



Community Perceptions on the Changes in Vegetation Composition and Abundance in Rusinga Island, Homa Bay County, Kenya

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Introduction

- There is a global decline in plant species driven by expansion of agricultural fields and demand for plant resources.
- Leading to losses in biodiversity and ecosystem goods and services.
- Local communities have an extensive knowledge about environmental changes.
- Important in scientific investigation on the causes of the changes and design of adaptation and mitigation measures to deal with the changes

Objective

- To assess the different uses of woody plant species, the perceptions of the local people on the changes in vegetation, the causes of the changes and proposed management approaches.

Materials and methods

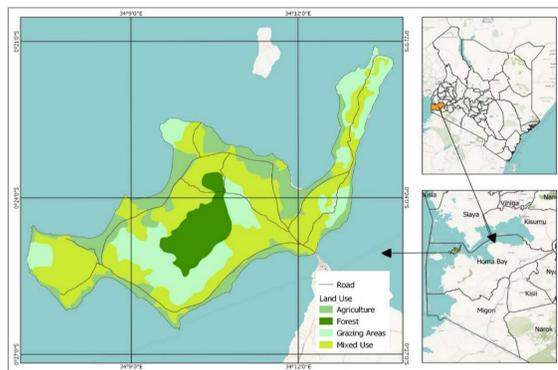


Fig. 1. Map of the study area

- Household interviews (n=150): semi-structured questionnaires
- FGDS (n=4) and KIIS(n=30).



Key informant interviews



Focus group discussions

Results and Discussions

Table 1: Community perceptions on the changes in vegetation composition and abundance

Variables	Number of respondents (N=150)	Chi-square(χ^2) value	P-value
Are there changes in vegetation		77.76	0.000
Yes	129(86)		
No	21(14)		
Where the changes have occurred		153.73	0.000
Entire island	23(15.3)		
Hills	102(68)		
Homesteads	4(2.7)		
Not applicable/No changes	21(14)		
Causes of the changes		81.040	0.000
Deforestation	65(43.3)		
High population growth	23(15.3)		
Overgrazing	16(10.7)		
Inadequate rainfall	15(10)		
Soil erosion	10(6.7)		
No changes/causes	21(14)		
Signs of the changes		69.87	0.000
Few and small-sized trees	67(44.7)		
Increased soil erosion	36(24)		
Inadequate supply of firewood	17(11.3)		
Insufficient supply of building materials	9(6)		
No changes	21(14)		
Proposed restoration strategies		134.77	0.000
Planting trees	76(50.7)		
Protection of existing trees	24(16)		
Use of alternative sources of fuel	13(8.7)		
Increased awareness creation on environmental conservation	10(6.7)		
Controlled livestock grazing	6(4.0)		
No changes	21(14)		

Table 2: Uses of different woody plant species reported by communities in Rusinga Island

Species	Uses				
	Construction	Fuel (firewood & charcoal)	Medicine	Fencing	Forage/Fodder
Acacia brevispica		x			
Acacia seyal	x	x			x
Albizia coriaria	x	x	x		
Azadirachta indica			x		x
Balanites aegyptiaca		x			x
Caesalpinia decapetala				x	
Carrisa edulis			x	x	x
Commiphora Africana			x		
Cordia ovalis		x			
Dovyalis caffra				x	
Eucalyptus species	x				
Euclea divinorum	x	x	x		x
Euphorbia tirucalii		x		x	
Ficus species					x
Grevillea robusta	x				
Grewia bicolor	x	x	x		x
Harrisonia abyssinica			x	x	x
Lanea schimperii			x		
Lantana camara		x		x	x
Leucaena leucocephala	x	x			x
Markhamia lutea	x	x			
Melia azadirach			x		x
Moringa oleifera			x		x
Olea africana	x	x			
Rhus natalensis	x	x	x		x
Senna didymobotrya			x		
Senna siamea	x	x			x
Sesbania sesban					x
Terminalia brownii	x		x		
Thevetia peruviana		x	x	x	x
Ximenia caffra			x		

Table 3: Woody plant species mentioned in order of preference for land rehabilitation in Rusinga Island

Most preferred species	Reason for preference	Least preferred species	Reason for non-preference
<i>Markhamia lutea</i> (21)	Compatible with crops, fast-growing and coppicing properties	<i>Terminalia mantaly</i> (10)	Associated with the death of family members because of the arrangement of its canopy.
<i>Senna siamea</i> (15)	Adaptable to the local climatic conditions	<i>Eucalyptus species</i> (8)	Requires a lot of water to grow and causes the drying out of an area.
<i>Leucaena leucocephala</i> (14)	Fodder for livestock and improves soil fertility	<i>Thevetia peruviana</i> (7)	Provides hiding places for the green snakes which are poisonous to children, spreads out very fast and reduces the fertility of the soil. Takes a very long time to grow
<i>Olea africana</i> (6)	Good for building houses, firewood and resistance to drought	<i>Acacia seyal</i> (3)	
<i>Euclea divinorum</i> (5)	Good for building, firewood, medicinal and adaptable to the local climatic conditions	<i>Euphorbia candelabrum</i> (3)	Believed to be a bad omen as it causes death in a family and it is not mostly found in homesteads
<i>Azadirachta indica</i> (5)	It is a medicinal plant species	<i>Balanites aegyptiaca</i> (2)	Takes a very long time to grow
<i>Grevillea robusta</i> (4)	Compatible with crops, source of firewood and timber for construction	<i>Ficus species</i> (2)	Takes a very long time to grow
<i>Rhus natalensis</i> (4)	Adaptable to the local climatic conditions		
<i>Terminalia brownii</i> (2)	Drought resistant and good for building houses		

KIIs (N=30) Number of informants who mentioned each species is given in parentheses

Conclusions

- Majority of the people are cognizant of the decline in vegetation and the possible driving factors.
- Woody vegetation is highly dispersed and all the forest trees are declining in abundance.
- There is need for active involvement of the local people in the management and rehabilitation efforts.
- Incorporation of local ecological knowledge in ecological resource management
- Species preferred for restoration: *Markhamia lutea*, *Senna siamea*, *Leucaena leucocephala*, *Olea africana* and *Euclea divinorum* be encouraged and promoted.

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