

One Health and Vector Borne Diseases Webinar Series Webinar 4



16 May 2024, 11:00- 12:30 CET

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TDR Project:

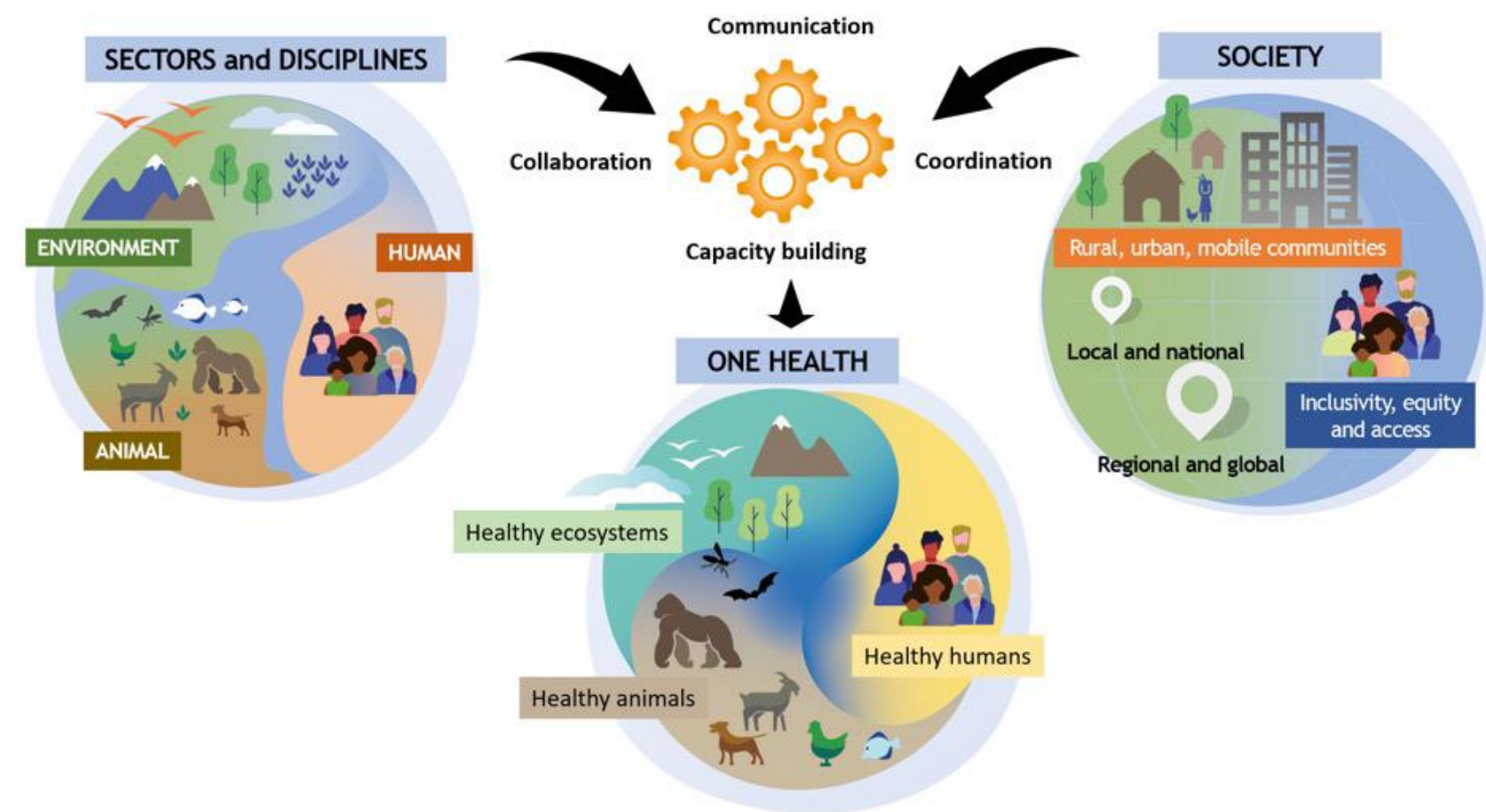
One health approach to control and understanding the dynamics of fascioliasis and schistosomiasis in the context of climate change in Rwanda and Tanzania

