

Progress report June 2024

Background

Hippos are among a few African mega-herbivores that are understudied and thus, relatively neglected, despite them being listed as vulnerable by IUCN. The species is facing big threats throughout its ecological range due to high level of loss of its natural habitats, coupled with accelerating incidences of human-hippo conflict (HHC) (Van Houdt and Traill, 2022). Just like the rest of the other wetlands (hippo range) areas in Tanzania and Africa, the hippos around Lake Manyara and Babati have continued entering into conflicts with local communities mainly due to tension between hippos and livelihoods activities being performed by communities residing adjacent to their habitats. In addition, environmental degradation practices which involve clearing of vegetation cover in the hippo habitats, increased settlements and opening of new farms have accelerated HHCs and diminished the availability of hippo foraging areas, especially during dry seasons.

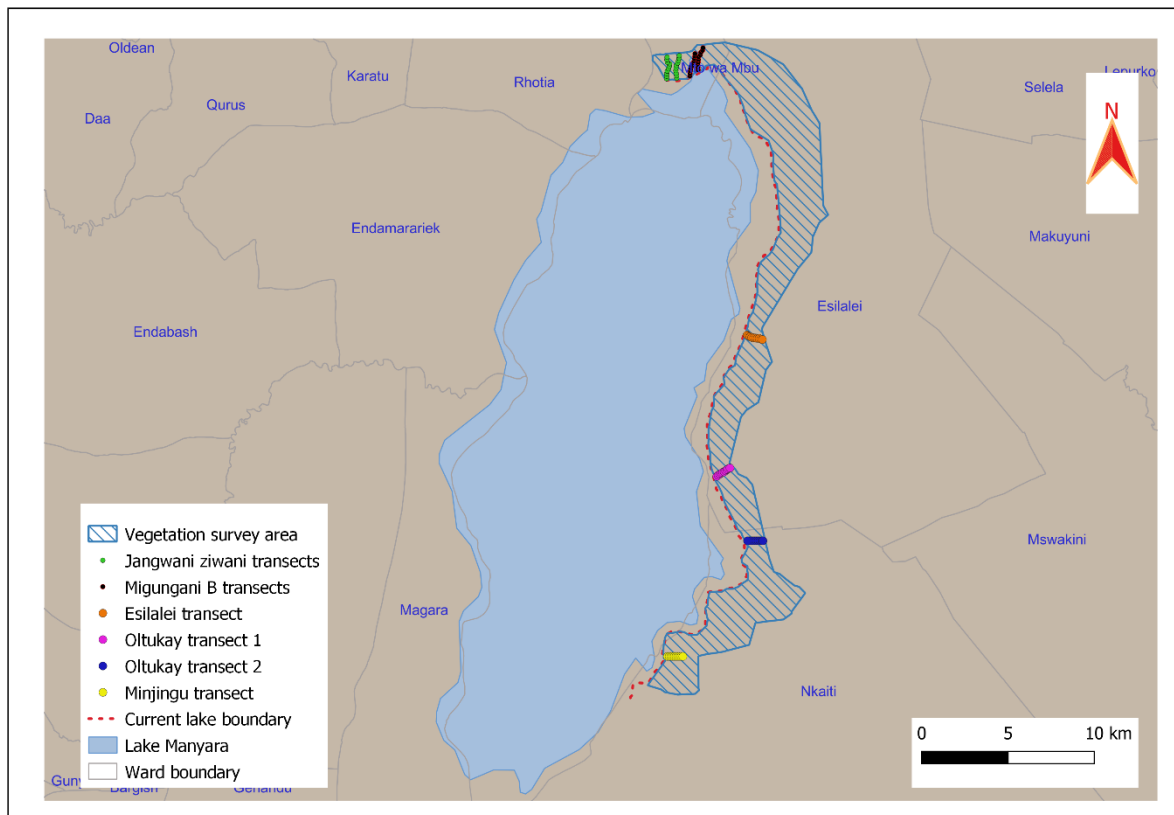
Project Inception: April 2023

This was done to explain the project to key stakeholders and involved meeting with conservationists, local leaders and members of the community. People participating included Monduli District Game officer, village executive officers and GCAs officers and few villagers' representatives.

