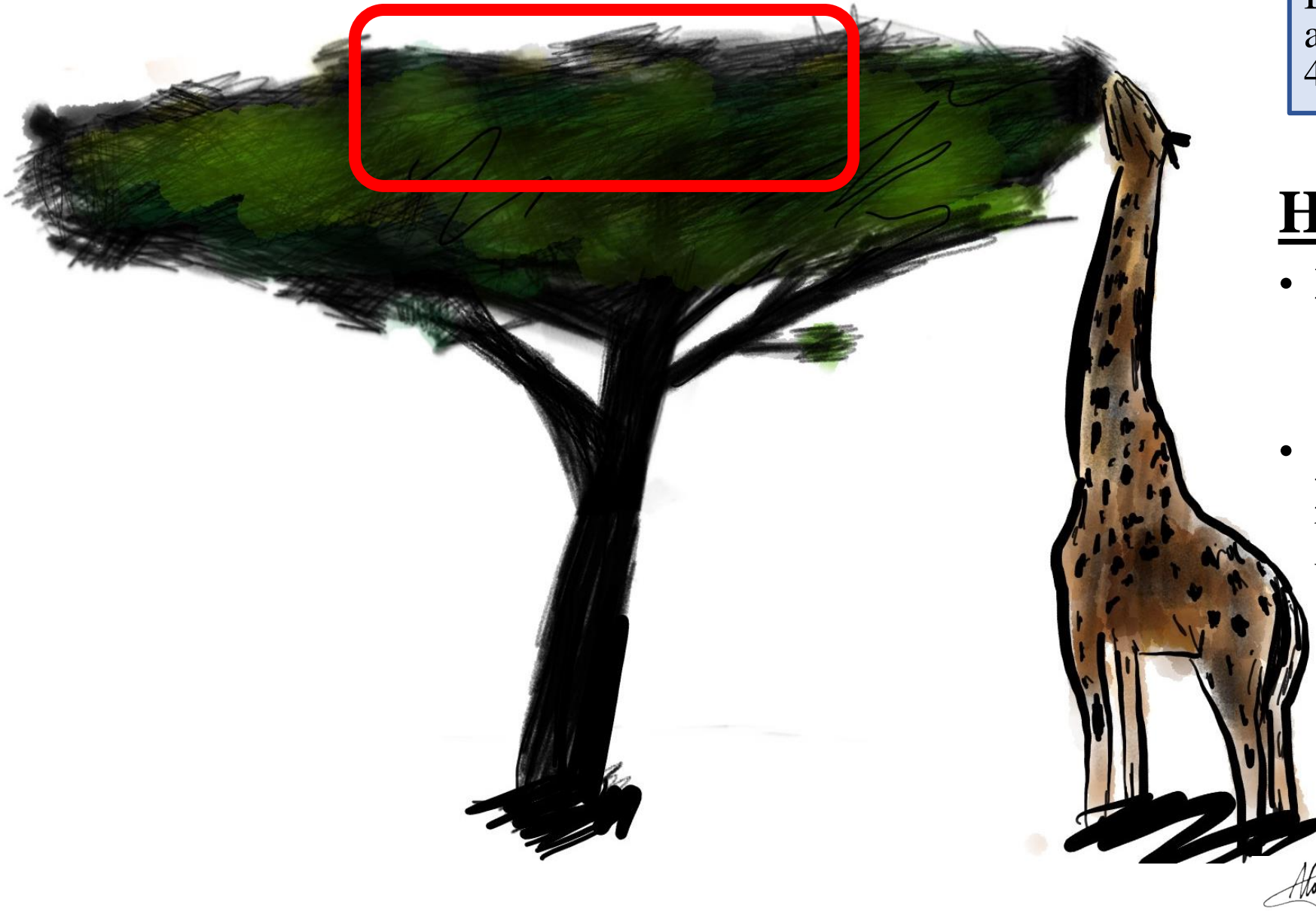


Fig 1. Correlation between tree height and canopy width of 220 sampled acacias from 14 species in Kwa-Zulu Natal.