Broad objective

To develop One Health based strategies for controlling and understanding the dynamics of Fascioliasis and Schistosomiasis in the Context of Climate Change in Rwanda and Tanzania

Ethical clearance

- Ethical approval from the Institutional review board of the UR College of Medicine and Health Sciences, local permits (RBC, Districts),
- Approval from the WHO-REC (Dec. 2023)



Background Rationale



Fascioliasis and Schistosomiasis, snail-transmitted parasitic infections, remains among the most important neglected trematode infections posing a major public health threat in tropical regions:

- ❖ High prevalence of Fascioliasis in human (2.4 million people globally affected each year),
- ❖ Schistosomiasis affects over 290 million people in sub-Saharan Africa (endemic in some countries including Rwanda and Tanzania),
- ❖ Despite this fact, little has been done to further research into context-appropriate management and control strategies of the infection in both human and livestock.

The current study aimed at piloting an estimate of point prevalence of fascioliasis and schistosomiasis in humans and livestock, focusing on peri-urban areas of Gasabo, Nyarugenge and Kicukiro Districts of Kigali, being in proximity of the prominent Nyabugogo wetland and the biggest SABAN Abattoir.

Methodology

Livestock and Snail Survey



Study area and design



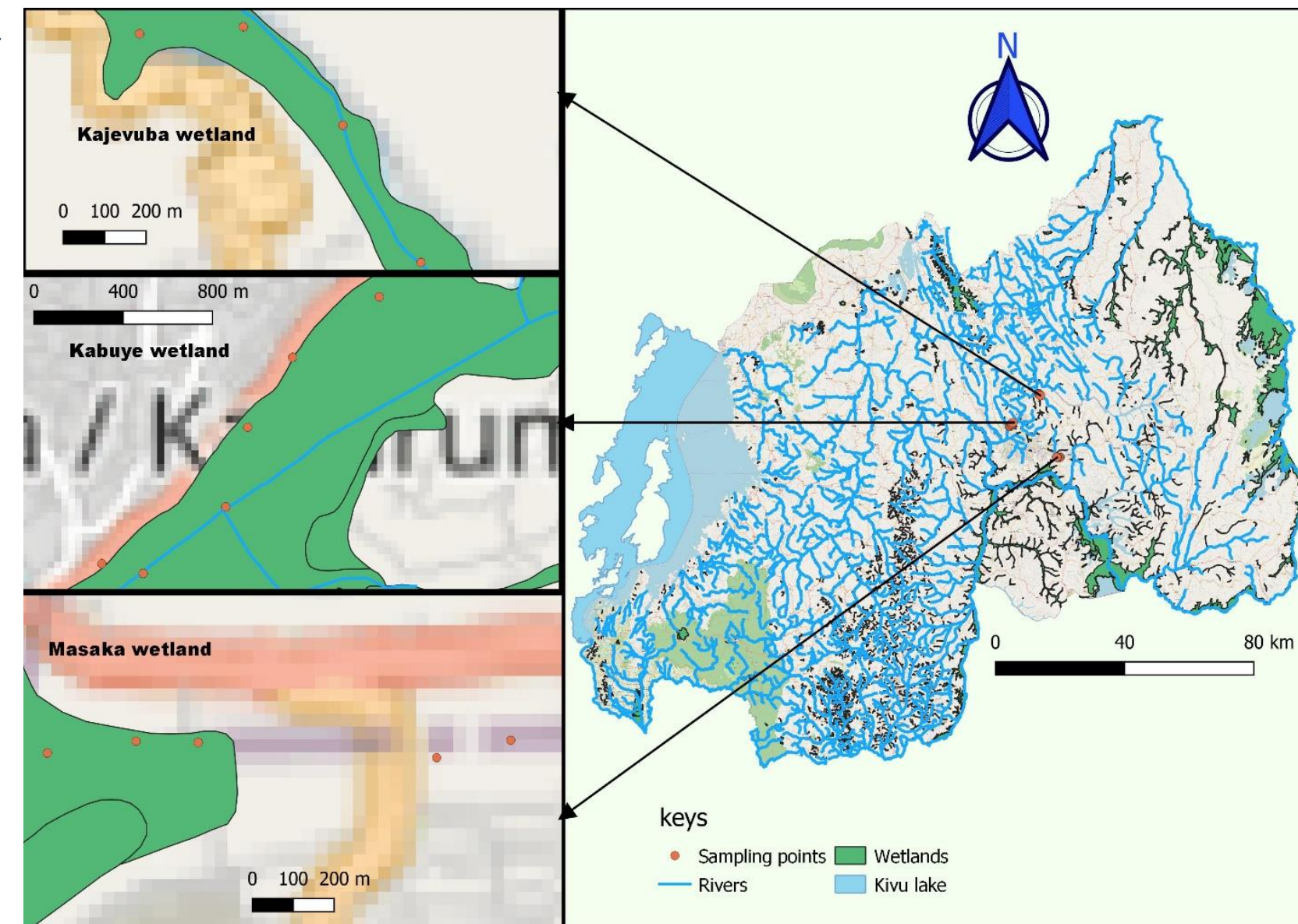
Study area : peri-urban areas of Gasabo administrative district (Kigali city)



