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One Health Symposium

Bridging gaps with
One Health:
challenges and
opportunities in the
Global South

BELGIUM

Brussels, 27 June 2024



Bridging Gaps with One Health: Challenges and Opportunities in the Global South

Content:

1. Introduction: “Exploring One Health” by Katharina Kreppel, Professor for Emerging Infectious Diseases at the Institute of Tropical Medicine in Antwerp (ITM)
2. “A One Health approach to tackling snail-borne diseases” by Tine Huyse, researcher at the Biology Department of the Africa Museum in Tervuren
3. “One Health approach – a community-based perspective” by Krizia Vieri, One Health Advisor at Doctors of the World Belgium
4. “One Health implementation in and around Kahuzi-Biega National Park in South Kivu, DRC: a case study” by Joep van Mierlo, general director at Vétérinaires Sans Frontières Belgium





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Exploring One Health

Katharina Kreppel,
Professor for
Emerging Infectious
Diseases

Institute of Tropical
Medicine in Antwerp (ITM)

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VSF Symposium Brussels

Prof Katharina Kreppel
Emerging Infectious Diseases
Department of Public Health



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- ✓ **Climate**
- ✓ **Zoonoses**
- ✓ **Transmission**
- ✓ **One Health approach**
- ✓ **MSc Global One Health**

Planetary-health

“The health of human civilization and the state of the natural systems on which it depends”

- ✓ Human medicine
- ✓ Economy
- ✓ Energy
- ✓ Natural resources
- ✓ Agricultural sciences
- ✓ Ecology
- ✓ Environmental sciences
- ✓ Marine sciences

Eco-health

- ✓ Public health
- ✓ Social sciences
- ✓ Veterinary medicine
- ✓ Conservation and ecosystem management
- ✓ Rural and urban development and planning



One Health

WHO: “One Health is an approach to designing and implementing programmes, policies, legislation and research in which multiple sectors **communicate and work together** to achieve better public health outcomes.”