Anti-giraffe browse hypothesis

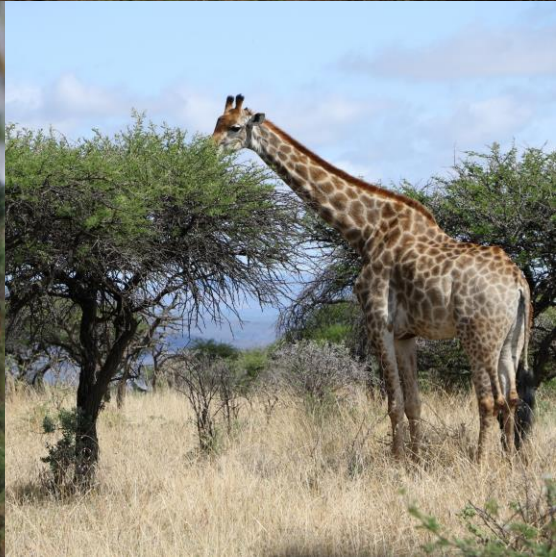
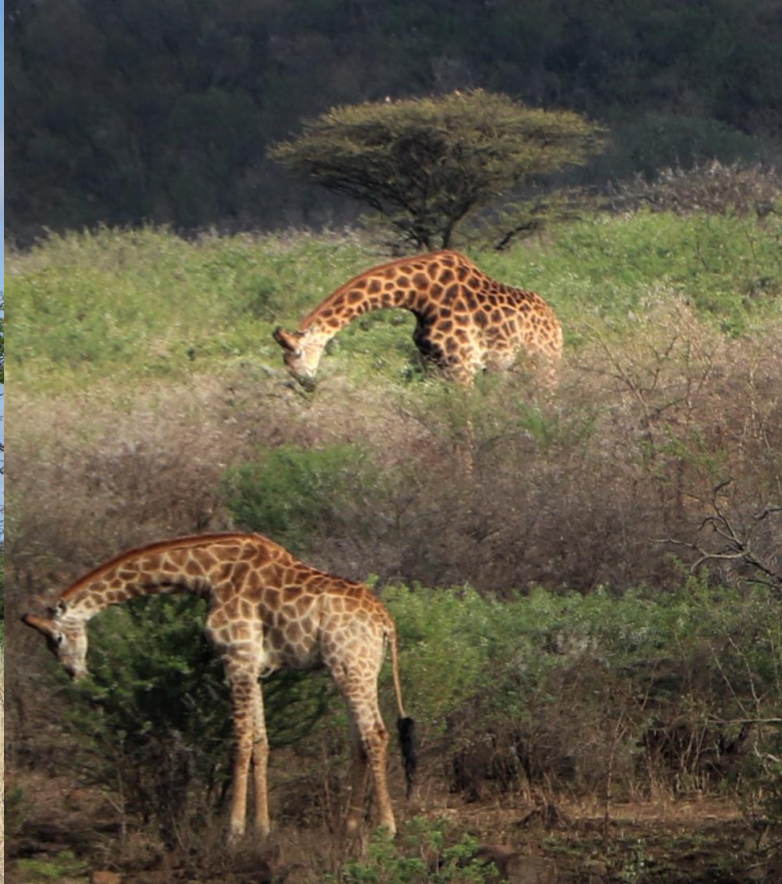
(Brown, 1960)

Brown, W.L., 1960. Ants, acacias and browsing mammals. *Ecology*, 41(3), 587-592.



However,

- **No better** protection than other shapes.
- *Vachellia sieberiana woodii* **heavily browsed** & stuck in browse-trap in Spioenkop & Weenen Nature Reserves (EKZN).



Tree- grazer mutualism hypothesis



Tree- grazer mutualism hypothesis

- Grass is short below-canopy. Often bare or patchy, especially in dry season.
- Grazer exclusion experiment: 42 flat-top trees 3-4m tall; 1x1m cages to exclude all animals. Setup October - assessed February.