This is a cross-sectional study



Study populations : humans, **livestock** (**N=269**; cattle, sheep, goat, Tissues and rectal faeces): farms (N=120), abattoir carcasses (N=149), **snails** (**N=222**, 15 geo-localised sampling points)



- ❖ The sampling, laboratory analyses were conducted during the rainy season of March 2024,
- ❖ Snails were collected in areas of water-human contact: by swimming, rice plantation, grass collection, washing and many other activities...

Preliminary results

- Preliminary results indicated an estimated point prevalence of 33.6% (abattoir samples) to 40% (farm samples) for Fasciolosis.
- The prevalence of Schistosoma was estimated at 6.67% in livestock samples collected from farms, while 1 co-infection case was observed with both Fasciola and Schistosoma in a lactating cow, representing 0.8%.
- Its is worth noting that, most of sampled animals (96.7%) were dewormed at least since the last 6 months, suggesting a considerable risk of re-infection.



Preliminary results



- 222 snails were classified in six families, three of them are the most known to be intermediate host of trematode cercaria:
 - ❖ Planorbidae,
 - ❖ Physidae,
 - ❖ Lymnaeidae.
- Nine genus, 11 species,
- 2 (0.9%) snails shedding cercaria trematodes of *Schistosoma mansoni*:
 - ❖ *Biomphalaria pfeifferi*,
 - ❖ *Lymnaea natalensis*.
- 1 (0.4%) snail (*Biomphalaria sudanica*) infected with *Fasciola sp.*

Wetland	Kajevuba				Kabuye						Masaka				
Taxon	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15
<i>Biophalaria pfeifferi</i>	26	2	2	2	0	0	7	0	0	0	0	2	1	0	3
<i>Physa acuta</i>	9	7	6	0	3	0	0	0	0	0	0	0	0	7	6
<i>Lymanae natalensis</i>	6	0	4	3	1	3	0	0	4	2	10	5	4	2	8
<i>Biophalaria sudanica</i>	6	5	4	3	15	0	4	0	0	0	0	0	0	0	0
<i>Pila ovata</i>	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
<i>Biophalaria sp3</i>	0	0	0	0	0	5	0	9	1	6	0	0	9	0	0
<i>Bulinus sp</i>	0	0	0	0	0	0	1	2	0	2	0	0	0	0	0
<i>Melanoides sp1</i>	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
<i>Lymanae columella</i>	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
<i>Physa sp</i>	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
<i>Biomphalaria sp2</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Abundance per point	47	14	16	8	21	8	12	11	6	10	13	7	14	9	20
Abundance wetland	85				68						63				
Shannon Weiner															
Diversity Index*	1.33				1.73						1.5				

*According to the Shannon Weiner Diversity Index, the highest taxonomy of snail recorder in Kabuye (H'=1.73)

Conclusion

- ❖ Fascioliasis and schistosomiasis infections are observed in livestock in Rwanda,
- ❖ Snail vectors showed cercaria shedding activity,
- ❖ The ongoing research along with correlating meteorological data, is expected to provide further insights into the dynamics of these infections in both countries (Rwanda, Tanzania),
- ❖ Integrating these findings into existing control strategies can help reduce the burden of these infections, especially in endemic areas

MURAKOZE,

ASANTENI,

THANK YOU!

