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**Master's degree in
Climate Change, Biodiversity, Policy
and Practice**

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Comparative Study of Plant Species and Community Benefits in the Flat Plains of the Shai Hills Resource Reserve and Adjacent Unprotected Areas in Ghana

Introduction and problem statement

- ✓ The Shai Hills Resource Reserve (SHRR) is one of Ghana's key savanna ecosystems, supporting diverse woody plant species and providing vital livelihood benefits to surrounding communities.
- ✓ However, increasing pressures such as illegal logging, fuelwood harvesting, bushfires, quarry expansion, and settlement encroachment are contributing to a gradual decline in plant species diversity and regeneration.
- ✓ This study highlights the growing tension between biodiversity conservation and rapid land-use change in one of Ghana's most pressured peri-urban ecosystems.

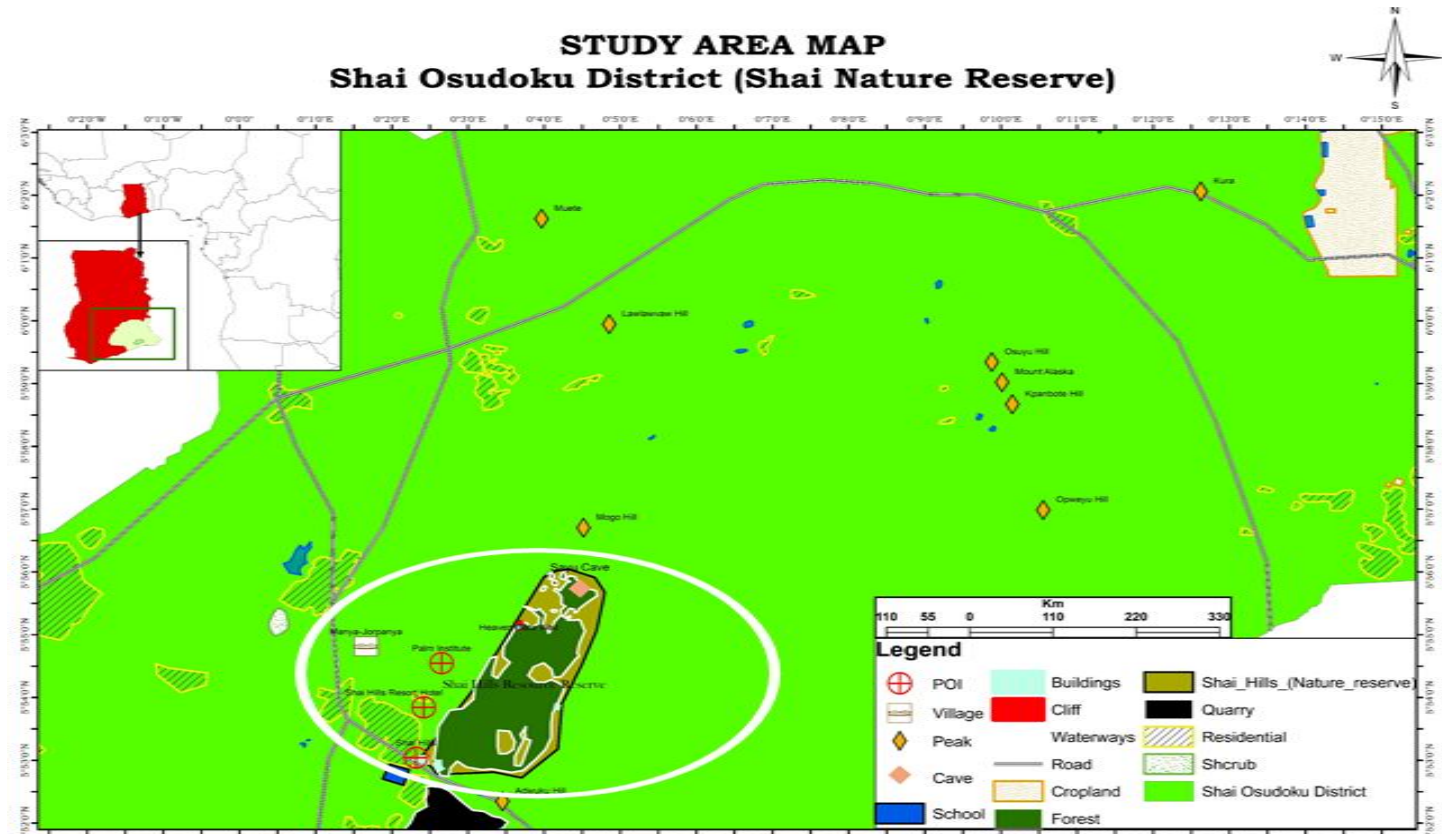


Figure 1: Map of the area, created by Nancy Karikari with ArcGIS Pro 3.3.

Objectives

1. To assess the plant species community of the flat plains (SHRR) and unprotected areas (flat area).
2. To determine factors influencing the decline of plant species in the flat plains (SHRR).
3. To evaluate the benefit of plant species in flat plains (SHRR) and unprotected areas for the people living around the reserve.

Methods

Objective 1

Ecological inventory with the help of a botanist.

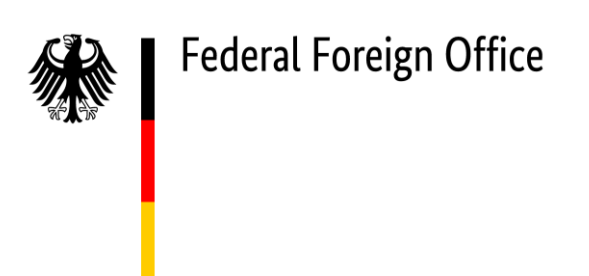
Objectives 2 and 3

- ✓ A structured questionnaire was used for recording respondent traits, perceptions on species decline, and on plant benefits in Shai Hills.
- ✓ Key Informant Interviews (KIIs) with experienced hunters, herbalists, farmers with long-standing ties to the land were used to record plants benefits, based on the respondents' traditional ecological knowledge.