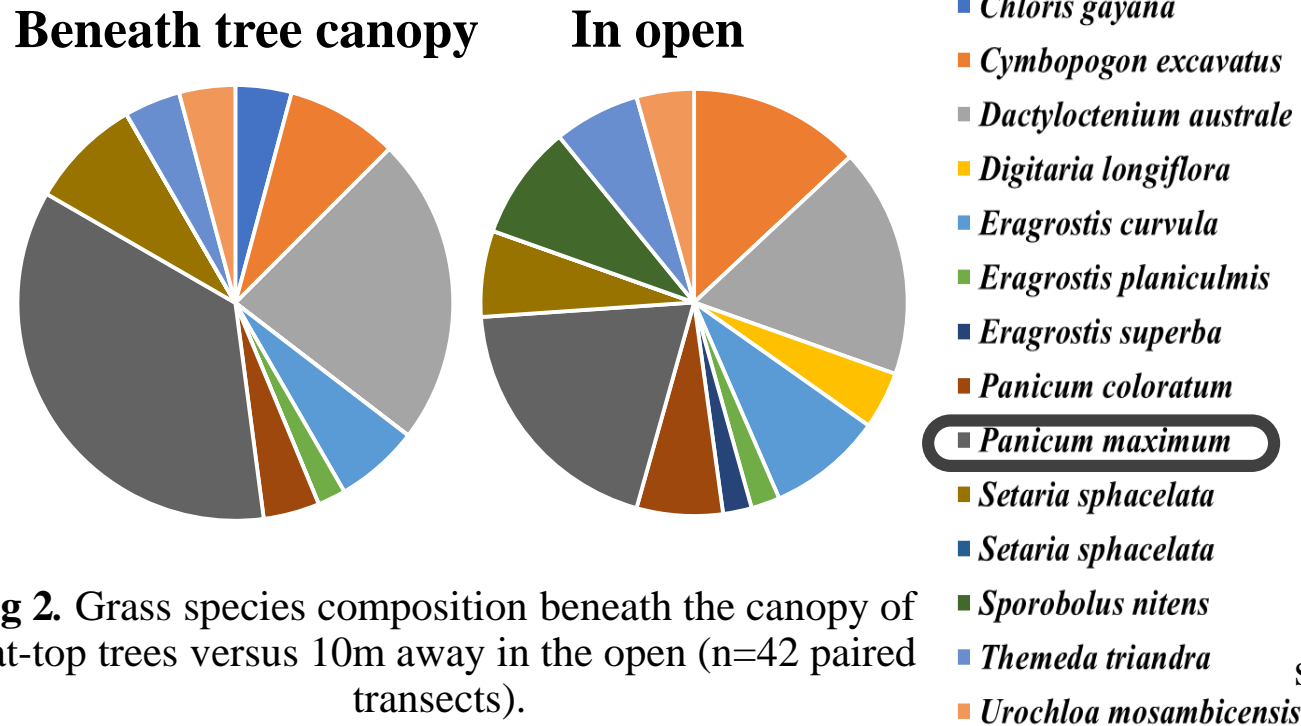


Fig 2. Grass species composition beneath the canopy of flat-top trees versus 10m away in the open (n=42 paired transects).