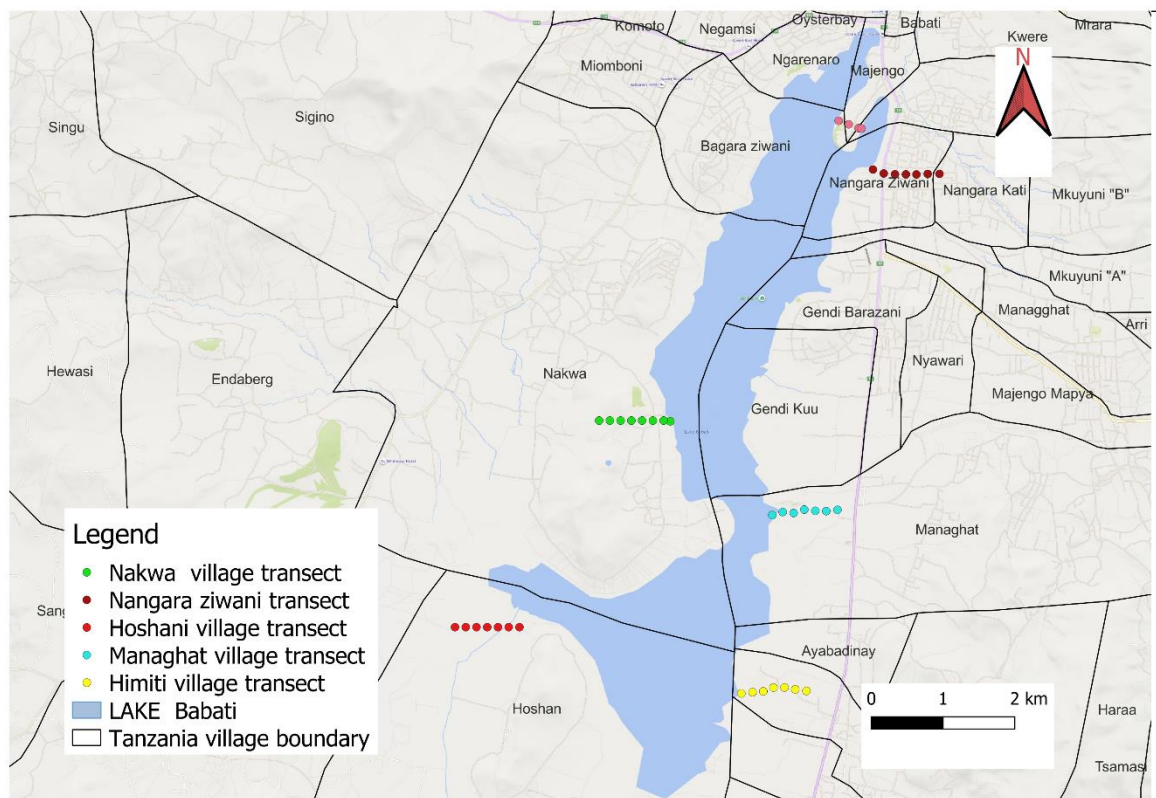
Vegetation Survey

A vegetation survey was done around Lake Manyara and Lake Babati (June, 2023 and July, 2023 respectively). This part of study was conducted to assess the vegetation focusing on lower plants (grasses and herbs) in areas used by hippos. In Lake Manyara study site, the 24 hypothetical transects were evenly laid in three wards (Mto wa mbu, Esilalei and Nkaiti) which are close to the lake and we randomly chose 25% of the transect. Of 25%, each ward allocated 8.333%, making two transects per ward. Six randomly chosen transects were then laid perpendicular to the shoreline along which 10 plots of 1 x 1m were systematically established at 100-150m intervals. The following parameters were obtained during the fieldwork: GPS locations of the plots, species names and vegetation cover % for each plot. Land use types in Lake Manyara

site are game controlled areas whereby unregulated human settlements, farming and livestock grazing are evident. Vegetation cover comprised different species, *Cynodon dactylon* and *Sporobolus spicata* being dominant.



