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Characterization of Honey Production Pratices and impacts in Lizongole village, Niassa National Reserve Mozambique

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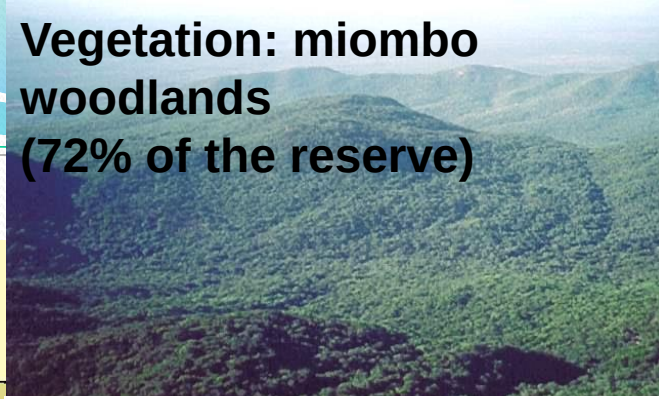
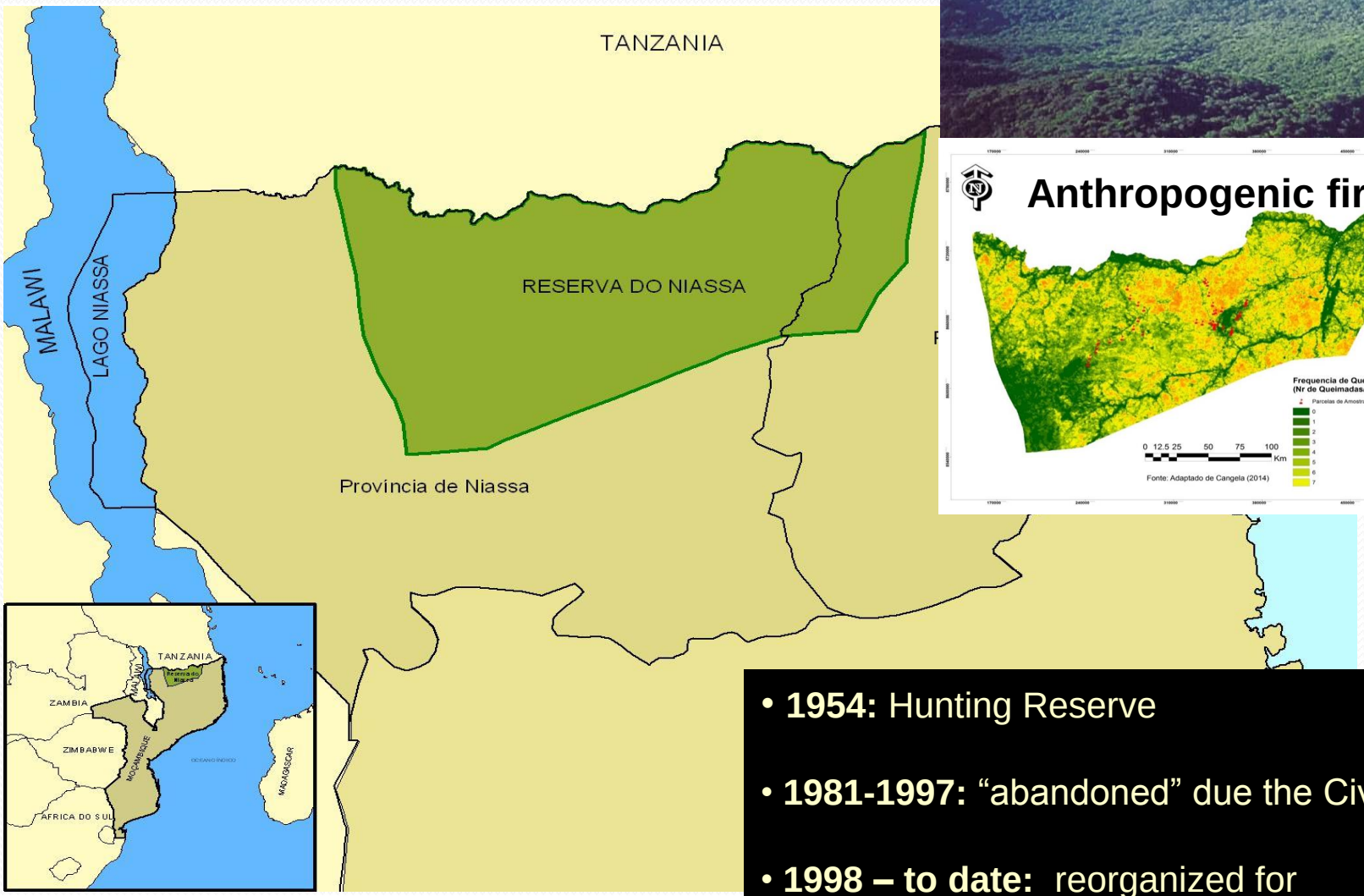
Importance of Miombo Woodland

