

ATRAP newsletter

Action Towards Reducing Aquatic snail-borne Parasitic diseases



Final day of the awareness week, November 2021, Kagadi District.

Welcome! It is a great honour and privilege to present our second newsletter to all our partners collaborating in the fight against snail-borne diseases in Uganda.

First, the ATRAP team would like to extend its sincere appreciation to you all for your continued participation in various activities even in such challenging times. A lot has happened since our previous newsletter in 2020. The citizen researchers (CRs) continued to monitor the snail presence at the selected sites, the Ugandan PhD students had a successful research visit in Belgium, microscopic and molecular analysis were executed to identify the collected snails and parasites, the study findings of the interviews and focus group discussions were shared and discussed with the CRs and the communities, which formed the basis for a fantastic community-led awareness campaign in November. The CRs and students did such a superb job that we as ATRAP coordinators feel very proud and grateful for such a motivated team!

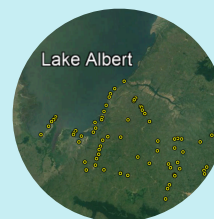
With these concerted efforts, ATRAP hopes to substantially contribute to the fight against snail-borne diseases. We are committed to this journey, watch this space for more information!

Dr. Casim Umba Tolo & Dr. Tine Huyse on behalf of the entire ATRAP team



The team

Mbarara University
of Science &
Technology, Royal
Museum for Central
Africa, KU Leuven



The area

Southern Lake
Albert, 750 km²
and 82 sites

Figures



61085 snails
4292 reports
submitted by 25
citizen researchers

Citizen researchers

Despite the uncertainties generated by COVID-19, the ATRAP' CRs have made great strides. They received a refresher training in January where personalized feedback was provided to each participant. This is reflected in the great progress made in the data reported on snail presence, water parameters, and human-related activities. They also took the lead in the planning and execution of the snail-borne awareness week activities with support from the entire ATRAP team.



Left: CRs in action raising awareness through megaphones.
Right: Door to door visits made by the CRs.

In addition, Mr. Bahungirehe Cruzestom represented the CRs team at the ISNTD webinar on December 09, 2021, where he shared his experiences as a CR with a global audience.

PhD / master students

The **biology students** monitored monthly the snail population and the associated parasites using shedding experiments and PCR techniques. Stool samples of livestock and wild mammals were also examined for parasite eggs. They also interviewed a total of 100 livestock owners, veterinary officers, herders, butchers, and game rangers to probe their knowledge and perceptions about animal bilharzia and liver flukes.



Mobile biology field lab used to analyze the type of parasite found in the snails.

On the other hand, the **social sciences students** conducted in-depth interviews, and focus group discussion sessions in Ndaiga and Kyaterekera to assess the gender roles, stereotypes, and beliefs that influence the spread and control of

Figures

25 CRs involved in the ATRAP Uganda Project were trained on health communication strategies regarding schistosomiasis prevention.

115 community members and district leaders participated in the validation of knowledge, attitudes and practices' findings and participatory design of communication strategies.

8500+ people attended awareness campaigns of various sorts-house to house visits, drama, songs, dances, community radio show, and football tournaments.



schistosomiasis. They later on used the data party approach to disseminate key findings of KAPs lived experiences and the world café technique to co-design a **contextualized communication strategy**.



Community stage play debunking misconceptions about bilharzia.

Awareness campaigns for behaviour change about schistosomiasis prevention through megaphones, radios, house-to-house visits, drama, songs, dances, and football tournaments were implemented in November 2021. Finally, we held a stakeholders dialogue workshop where CRs and the students presented the findings to NGO representatives, ministry officials, political and technical leaders, as a basis to co-develop policy recommendations for context-specific interventions.

Results - Biology

More than **4,200 individual reports** by the CRs have been submitted, containing information about more than **61,000 snails**. The presence/absence data has been compared with the expert monthly data resulting in considerable agreement (up to 83%). In addition, biology students collected a total of 33,000 snails (*Biomphalaria*, *Bulinus*, and *Radix*). More snails were found in upland streams and rivers, compared to lake sites.

However, **only *Biomphalaria* snails at the lake sites were shedding schistosome cercariae, up to 43% of the snails were infected**. A sample of 380 snails were examined for

bilharzia infection using diagnostic PCR tests. About 11.5% of the *Bulinus* snails from Mpeefu (upland) were infected with animal bilharzia (*S. bovis*). Human bilharzia was only detected at the lake sites while bilharzia of rodents (*S. rodhaini*) was detected at various upland sites (prevalence < 05%).



Powerful message spread by the players during the football tournament.