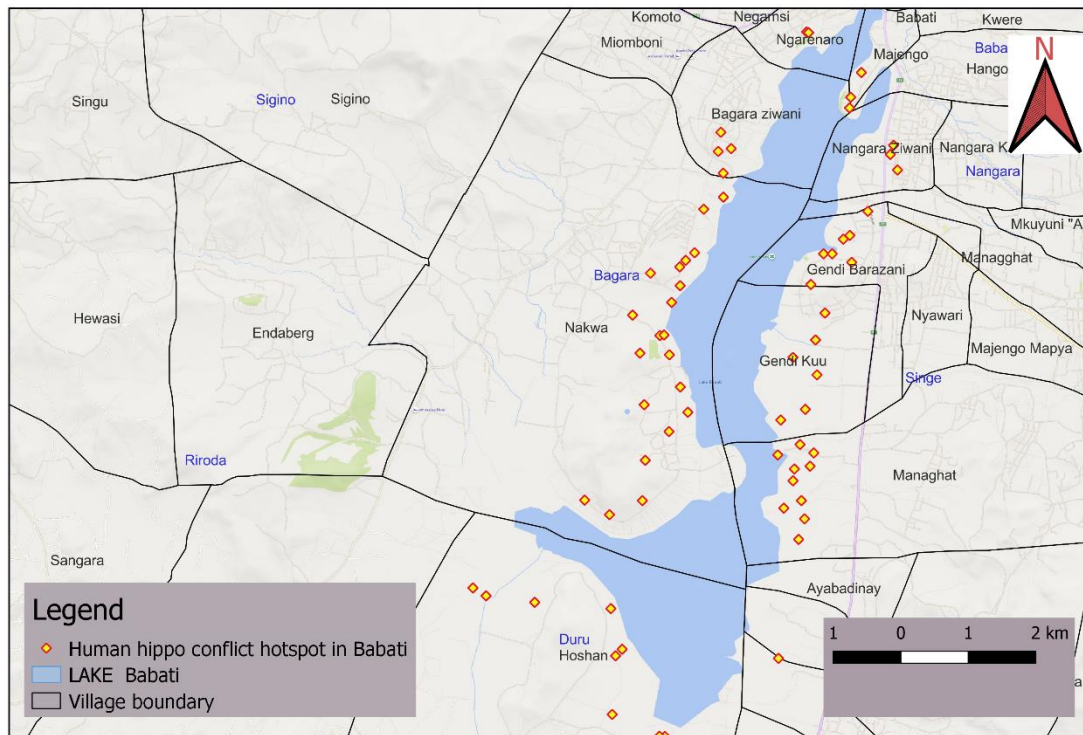
In Lake Babati study site, 24 hypothetical transects were established evenly in its six wards (Bagara, Babati mjini, Nangara, Singe, Bonga and Duru) surrounding the lake and we randomly chose 25% and therefore each ward allocated 4.167% meaning one transect per ward. A total of six random transects were established perpendicular to the shoreline along which plots of 1 x 1m per transect, were systematically established at 100m intervals until the foraging area ends. The following parameters were obtained during the fieldwork: GPS locations of the plots, species names and vegetation cover %. Land use type around Lake Babati site is settlement and small scale agriculture. Vegetation cover comprised different species, *Cynodon dactylus* and *Cyperus rotundas* being dominant.