- 8500 plant species, 50 % are endemics (White, 1983).
- Dominated by:
  - *Julbernardia* ssp.
  - *Brachystegia* spp.
  - *Isoberlinia* spp.
- Providing goods and services to 39 millions people in rural zone and 15 millions at urban zone, including Mozambique (Campbell et al., 1996).

Niassa National Reserve





- **1954:** Hunting Reserve
- **1981-1997:** “abandoned” due the Civil War
- **1998 – to date:** reorganized for management and conservation activities

Importance of Miombo Woodland

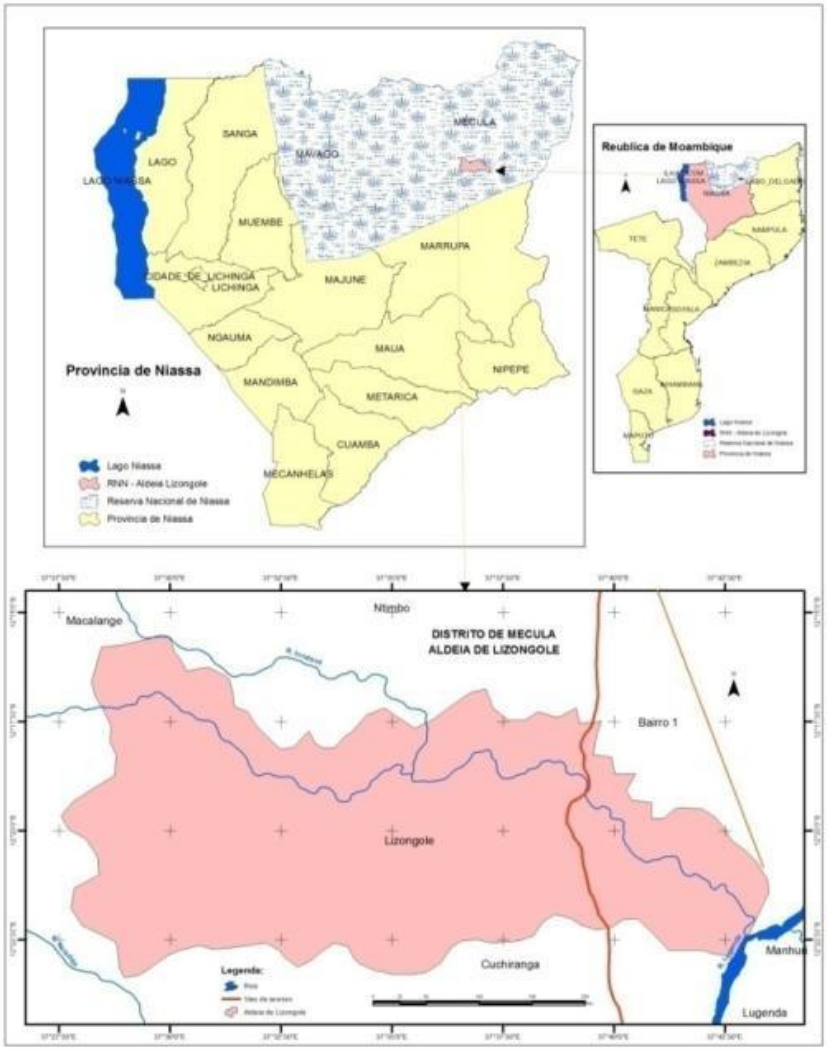
- In NNR, Miombo provides goods and services to circa 45,000 people.
- Honey production is one of the major activities in NNR contributing strongly to family income and nutrition.
- In this context were elaborated this study in order to assess the practices and techniques.

