

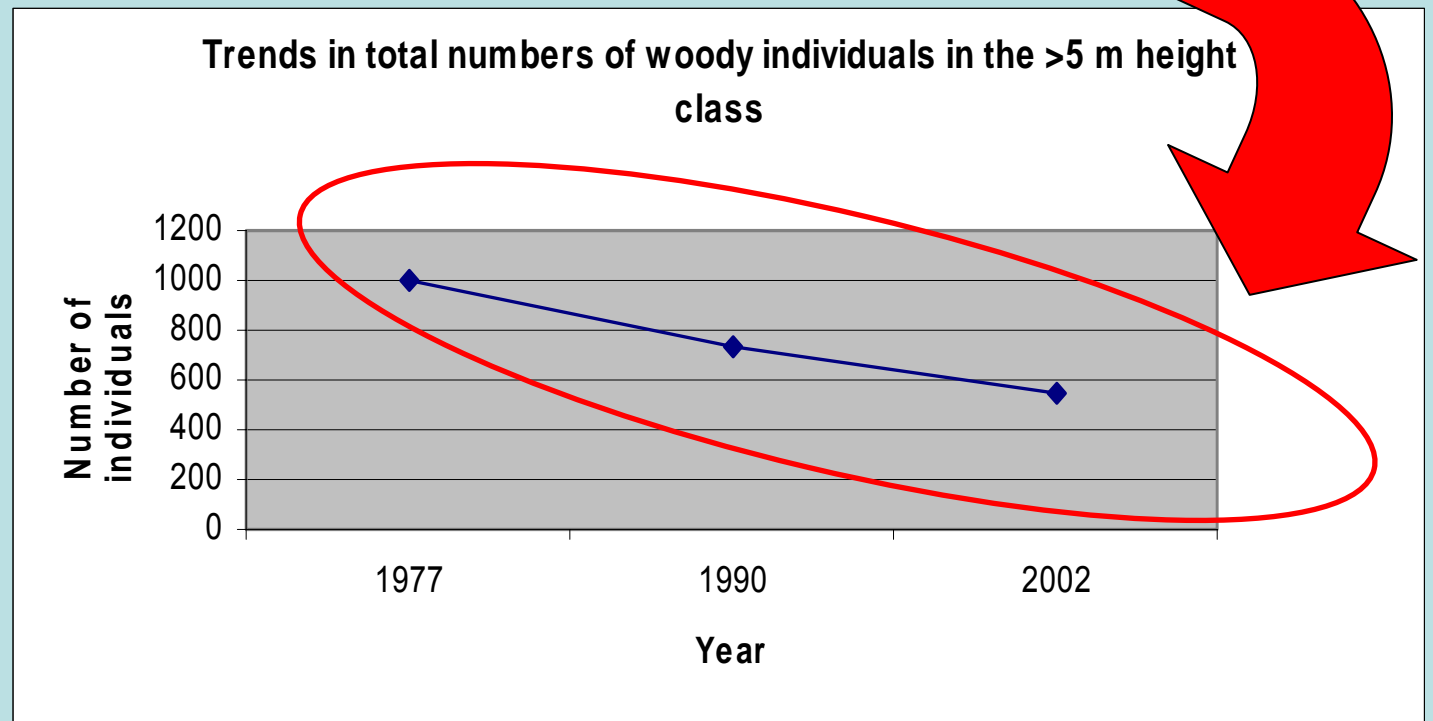
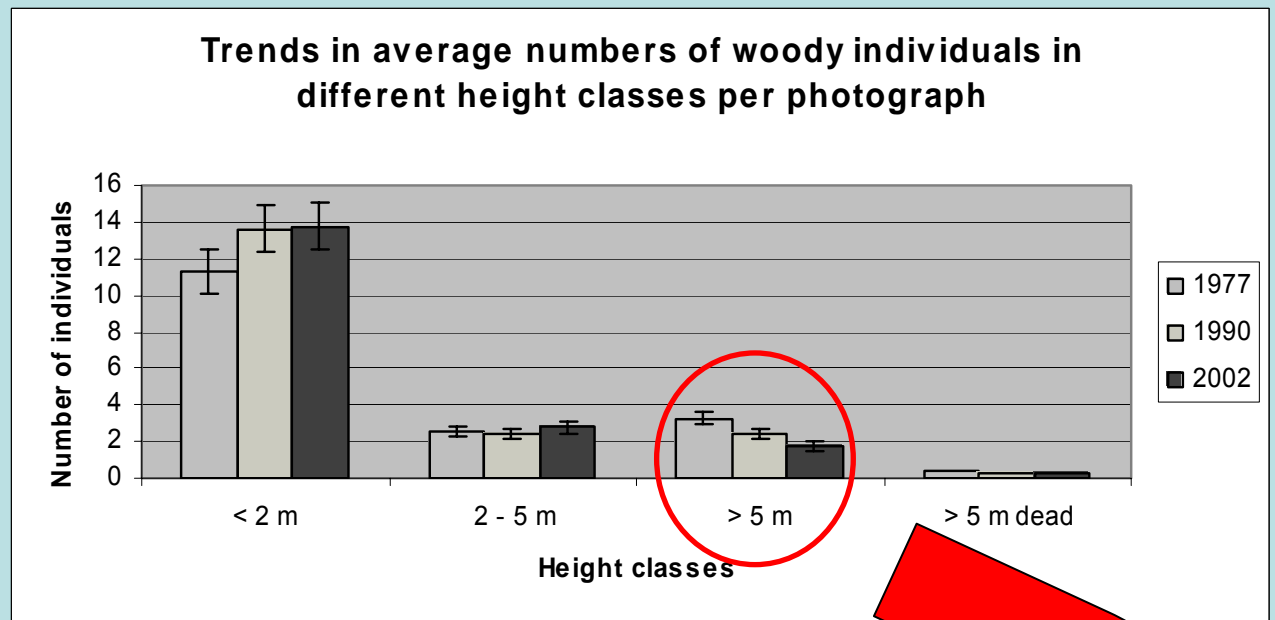
Do we know enough about the ecological role of large trees to allow them to fluctuate at levels as implied by some scientists?

