Floristic and abiotic characteristics of gaps in selected KwaZulu-Natal coastal forests

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Background

- What are forest gaps?
  - an area within a forest where the canopy is noticeably lower than in adjacent areas [1]

- Canopy gaps
  - small gaps [2]
  - big gaps

- Status of coastal forests
  - Protected forest
What causes forest gaps?

- wind
- ageing of tree
- fungal attack
- anthropogenic causes [3]
What happens in gaps?

- Regeneration of indigenous species \(^1\)\(^2\)
  and/or
- invasion by aliens \(^4\)
Aim

- To characterize the size and frequency of gaps in coastal forests

- To examine the floristics of gaps within different size classes in coastal forest in relation to their physical and abiotic characteristics
Objectives

- to enumerate and characterize gaps in terms of size
- to determine and compare species composition and abundance within selected gap size classes
- to relate species composition and abundance to abiotic factors (e.g. soil moisture content and light intensity), across gap size classes
Methodology

Study sites

Hawaan Forest

eMpisini Forest
Part 1:

Walked parallel transect

- gaps would be determined along the transects
- gaps will be georeferenced and classified according to size e.g.:
  - small gaps < 5 m$^2$
  - medium gaps 5 - 10 m$^2$
  - big gaps ≥ 10 m$^2$
Part 2:

- Gaps will be represented spatially

- Hawth’s Tool extension in ArcMap will be used to randomly identify n=10 gaps in each size class
Part 3: Determining species composition and abundance

- Species composition
- Species abundance
- Alien vs indigenous ratio
Measuring abiotic factors

- Light Intensity
- Soil Moisture content
- Humidity
Analyses

- Floristic Data
  - species accumulation curves
  - cluster analyses
Analyses

- ANOVA – differences across size classes
- MANOVA
  - interactive effects
Significance

- No baseline data for gaps in KwaZulu-Natal
- To understand forest gap regeneration
- Provide information on how to manage forests
Acknowledgements

- Hawaan and eMpisini Forest management