Among examined livestock, prevalence of liver fluke was highest at Mpeefu (57.96%), followed by Kanara (57.54%), and lowest at Ndaiga (40.4%). Animal bilharzia was detected in 2.6% and 4.3% of the cattle from Mpeefu and Ndaiga, respectively. In wild mammals, liver flukes prevalence was highest in hippos (66%), followed by warthogs (8%) and baboons (6%). However, no wild mammal was found positive for animal bilharzia. The major risk factor for contracting flukes in livestock was free - range grazing on communal land practiced by 65-90% of farmers. The sharing of grazing grounds among livestock and wild mammals reported in Kanara and Ndaiga sub-counties also increases the risk of exchanging parasites among them.

Results - Social sciences

Based on the participatory data party technique to disseminate key findings of the KAPs and lived experience study conducted in Kanara, Ndaiga, Kyaterekera, Mpeefu, and Bwikara sub-counties of Ntoroko and Kagadi districts in August, the 115 in attendance participants observed that the main socio-cultural risk factors

associated with schistosomiasis were identified including: **lack of access to clean and safe water, low latrine coverage leading to open defecation, poor health-seeking behaviours, inadequate drug supply, inadequate knowledge about the disease, myths and misconceptions, stigma, isolation, and domestic violence.**



End of the theatre play: enthusiastic community members after spreading a positive message.

Lastly, the stakeholders dialogue in November, 2021 allowed an important avenue for the stakeholders' involvement and participation in advocating for schistosomiasis preventive measures taking into account the previous findings.



Distributed posters on bilharzia symptoms and prevention

The dialogue highlighted the need for the provision of clean and safe water to the communities, increasing latrine coverage, community mobilization and sensitization



An informed community, is a healthier community!

regarding schistosomiasis preventive measures, enacting by-laws to enforce preventive measures, district and sub-county to include water, sanitation, and hygiene in their planning and budgeting, involvement of cultural and religious leaders to debunk cultural beliefs, and the involvement of citizen researchers, VHTs and other members of the communities in preventive measures.

Participation in international conferences

The ATRAP team attended and participated in various conferences and webinars including but not limited to:

The British Society for Parasitology conference in June 2021: Two Ph.D. students Julius and Maxson, and one MSc student Daisy made oral and poster presentations about the ATRAP results.

ISNTD - GSA webinar in December 2021: Dr. Tine Huyse (PI), Mercy and Julius (Ph.D. students), and Cruzestom (CR) made presentations at the webinar. Link: <https://bit.ly/3oFB975>

Maxson's PhD proposal and communication concept webinar presentation at University of Antwerp. Link: <https://eu-ti.bbcollab.com/collab/ui/session/playback>

Upcoming

- **February, 2022:** Refresher training for CRs in Kagadi district.

- **February, 2022:** Participatory process evaluation of citizen science participation in community awareness campaigns regarding schistosomiasis prevention.

Publications

Ashepet, M. G., Jacobs, L., Van Oudheusden, M., & Huyse, T. (2021). Wicked solution for wicked problems: citizen science for vector-borne disease control in Africa. *Trends in Parasitology*, 37(2), 93-96. <https://doi.org/10.1016/j.pt.2020.10.004>

Brees, J., Huyse, T., Tumusiime, J., Kagoro-Rugunda, G., Namirembe, D., Mugabi, F., Nyakato, V., Anyolitho, M., Tolo, C. U. & Jacobs, L. (2021). The Potential of Citizen-Driven Monitoring of Freshwater Snails in Schistosomiasis Research. <http://doi.org/10.5334/cstp.388>

Knowledge, attitude, and practices regarding schistosomiasis infection and prevention: a mixed methods Cross-sectional survey among endemic communities of western Uganda (accepted in PLOS Neglected Tropical Diseases).

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Specioza, Ms. Nakingi Rose, Mr. Ategeka Rogers, Mr. Kamukama Josias, Mr. Nuwagaba Emmanuel, Mr. Tweheyo Julius, Mr. Bahungirehe Cruzestom, Mr. Alinda Hassan, Mr. Chotum Friday, Mr. Atanasi Marisel, Mr. Opio Isingoma, Mr. Ategeka Augustine, Mr. Bahemuka Bob, Mr. Kisoro Timothy, Mr. Masereka Haruna, Mr. Sebakara Fobious, Ms. Nyamahunge Imelda, Mr. Businge Zabron, Ms. Tumusiime Janet, Mr. Nsenga David, Ms. Night Marygoret, Ms. Kyaligonza Noeline, Mr. Mwesige Robert.

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ATRAP project information

The ATRAP project is a collaboration between Mbarara University of Science and Technology (MUST) in Uganda and the Royal Museum for Central Africa (RMCA), the KU Leuven and the University of Antwerp in Belgium, funded by the Belgium Development Cooperation (DGD). It runs from 2019-2023. Two Ugandan and two Belgian PhD students are trained, in addition to two Ugandan MSc students.

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<https://www.citizenscienceuganda.info/atrap-project-description.html>
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