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Understanding Interactions Between People, Elephants and Fires in the Miombo Woodlands of Niassa Special Reserve in Support of Biodiversity Conservation Action

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First Niassa Special Reserve Science Meeting and Miombo Network Meeting: from science to miombo woodlands management

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Introduction

Infinitively, the principles of conservation areas management were solely based on scientific evidence and methods, with minimum or no integration of human component on the interventions made in the area.

But recent developments has shown that the strict separation between Humans and wildlife on natural resource management programs most of the times is the source of failure.

There is a clear relationship between fires, people and elephants in NNR, and any sustainable management of the study area (Chiulexi Conservancy), must include people's perspectives regarding the use of fires and their relationship with fires and elephants.

- **Aim Of the Study:**

- To investigate and map the use of fire by humans in the NNR (Chulexi Conservancy), and its association with elephant movements and habitat distribution.

- **Specific Objectives:**

- To understand villagers' perceptions tied to changes in the use of fire and how it affects ecosystems, by inventorying the multiple ways in which fire is used by local residents and how that is connected to where fire occurs in the NNR,
- Explore community understanding of how elephant movement and density in the Reserve is tied to fire distribution, habitat preferences, corridors and seasonal changes.
- Map conflicts experienced between humans and elephants in the Reserve, including how those have changed in the recent past.

Study Area

Chuilexi Conservancy

- A management block with 586,800 hectares,
- Around 973 people (*source: Chiulexi Conservancy*)

Communities:

- Gomba: 285
- Naulala: 191
- Eruvuka: 410
- Nalama: 72 (TBC)



Methods



Focus Group Discussions (October 2020):

- 112 community members were interviewed (57 men & 67 women),
- Two groups per community:
 - One composed by +/- 20 people, (10 men and 10 women);
 - One composed only by women (+/- 10 women);
 - Additionally, honey collectors (04) were interviewed in Eruvuka.
- Duration 2 hours per group

Individual Interviews

- Community Members (22)
- Rangers (05)
- Managers from NNR (04) and
- Chuilexi Conservancy (02)

Direct observations

Note: Focus group discussion & interview protocol approved by WCS IRB (human subjects review)

Methods

Questions Categories

Focus Group and Community Members

- How fires is used by people,
 - How fires affect village lands when they become uncontrolled (forest or bush fires),
 - How these patterns have (or have not) changed over time,
 - village's observations about elephants on village lands,
 - What is noticed about the ways in which elephants respond to fires,
 - Experiences that as villagers have with elephants (encounters and HWC) and how it can be solved.
- Note: for the Individual community members, the questions were focused on personal perspective while additional in-depth question were related to the role of the person inside the community, how long he has been a member of that community.

For NRM/Chiulexi Conservancy Managers and Rangers:

- Conducted in-depth mapping interviews to develop a broader scale map and characterization of human use of fire and distribution within othe study area in the NNR, to further intersect with local resident knowledge and collected data.
- Identify characteristics of human-induced fires they encounter in their work on the ground.
- Understand in their perspectives the reasons for both fires encounters with elephants and their perceptions on shifts in elephant movement.
- Effects of COVID-19 in their work

Preliminary results – Fire Component

- Frequency of fires:
 - One to two times per year;
 - There is no significant changes along the years;
- Areas with more fires:
 - a) Lower grass lands near where occurs honey collection, fishery and farming.
 - b) Most affected animals included turtles, snakes, in sumary those with less mobility

Preliminary results – Fire Component

- The reason related to cleaning roads is related to safety, to avoid encounters against animals and was mentioned in all the villages by both focus group and individual interviews.
- The answer: **“I don't know”** appeared during some individual interviews, probably due the sensitivity of the issue.
- Cleaning farms, was mostly mentioned by women groups.

REASONS FOR FIRES	VILAGERS			
	GOMBA	NAULALA	ERUVUKA	NALAMA
<i>Focus Group</i>				
Cleanning roads	MG	MG, WG	MG	MG
Cleaning farms	WG	MG, WG	WG	WG
Honey collection	MG		HC	MG
Smoke fish		MG	MG	
I don't know				
<i>Individual Inderviwes</i>				
Cleanning roads	2 (8)	1 (5)	2 (6)	2 (4)
Cleaning farms		3 (5)	3 (6)	3 (4)
Honey collection	2 (8)	2 (5)	3 (6)	
Smoke fish		2 (5)		2 (4)
I don't know	4 (8)		2 (6)	

Preliminary results – Fire Component

- Poaching was the main reason mentioned by rangers, while cultural practices was mentioned mostly by managers.
- Rangers think that fires affect their job by reducing the area for their cover when patrolling.
- Managers reported that poachers uses fire to attract animals to newly burnt areas with new grass.
- There have been no mention for farming by managers.