One-Health



Food and Agriculture
Organization of the
United Nations



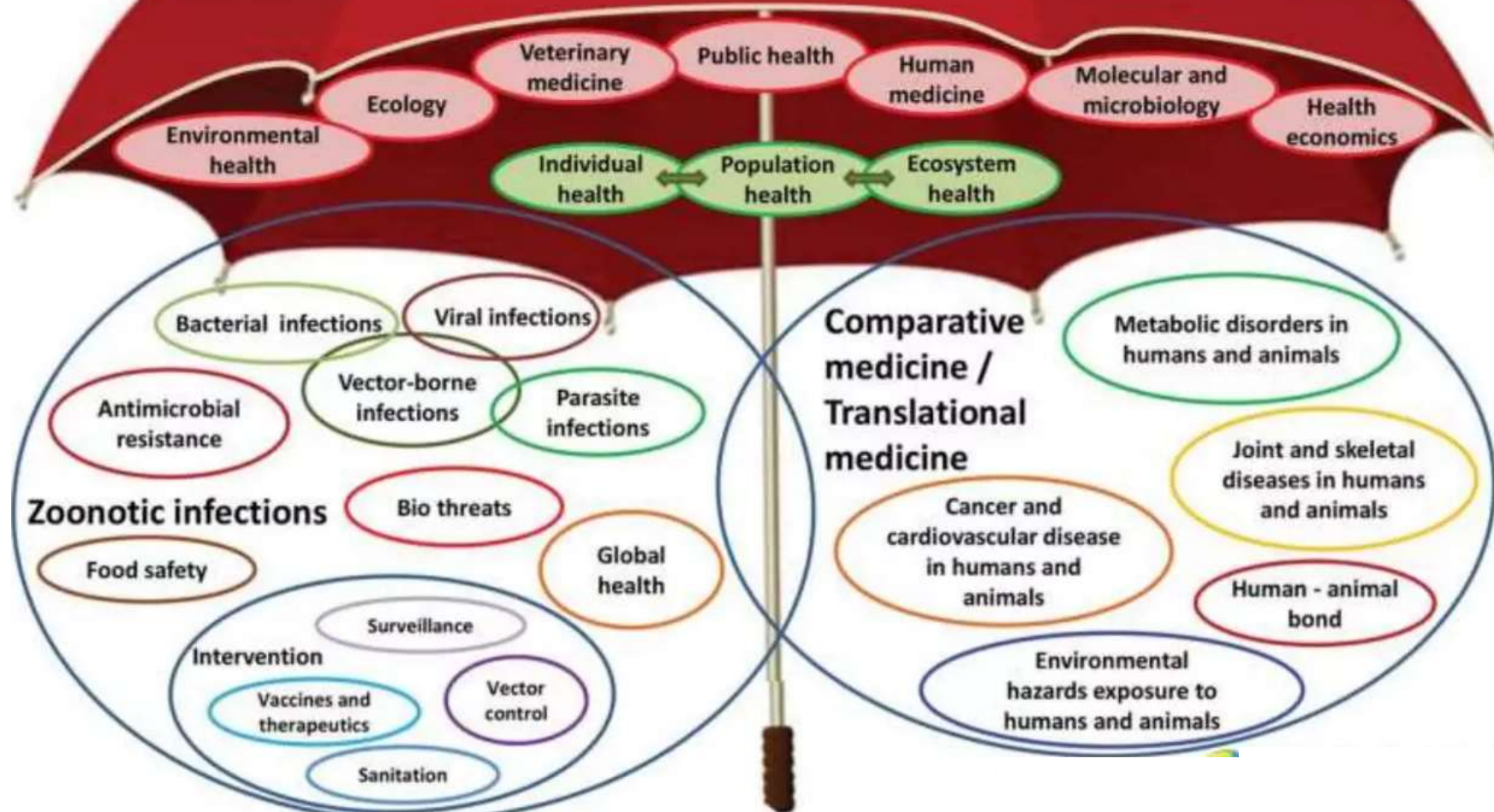
World Health
Organization

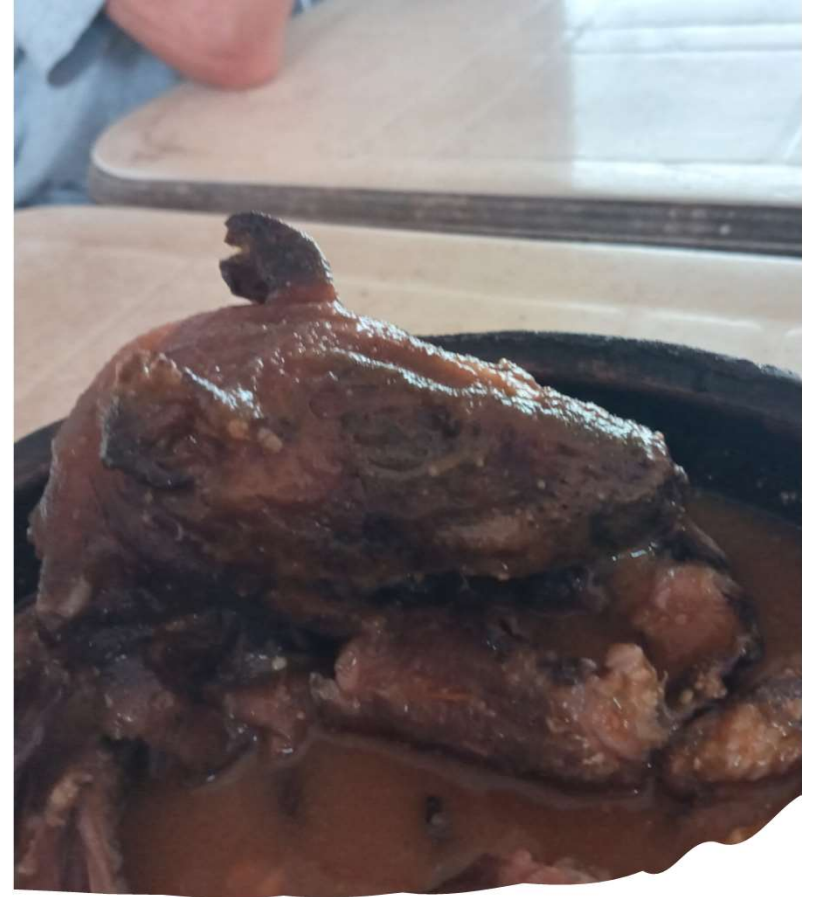
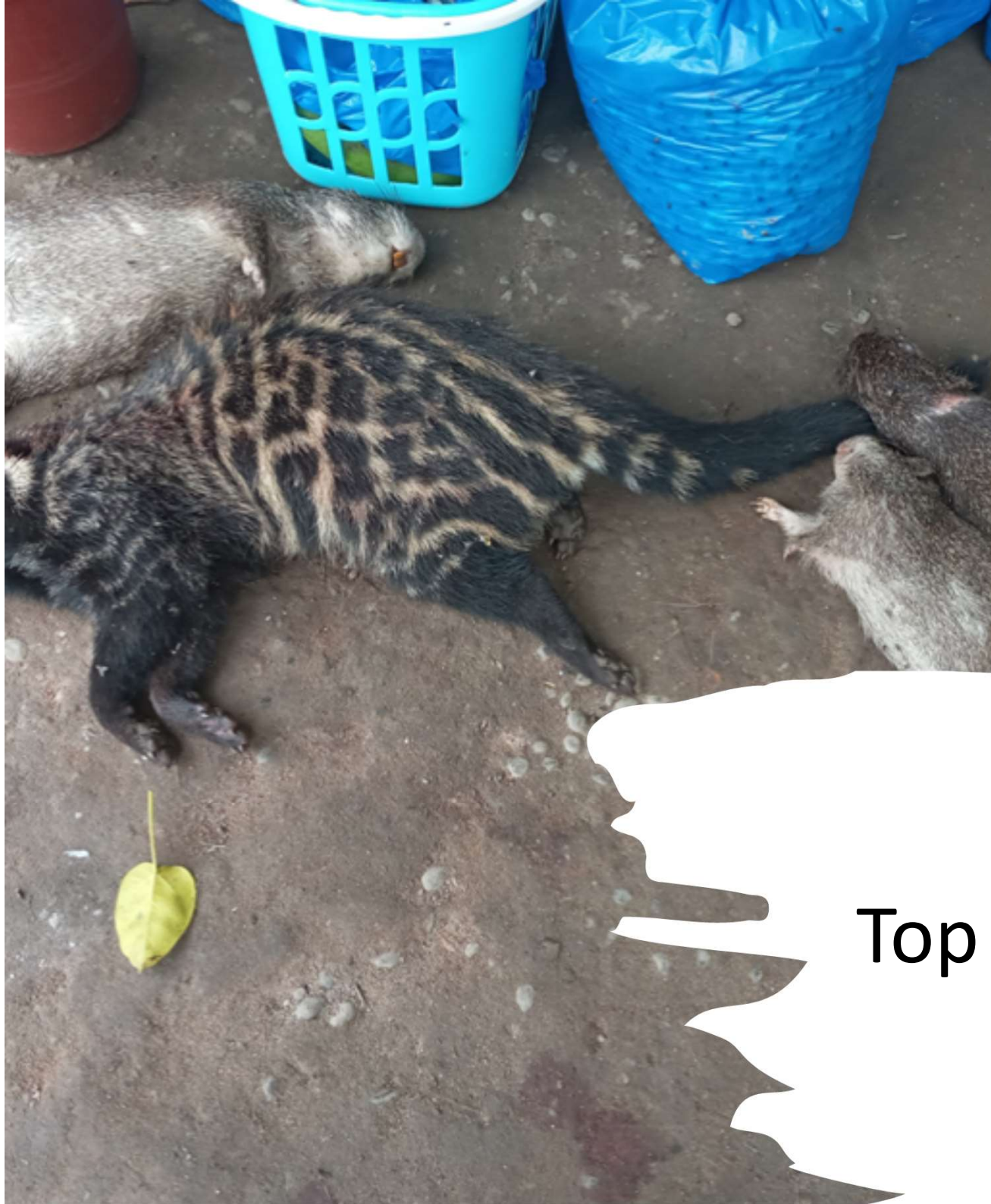


World Organisation
for Animal Health
Founded as OIE

Collaboration
Added value
System thinking
Transdisciplinarity
Participation of stakeholders
Gender & Equity
Implementation
Sustainability