Holger Eckhardt

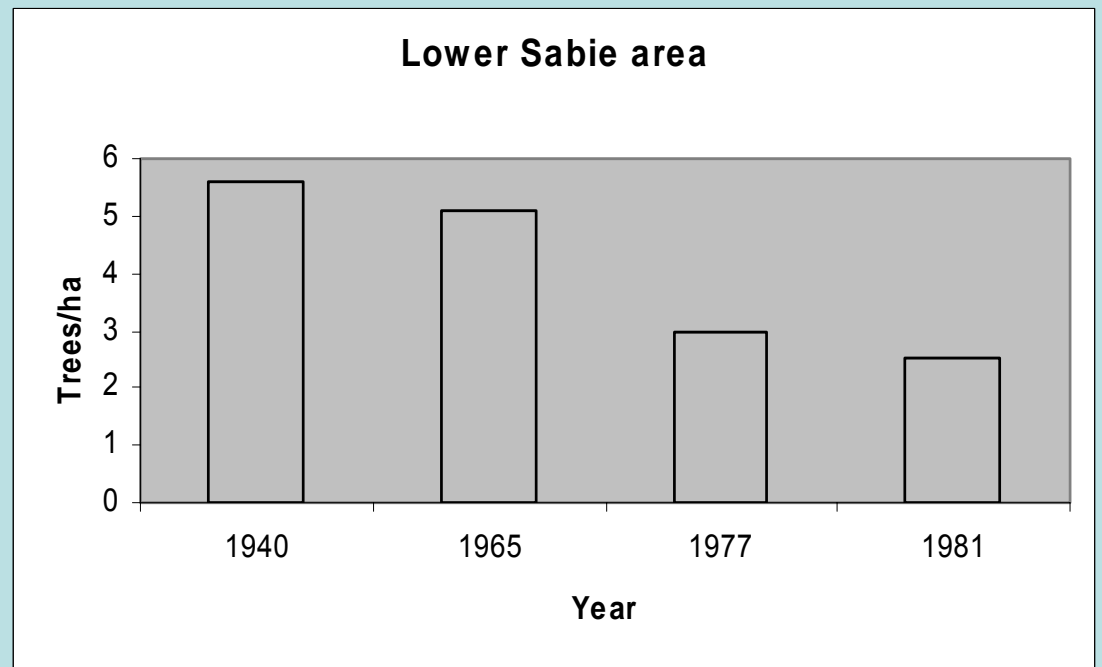
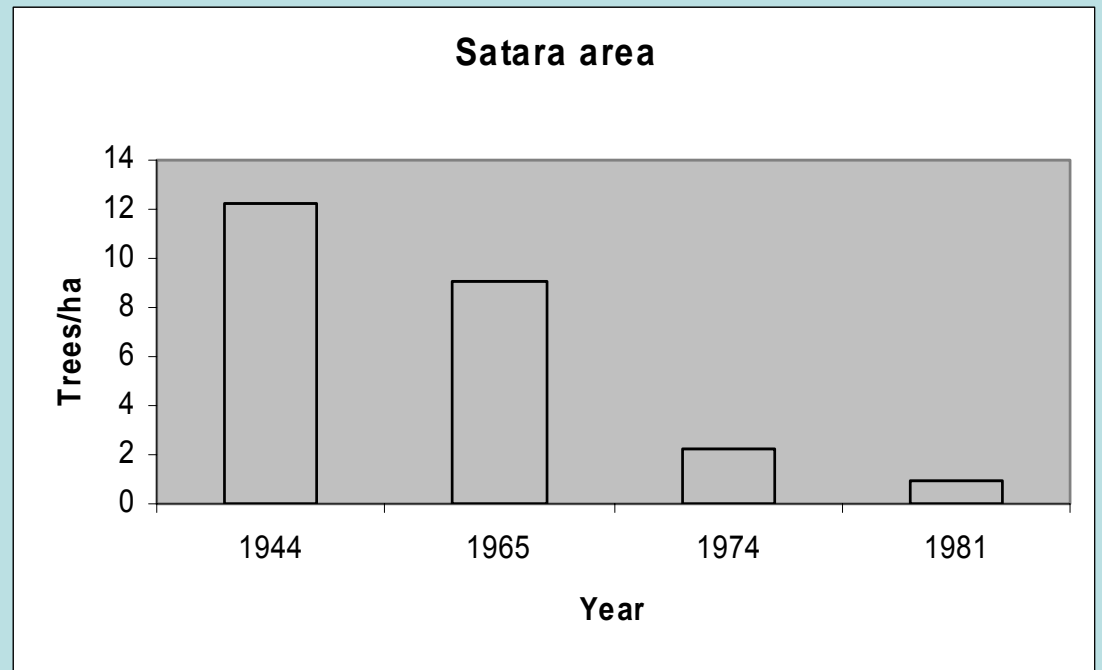


OBSERVED TRENDS

Large trees (> 5m)