OBJECTIVES

- Objective
  - Contribute to sustainable management of miombo woodland in the village of Lizongole in NNR.

- Specific Objectives
  - Identify and characterize the practices and traditional techniques for honey extraction.
  - Assess the damage caused by extraction of honey the populations of *Julbernardia globiflora* and *Brachystegia boehmii*.

Study area



Lizongole Village.

- Area: 23.189,694 m²;
- Total Population: 457 inhabitants;
- Main activities: subsistence agriculture, fishing, hunting and honey production.

Data collection

❑ *Identify and characterize the practices and traditional techniques for honey extraction:*

• Semi – structured interviews: 2 Key informant (village chief and governments chief) and 15 honey producers (100% in the village).

❑ *Assess the damage caused by honey extraction to Julbernardia globiflora and Brachystegia boehmii*:

• Walk-in method through the forest (>10 km around the village);

• Transects;

Damage Assessment (Cunnigham, 2001):

0- no damage

1- 1-25%

2- 26-50%

3- 51-75%

4- 100% (dead)

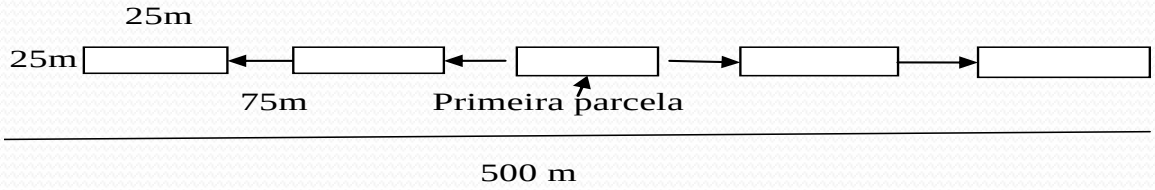
5- Dead trunk with sprouting

6- Others

Data Collection

- The following parameters were measured: Cutting height (m), bark thickness (mm),DBH (cm), Tree height (m) and Botanical identification.

- Evaluation of the damage by the opening of cavities



19 transects: 500 m x 25 m,

DATA ANALYSES

- Characterization of practices: descritpive statistics of responses (percentage & frequencies).

- Damage assessment of bark and cavities or trees felled:
  - Descriptive statistics (percentage, Average, standard deviation).

  - Pearson correlation (α=0.05) for relationship between tree height and bark thickness and cutting height.=> preferred tree sizes.

RESULTS
Honey hunting

Zego

- Groups of 5-7 peoples; 5-10 days.
- mutualistic interaction between honey hunter and bird Zego (*Indicator indicator*) (Bradbear, 2009).
- Tree identification -> inspection-> decision on the method to use.
- Bees are chased out by using smoke of *Diplorhynchus condylocarpon* branches that have alucinogenous effects (Mickels – Kokwe, 2006).
- Quantity: up to 200l/ expedition

Open cavity

Honey hunting

Traditional beehives

- Average number of hives per beekeeper: 6.
- Preferred species: *J. globiflora*, *B.boehmii* and *B. spiciformis*=> *easy removal and transport and durability* (5-10 years).
- Quantity: Average 11,5 l (Summer) and 6 l (winter)
- Complete removal of the bark=> tree killing.

	Statistics			
	Average	**Standard deviation**	Minimum	Máximum
DBH (cm)	27,03	5,89	16	36,6
Tree height (m)	10,37	2,56	5	14
Cut height (m)	1,94	0,68	0,8	3,1
Bark thickness (mm)	11,69	7,6	0,35	33,26

Characterization of traditional beehives damage

All individuals with damage 4 (100% of the removed bark).

