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Multidisciplinary Perspective on Mangrove Health and Conservation

A Study in Funzi Bay, Kenya

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Introduction

In Kenya, mangrove ecosystems have experienced significant decline, with about 50% lost over the past 50 years due to pressures from agriculture, aquaculture, urbanization, and inadequate legislation (FAO, 2005; Kirui et al., 2013). Rehabilitation efforts, such as replanting programs initiated in Gazi Bay in 1991, aim to restore these critical habitats (Kairo et al., 2008). Local initiatives emphasize community-based management and reforestation, integrating sustainable practices to enhance both ecological resilience and local livelihoods (Hamza, 2022). Despite these efforts, mangroves remain under threat, highlighting the need for updated policies and stronger enforcement to protect these vital coastal ecosystems” (Alemayehu, 2016).

Methods

Integrated Geospatial Mapping:
Utilized GIS (QGIS) for remote mapping and GPS for on-site data collection. Supplemented with datasets from VLINDER Austria and available online data. Conducted three transects (1 km length, 4 m width) to analyze species composition, canopy height, zonation, and mangrove tree count.

Engagement with the local community:
via structured questionnaires and interviews.

Analyzed three datasets:

1. Expert interviews with Beach Management Unit chairmen
2. Questionnaires with 4 local communities (n=186)
3. Questionnaires with fishermen

Hypothesis

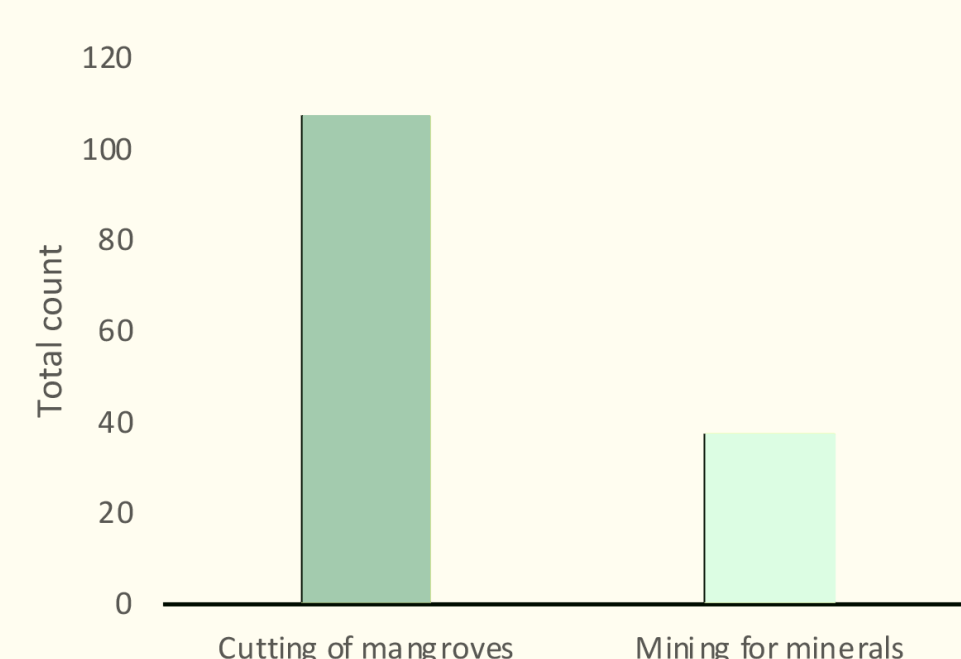
The presence and health of mangrove ecosystems in Funzi Bay are correlated with the socio-economic well-being and resilience of the local coastal communities.

What are the pressures and drivers of the Funzi Bay mangrove ecosystem?

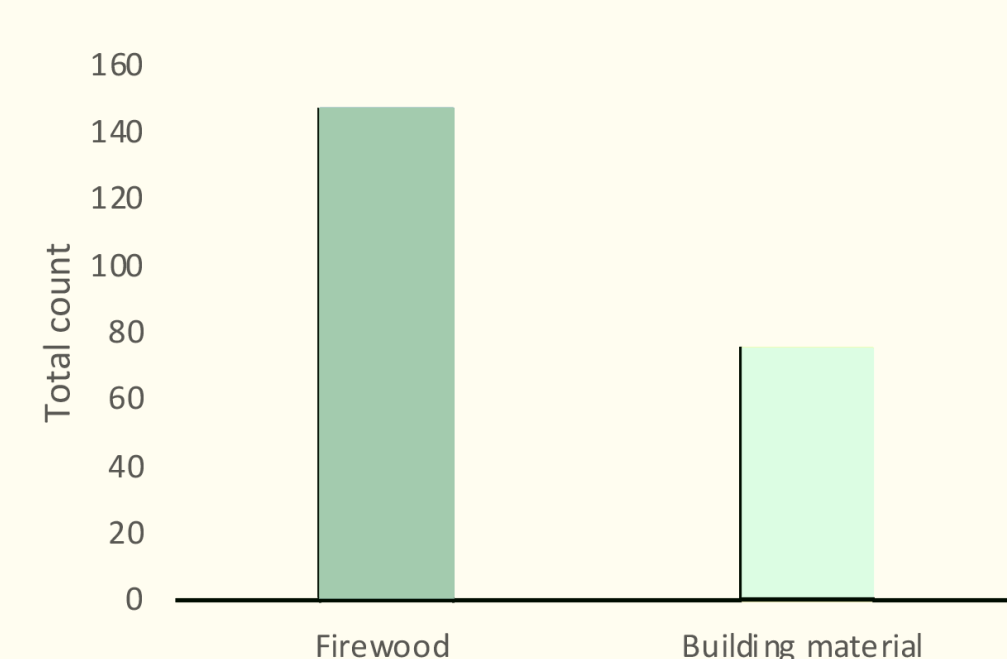
How is the awareness and knowledge regarding mangroves within the community?