down by $\pm 45\%$
since 1977.



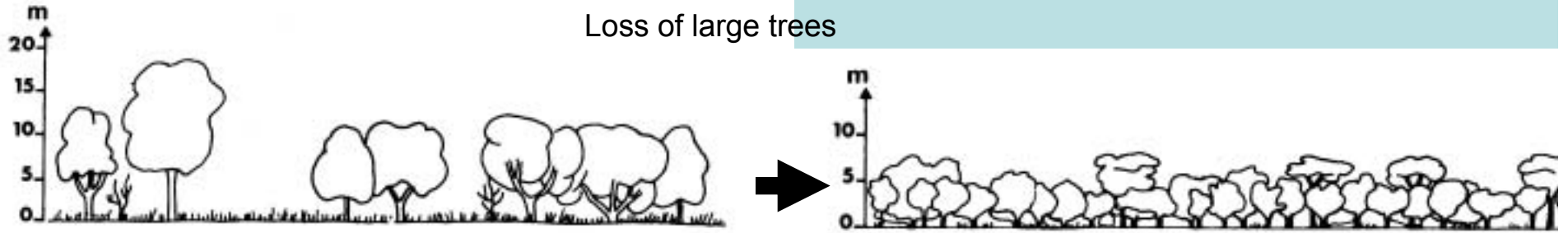
Large tree densities down as determined on aerial photographs.