Traditional beehives

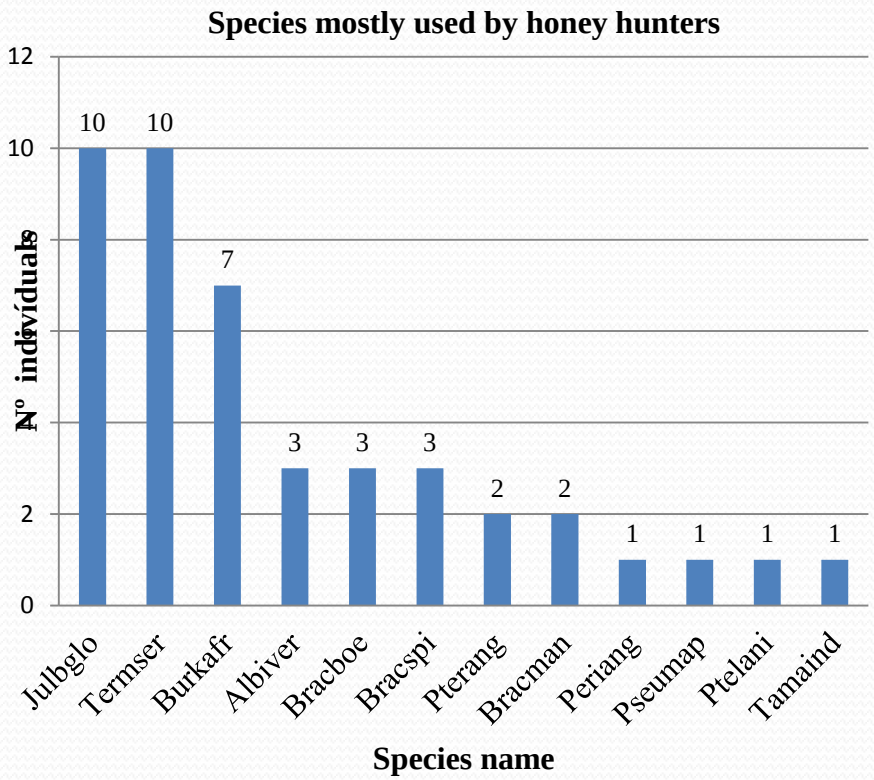
Correlation of DBH, tree height,cut height and bark thickness

	DBH	Tree height	Cutting height	Bark thickness
DBH	1	0,051	0,730 (**)	0,408
Sig.		0,821	0	0,066
Tree height.	0,051	1	0,327	0,364
Sig.	0,821		0,147	0,104
Cut height	0,730 (**)	0,327	1	0,495 (*)
Sig.	0	0,147		0,023
Bark thickness	0,408	0,364	0,495 (*)	1
Sig.	0,066	0,104	0,023	

*** Teste de Correlação de Pearson (P > 0,01)*

** Teste de Correlação de Pearson (P > 0,05*

Characterization of damage in the cavities



- DBH correlation, lenght and widht cavities

	Length	Average widht	DBH
Length		0,728	0,63
Sig.	1	0	0
Average widht			0,53
Sig.		1	0
DBH			
Sig.			1

** Teste de correlação de Pearson (P > 0,01)

CONCLUSION

- There are two honey production practices :
  - harvesting in cavities (most commonly used)
  - Traditional beehives.

- In terms of honey production by bark hives it was found the following::
  - The practice is selective in terms of preferred species:
    - *Julbernardia globiflora* and
    - *Brachystegia boehmii*
    - Trees with average size 27.3 cm (DHB).

- The harvest of honey in cavities has the following characteristics:

  - It is not selective in terms of tree species used,

  - There are preference for mature trees (DBH = 23 - 60 cm).

- The traditional honey production levels are **very low** and the impact on Miombo are minimum

RECOMENDAÇÕES

- implement sustainable practices honey production as:
  - Hallucinogenic species to remove honey both cavities and the hives, avoiding the use of fire.
  - Use the other species or terracotta pots to produce hives in order to relieve the pressure to *J. globiflora* and *B. boehmii*.
- Is essential a detailed study on the value chain of the production of honey in order to identify market and manufacturing strategies that are sustainable.
- Regulation of current practices, namely:
  - harvesting techniques,
  - quantities produced,
  - harvesting areas,
  - processing and
  - development of sustainable management plans.
- Awareness campaigns and the establishment of management committees at the local level.

Thank You

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