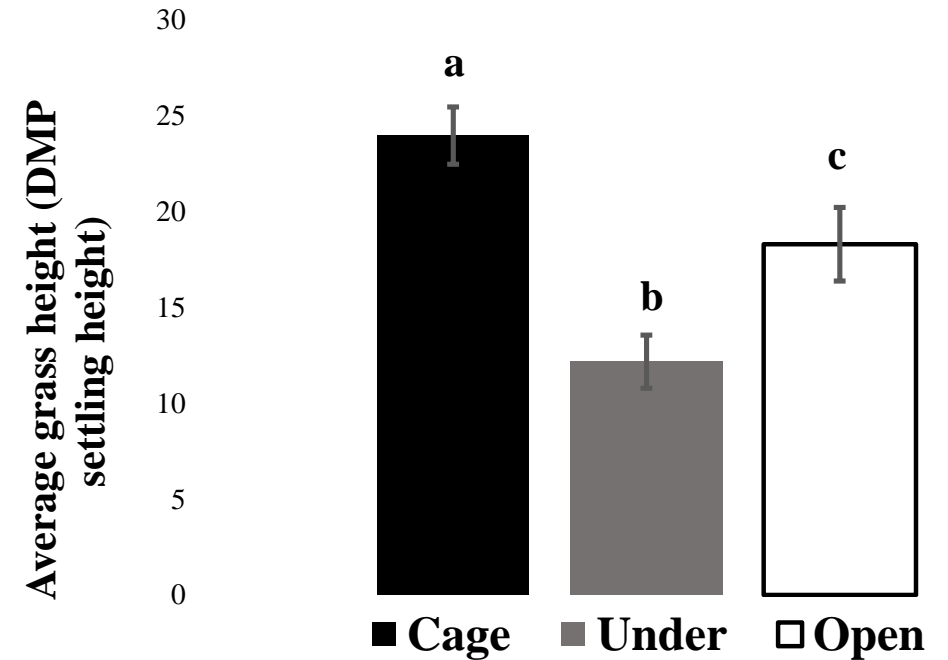
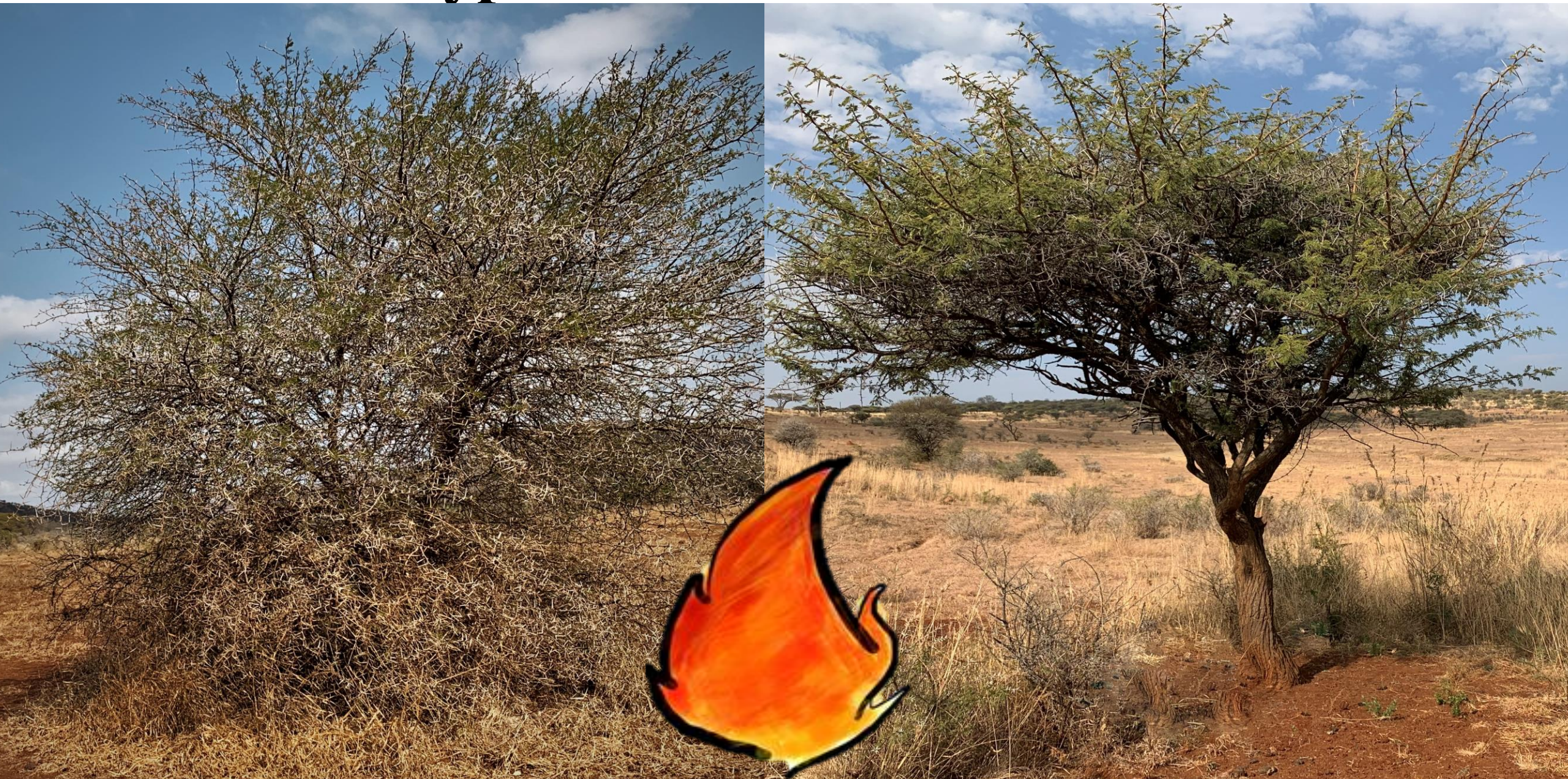


Fig 3. Average grass height (DMP) just post-growing season beneath the tree (Under), 10m away in the open (Open), and beneath the canopy inside exclusion transect (Cage). Bars represent standard error.