granites

Bush encroachment

Loss of large trees



Savanna woodland

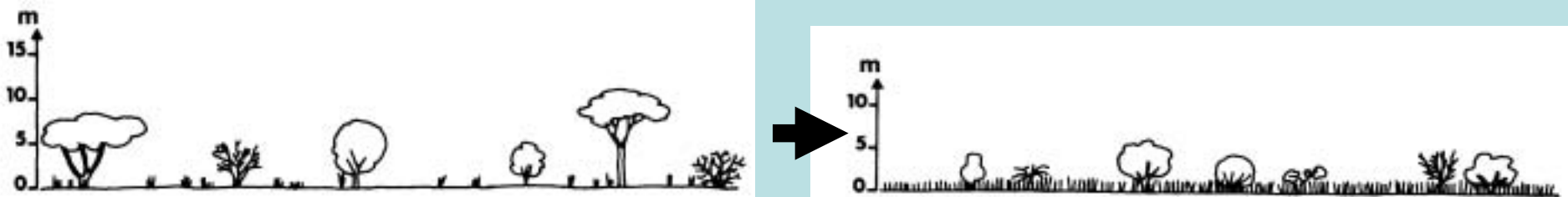
Thickets

Envisaged outcomes of current trends

basalts

Bush encroachment

Loss of large trees



Tree savanna

Shrub savanna

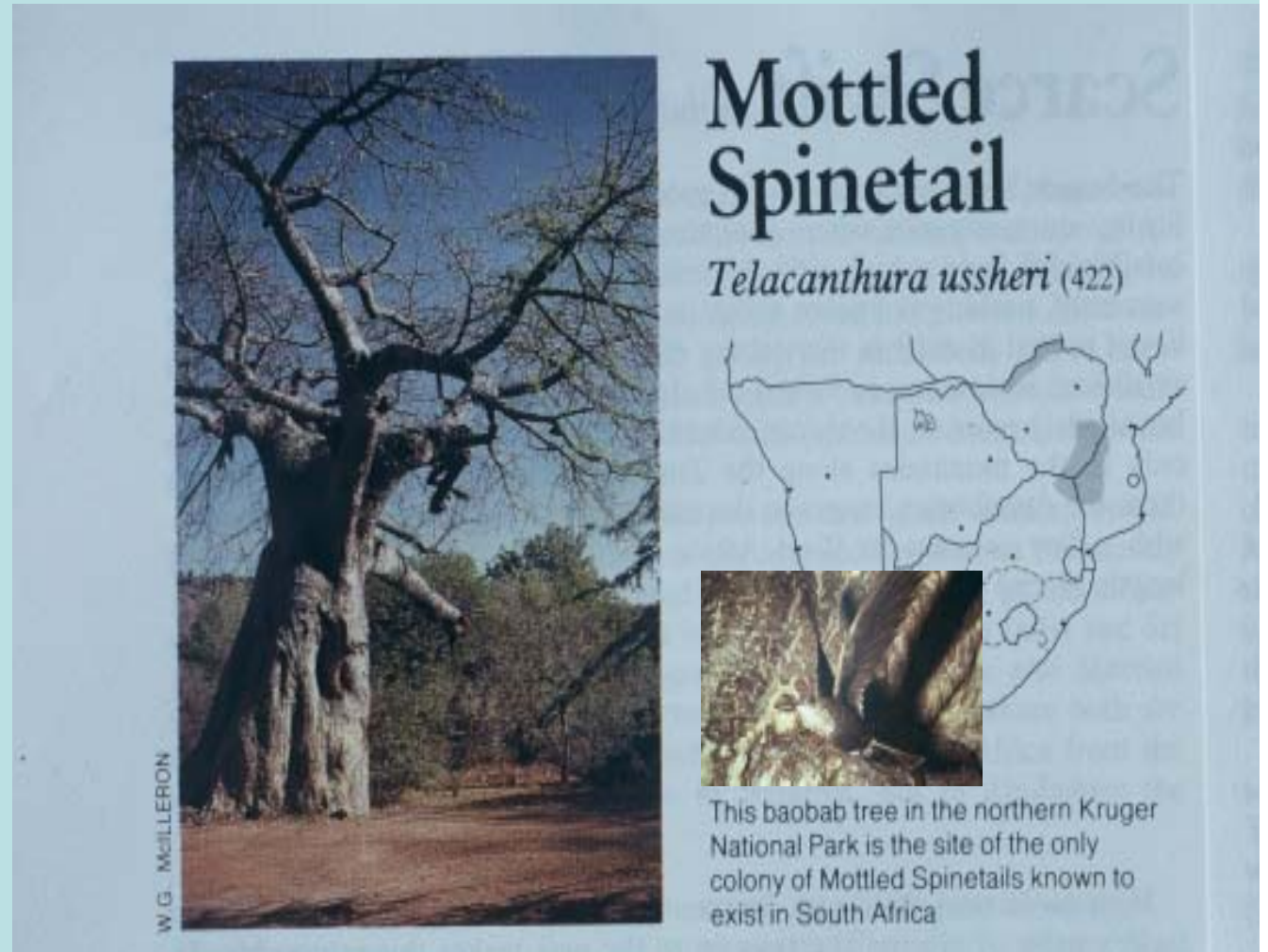
DIFFERENT OPINIONS REGARDING TPC'S AND THEIR CONSEQUENCES