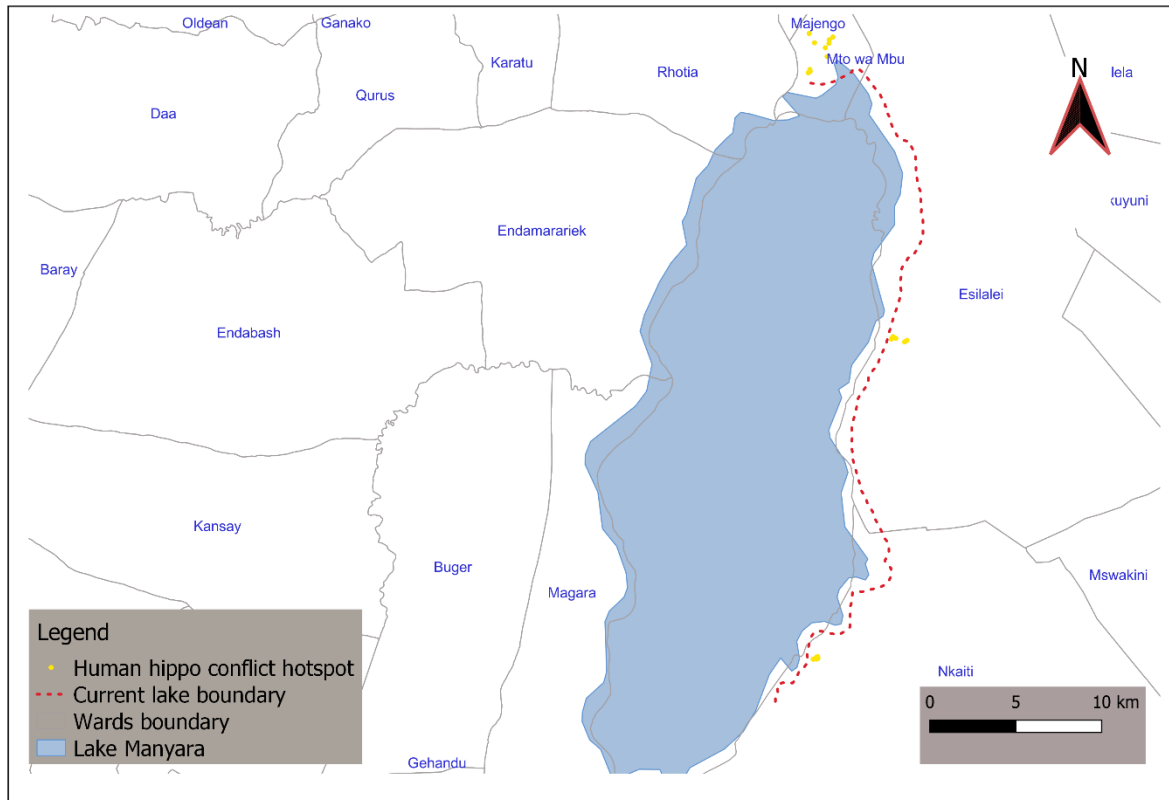
Conflict Hotspot and Triggers

Hippos are known to forage at night and they prefer searching for food on terrestrial lands. This contributes to crops raiding especially maize and lablab in the villages close to the lake resulting in conflicts. Through key informant interviews conducted at both study sites, a major trigger of HHC is increasing land use change from grasslands to farmlands due to population growth around the lakes and drought driven by climate change which make villagers to go further to the lake. These are results into decreased foraging areas by hippo.

For Lake Babati site, in 2002, the district was upgraded to form the capital of the newly gazetted Manyara Region. The situation attracted more people and amplified the significant human population growth and land use change, which potentially threatened the survival of hippos and other wildlife species.



For Lake Manyara site, the lake size mostly at Mto wa Mbu ward expanded due to increased rain between late 2019 and early 2021, which resulted in decreased grazing area. Currently, the water level has dropped but is still far from reaching the previous size. This has added HHC as the area remaining for grazing is minimal and increased the potential of hippos to extend their movement far from the lake through tributary streams where they enter farmlands at some points and this results in HHC occurrences. In Nkaiti ward there were minimal reported conflicts due to low human population, no farmlands and less competition between livestock and hippos. The few reported conflicts were between fishermen and hippo rather than farmers. From questionnaires, crop destruction (65%), fish net destruction (15%) and occasional attacks (25%) were identified as common HHC conflicts.



Evaluation of Community Awareness on Hippo Conservation and explore local mitigation measures

Lake Manyara study site

Questionnaires were administered to a total of 50 households in communities that are close to Lake Manyara. Approximately 70% of respondents were small scale farmers, 10% pastoralists while the rest were fishermen. The questionnaire checklist consisted of 21 questions designed to gauge the community's understanding of hippos, their significance, and the measures taken to mitigate conflicts. The survey aimed to obtain responses from individuals residing close to the lake.

i. Knowledge of Hippos their conservation importance

Approximately 70% of respondents demonstrated a clear understanding of hippos, citing their knowledge from personal experiences with hippos in their farming or fishing activities. The remaining showed limited awareness including those said they have never seen hippo, just heard about them. Most of farmers they admitted that they

don't recognize the importance hippo conservation nor feel any sense of responsibility for conserving Hippo. They see hippo as nuisance animal that destroys their crops and kill or injure people. The rest admitted knowing their conservation importance but they insisted they should kept within the lake and not enter their farms. Livestock keepers particularly in Nkaiti ward admitted to having hippos in their area but were not aware of their conservation importance while they admitted to feeling a sense of responsibility in hippo conservation.