Results

- There is awareness of the importance of mangroves to the community although there is also lack of awareness and cooperation regarding mangroves
- Active involvement in conservation efforts
- Recognition of the ecological and economic value of mangroves as breeding grounds for fish and other marine life.
- Mangrove degradation due to pollution from debris accumulation as well as sedimentation
- Threats from livestock grazing within mangrove areas.
- Negative impact of human activities, including illegal fishing practices and coral reef destruction
- Climate change as a severe threat, contributing to rising sea levels and increased flooding, resulting in mangrove loss



Pressures named by participants (n=186)



Products used out of the mangroves (n=186)

Conclusion

- Funzi Bay is affected by upstream agriculture (sedimentation)
- Industrial farming of sugar cane close by
- Illegal fishing withing the mangroves and the fishing industry in the indian ocean is affecting the mangroves
- The community is well aware of the issues but their dependency onto the system is forged by their low income.

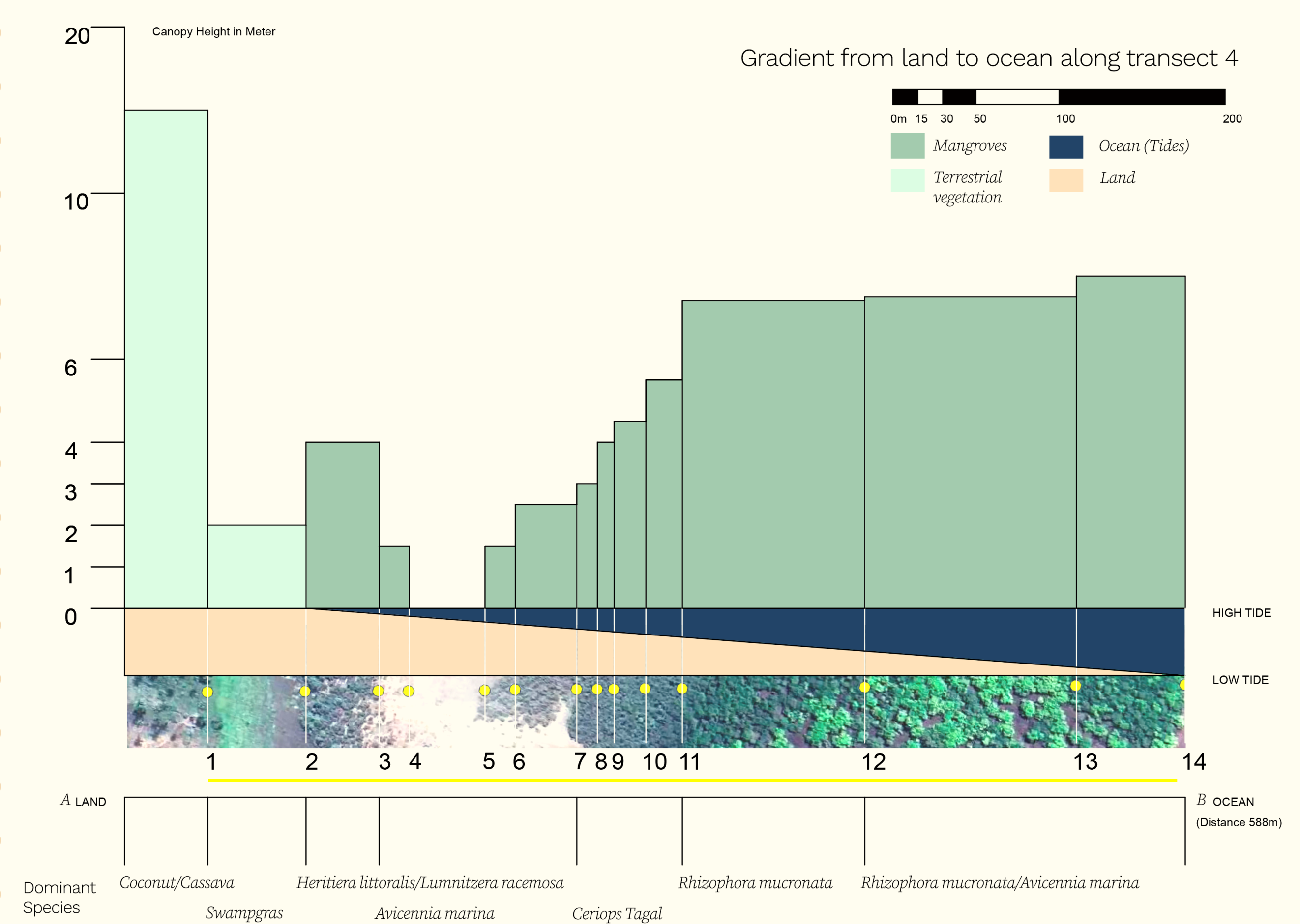
Quotation:
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Results



FUNZI BAY,
KWALE COUNTY, KENYA