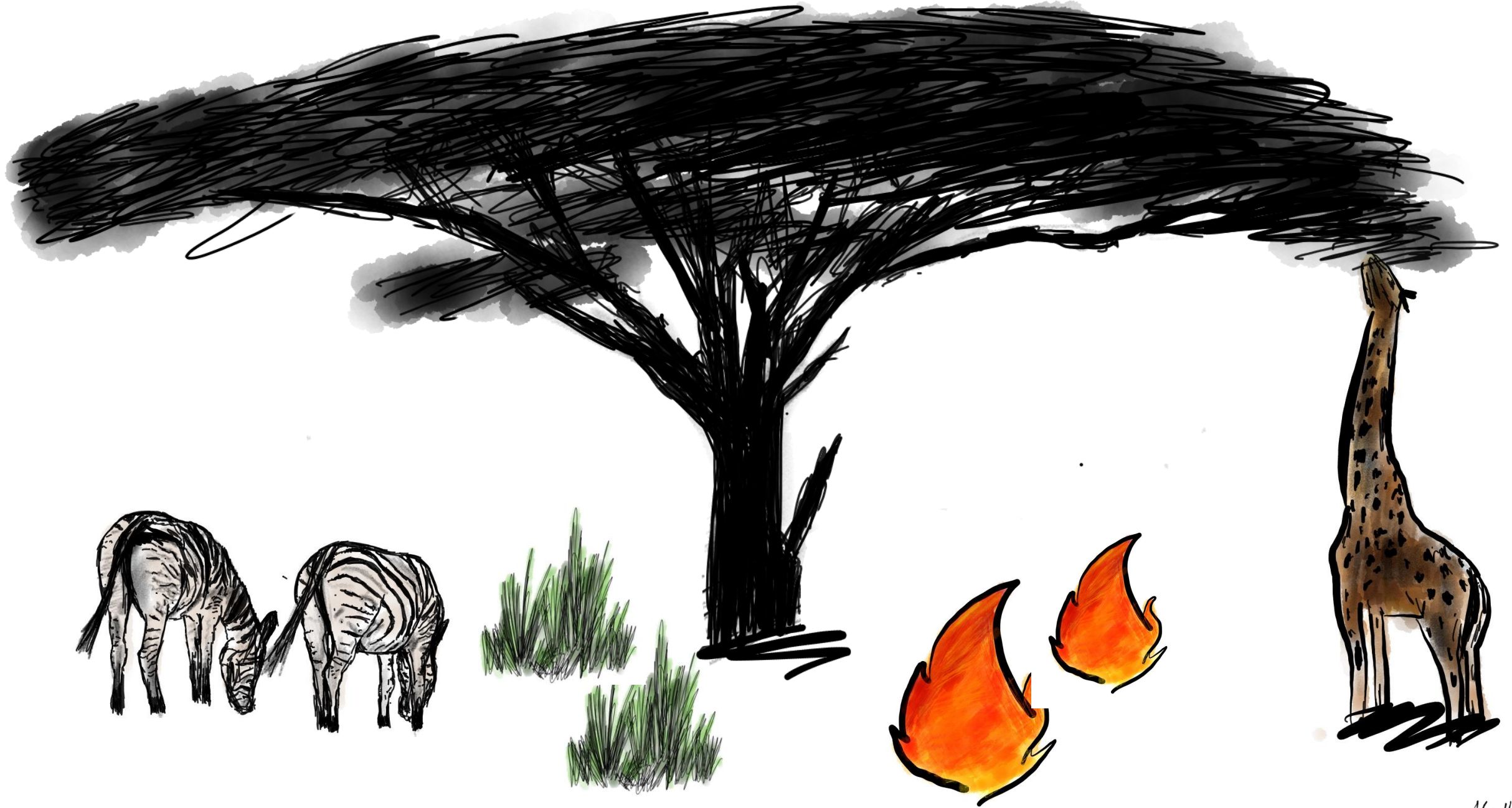
Fire survival hypothesis



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this?**



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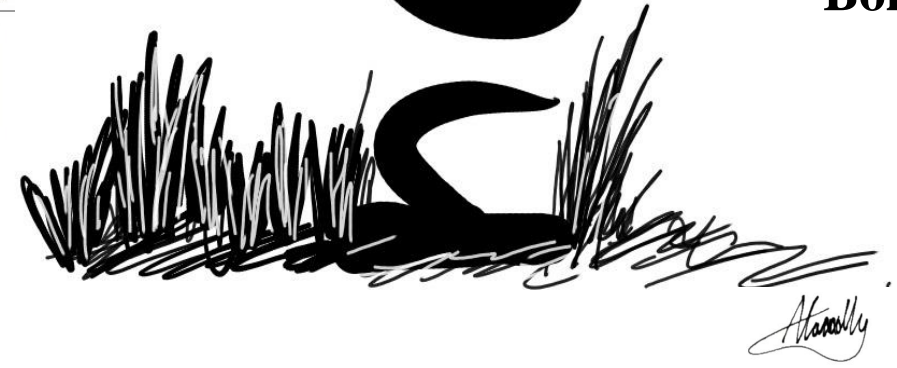


www.bonamanzi.co.za

Field assistants: Stacey Klein
Snakenborg, Mark Fitzgibbon,
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Research sites:

- Hluhluwe-Imfolozi Park (EKZN)
- Spioenkop Nature Reserve (EKZN)
- Weenen Nature Reserve (EKZN)
- **Bonamanzi** Nature Reserve (Private)



**All photographs & artwork by
Alexandra Connolly*