- Extreme fluctuations are part of natural processes, therefore no intervention required (Non-TPC group) → loss of all tall trees.
- Fluctuations are part of natural processes, however, within limits (TPC group).
- No fluctuations allowed, system to be maintained at equilibrium (not achievable since no system is completely static).

CAN WE ALLOW THESE
'EXTREME' FLUXES WHILE
WE STILL DON'T
UNDERSTAND THE
ECOLOGICAL ROLE OF
LARGE TREES?

FUNCTIONS AND INFLUENCES OF LARGE TREES

- More obvious roles → provision of different habitat types to various organisms, e.g. nesting sites for birds (hollow trunks, high crowns), shade for animals.



TAWNY EAGLE



Courtesy of Ian Whyte

WHITE-BACKED
VULTURE



Courtesy of Ian Whyte



WAHLBERGS
EAGLE

Courtesy of Ian Whyte



Courtesy of Ian Whyte

FUNCTIONS AND INFLUENCES OF LARGE TREES contd.

- Complex, less understood roles (KNP-context) → direct and indirect influences on immediate environment.

THE ANSWER TO THE PREVIOUSLY
ASKED QUESTION IS

NO

**BECAUSE OF LARGE GAPS IN
KNOWLEDGE BASE THEREFORE
THERE IS AN URGENT**

NEED FOR MORE INFORMATION

- **Autecology** of the main (prominent) tree species.
- Includes all aspects related to the ecology:
 - Ecophysiology (under different environmental conditions) → seed bank (production episodic, viability); → germination (subsequent conditions); → recruitment (escape from herbaceous competition and fire trap); → growth rate; → susceptibility to drought, fire and herbivory; → age at 'natural' mortality.

NEED FOR MORE INFORMATION contd.

- Effect of different size classes of trees on environment, e.g. do smaller trees (5-10m) have a bigger influence than larger trees (10-15m; >15m) or *vice versa*.
- Effects on plant species composition (herbaceous and woody), soil nutrient contents, soil moisture (hydraulic lift vs competition – Tree/Grass Prog) and temperature (shade).

NEED FOR MORE INFORMATION contd.

- Lastly but not least, in what way do large trees contribute to biodiversity and what would we lose if most or all large trees of specific species disappear??

FINAL COMMENT

- We need projects dealing specifically with issues listed earlier on.
- Please see this as an open invitation to close the existing gaps.



Thank you