REASONS FOR FIRES	STAFF	
	RANGERS (05)	MANAGERS (06)
Smokers	1	
Hunters	3	3
Cultural practices	1	4
Cleaning Roads	1	
Honey collection	1	2
Farm	1	

Preliminary results – Elephant Movements

- The number and frequency of elephants have been increasing since around 2015/2016, when patrol activities were reinforced;
- The areas where elephants are most seen are near the riverbanks in both dry and rain seasons – this represents a potential place for encounters.
- Elephants have learned over time how to deal with fires, hiding in areas that don't burn and returning when the fire is extinguished (to consume young vegetation).

Preliminary results: Human-Elephants Encounters

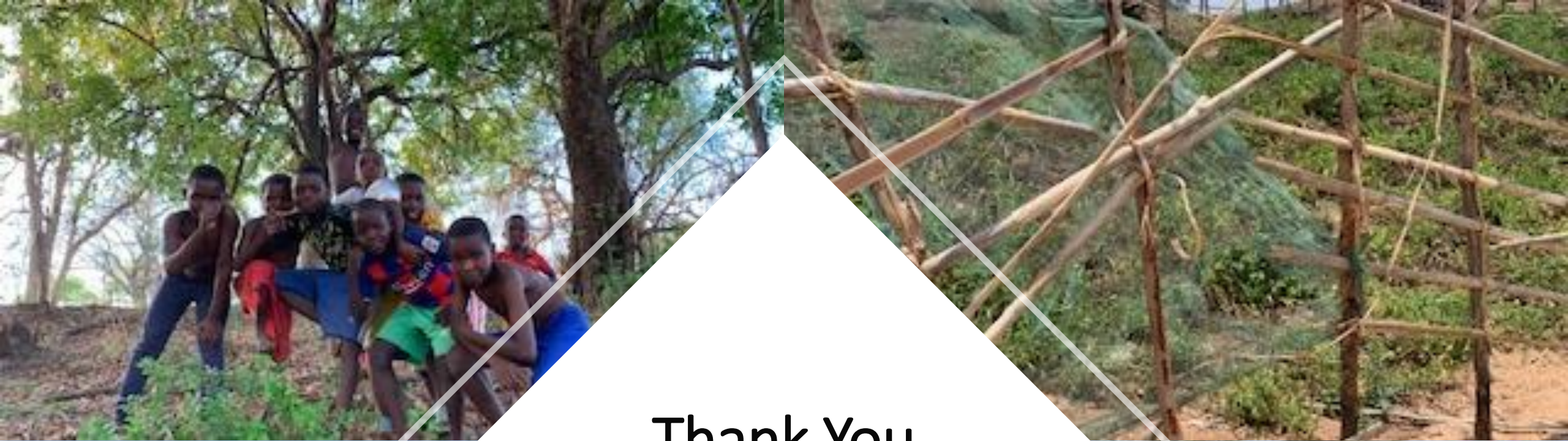
- Even with this increase, HWC are not in a critical stage now, but damages to properties seems to increase either. During the last 5 years, no death was registered by elephants.
- Elephants were not rated as the most dangerous animals in terms of physical threat. From the perspective of the communities, buffalos and crocodiles are the deadliest ones.

Conclusions

- Fires are part of the local community's livelihood, although, its bad management is the main reason for the occurrence of uncontrolled fires. Communities seems not to understand yet the benefit of using fire as a sustainable management tool.
- The number of elephants have been increasing since the reinforcement of patrol activities.

Recommendations for management

- Support livelihood activities, that reduce the use of fire for its implementation, for example, conservation agriculture, bee-keeping
- While the number of elephants has been increasing, communities continue to see them as a threat to their security and livelihood and any strategy to be introduced in order to improve their relationship should be able to reduce, compensate the negative impact of this co-existence.
- Involve more patrol staff on raising awareness against fires and poaching at community level.
- The new management plan of the NNR should provide areas where communities could have more benefits in terms of conservation activities (e.g., improved benefit-sharing mechanism, collaboration in monitoring elephant activity, sustainable livelihood projects, investment in reducing crop destruction by elephants and other wildlife).



Thank You