With fishermen, half of them recognise importance of hippo, as they provide a refuge for fish and hence maintain fish population in the lake. Hippo home in water is a safe place because fishermen don't fish those areas or close to those areas and therefore become a safe place for fish to grow and reproduce and spread all over replacing those overharvested through fishing.

ii. Interaction with Hippos and traceable trails

Half of respondents acknowledged some form of interaction with hippos during daily activities, such as farming, fishing, or water-related chores particularly in Mto wa Mbu ward while the rest reported minimal or no direct interaction with hippos. A majority of respondents identified traceable trails used by hippos in the area while the rest were unaware of such trails.

iii. Sense of Responsibility for Conservation and willingness to Assist Conservation Effort

About a third of respondent's majority being fishermen expressed a sense of responsibility for conserving hippos and their habitats as well as willingness to collaborate with conservationists or organization. The rest did not feel a personal responsibility for conservation efforts as well as hesitant or unwillingness to collaborate in hippo conservation especially farmers instead insisted they should be relocated. About a third expressed willingness to collaborate with conservationists or organizations to protect hippos. No respondent admitted previous involvement in conservation projects related to hippos.

iv. Farm visiting times/season and reasons

A majority of responses indicated that hippos visit farms predominantly at from dusk till dawn due to cooler temperatures and reduced human activity. Meanwhile hippos were reported to visit more during the dry season, possibly due to the scarcity of palatable forage.

v. Crops Cultivated and those preferred by hippos

Common crops included maize, rice, legumes, potatoes and variety of vegetables while those preferred by hippos included maize, legumes particularly lablab, potatoes and rice.

vi. Response to Stop Cultivating Preferred Crops:

Only a third of respondent expressed willingness to explore alternative crops while the rest resisted the idea, emphasizing economic constraints.

vii. Challenges faced by community

Significant challenges include crop damage, economic losses, death and occasional injuries during human-hippo encounters

viii. Local Mitigation measures

- Fence around the farms
- *Agave visalana* (Sisal)
- *Euphorbia tirucalli* (Mnyaa)
- Barbed wire
- Acacia branches with thorns

Lake Babati site

Questionnaires were administered to 60 households in communities residing around the lake Babati. The questionnaire checklist consisted of 21 questions designed to

gauge the community's understanding of hippos, their significance, and the measures taken to mitigate conflicts. The survey aimed to obtain responses from individuals residing close to the lake. 65% of respondents were farmers while the rest were fishermen.

i. Knowledge of Hippos and their conservation importance

Approximately 90% of respondents demonstrated a clear understanding of hippos, citing their knowledge from personal experiences with hippos in their farming or fishing activities. The remaining 10% displayed limited awareness including those said they have never seen hippo, just heard about them. 30% of respondent recognised the importance of hippos to the community, highlighting their ecological role in fishing particularly providing as refuge for fish in their home. Also, hippos are potential for economic benefits through tourism. The rest perceived hippos as a nuisance, emphasizing crop destruction, fishing nets destruction and safety concerns.

ii. Interaction with Hippos and traceable trails

Most respondents acknowledged some form of interaction with hippos during daily activities, such as farming, fishing, or water-related chores while the rest reported minimal or no direct interaction with hippos. Majority of respondents identified traceable trails used by hippos in the area especially in Nakwa and Majengo wards, while the rest were unaware of such trails.

iii. Sense of responsibility for Conservation and willingness to assist Conservation Effort:

Less than a third, expressed a sense of responsibility for conserving hippos and their habitats as well as willingness to collaborate with conservationists or organisation. The rest did not feel a personal responsibility for conservation efforts as well as hesitant or unwillingness to collaborate in hippo conservation instead insisted they should be relocated.

Less than a third expressed willingness to collaborate with conservationists or organisations to protect hippos. No respondent admitted previous involvement in conservation projects related to hippos.

iv. Conflicts between People and Hippos

Crop destruction (65%), fish net destruction (15%) and occasional attacks (25%) were identified as common conflicts.

v. Farm visiting times/season and reasons

A majority of responses indicated that hippos visit farms predominantly at night due to cooler temperatures and reduced human activity. Meanwhile hippos were reported to visit more during the dry season, possibly due to the scarcity of palatable vegetation.

vi. Crops cultivated and those preferred by hippos

Common crops included maize, legumes (*Cajanus cajan* being dominant), potatoes and variety of vegetables while those preferred by hippos included maize, beans particularly lablab and potatoes.

vii. Response to Stop Cultivating Preferred Crops

45% expressed willingness to explore alternative crops while the rest resisted the idea, emphasizing economic constraints.

viii. Challenges faced by community

Significant challenges includes crop damage, economic losses, death and occasional injuries during human-hippo encounters

ix. Local Mitigation measures

- Fence around the farms

-Agave *visalana* (Sisal)

- *Euphorbia tirucalli* (Mnyaa)

-Barbed wire

- Acacia branches with thorns

- Ditches around the farms

- Scaring by shouting, banging tins and drums, lighting fires and throwing stones.