Partner institutions:



Funded by:

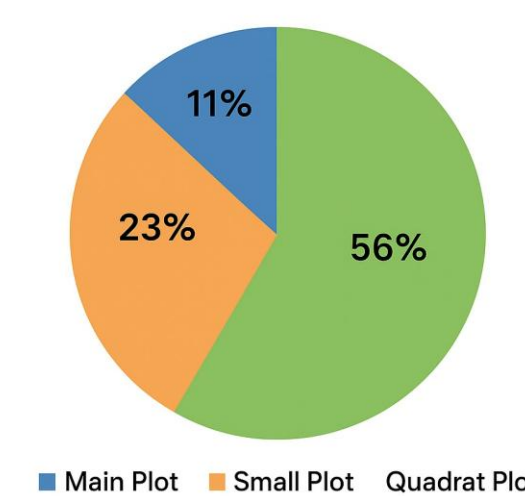


Results

Objective 1: Plant species community

Species population: Notably, the **unprotected flat plains** contained a slightly higher proportion of individuals (**52.4%**), while the **protected SHRR** area accounted for **47.6%**.

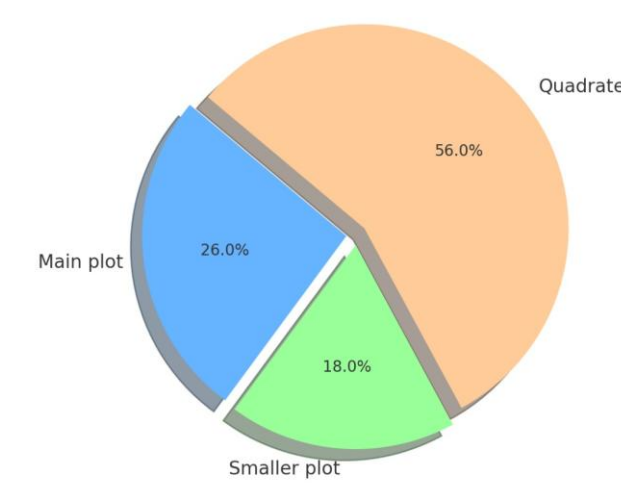
Species Richness by Plot Type



■ Main Plot ■ Small Plot ■ Quadrat Plot

Unprotected Area

Species Richness Distribution by Plot Area

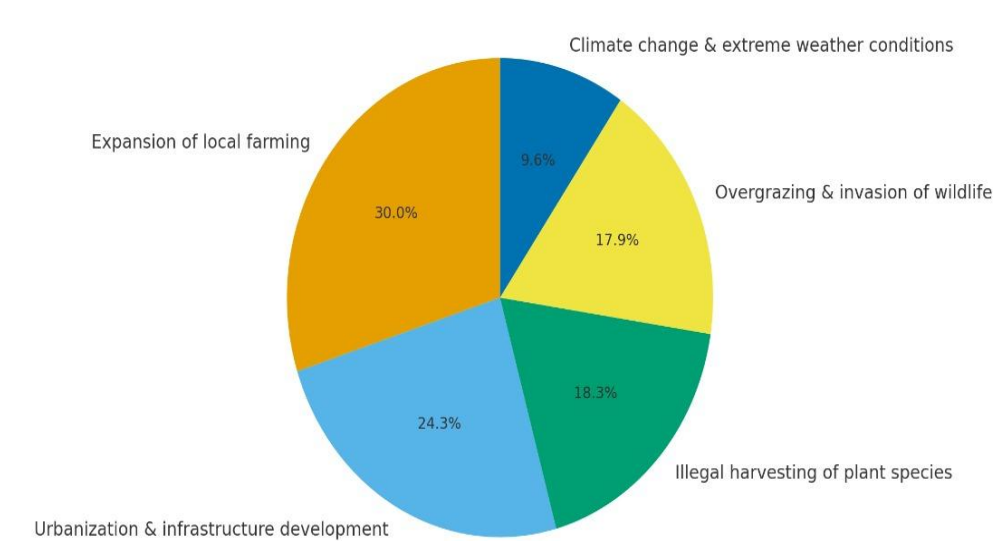


Protected Area

Explanation:
Main plot is 50m by 50m
Small plot is 10m by 10m
Quadrate Plot is 1m by 1m

Objective 2: Factors influencing species decline

Perceived Threats to Woody Species Conservation (n = 160)



Objective 3: Identified benefits of plant species in the flat plains (SHRR)

Family	Scientific Name	Common Name	Reported uses	Documented uses
Meliaceae	Azadirachta indica	Neem	Medicine (malaria, fever), pest control, and spiritual cleansing.	Anti-bacterial, insecticide, natural pesticide, oral care.
Meliaceae	Khaya spp.	Mahogany	Timber for building, shade, and protection from spiritual attacks.	Timber, veneer, plywood, fodder, canoes, medicinal, percussion instruments.

Conclusions

- ✓ The research underscores the need for **collaborative, landscape-based conservation strategies** that balance ecological protection with local livelihood needs.
- ✓ Degraded areas should be restored and the involvement of communities is essential for safeguarding the ecological integrity and cultural value of the Shai Hills for future generations.

Recommendations:

1. Control land commercialization and urban encroachment.
2. Support restoration through native tree planting.
3. Raise public awareness and environmental education.

Relevant stakeholders: Ghana Forestry Commission, researchers and academic institutions, NGOs in conservation and farmers.