One Health



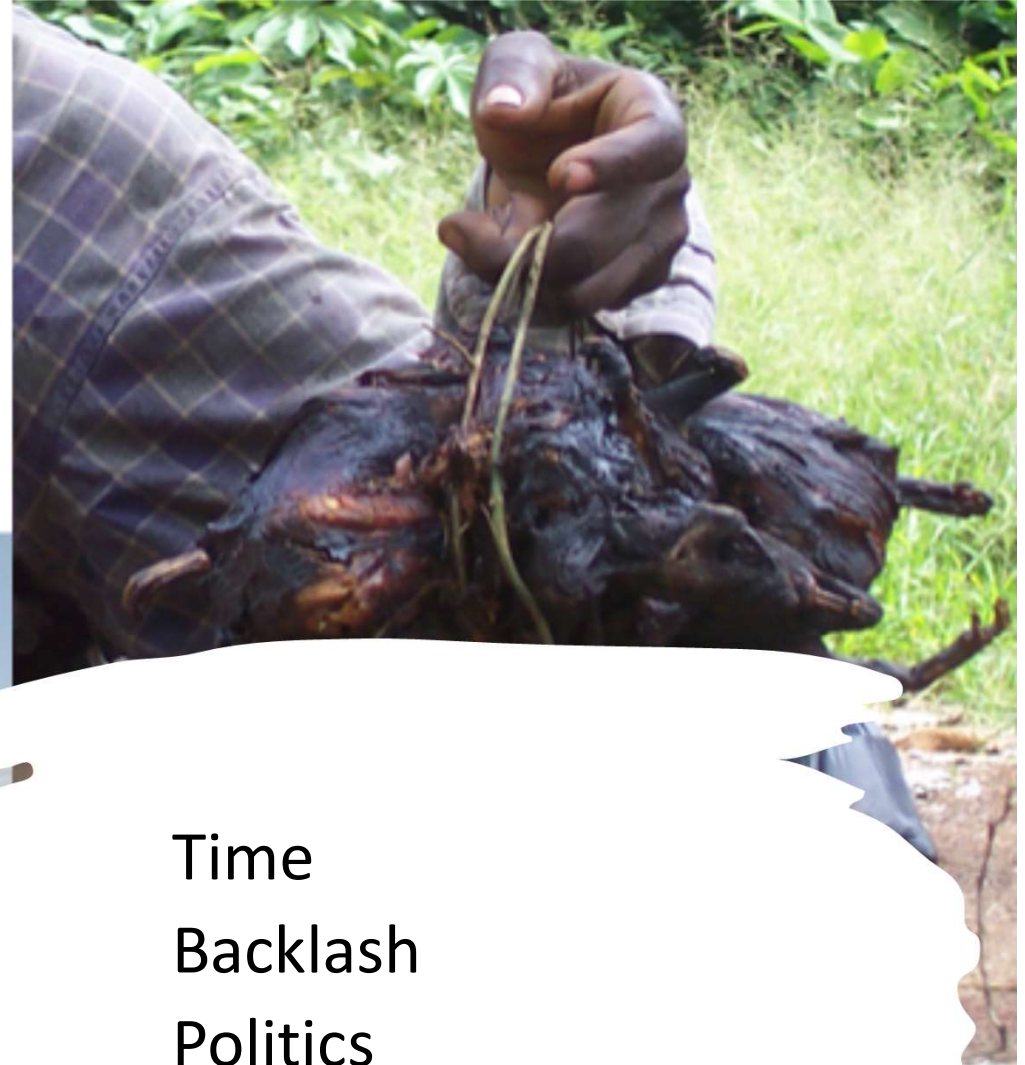


Top down



Community led

Complexities



Time
Backlash
Politics
Capacity
Reach
Sustainability



Community led



Thank You!



ONE HEALTH – Why now?

Outbreak	Type of pathogen	Origin of pathogen
Covid-19	Coronavirus	Bats (and?)
Zika	Flavivirus	Primates
Ebola	Filovirus	Bats and primates
Middle Eastern respiratory syndrome (MERS)	Coronavirus	Bats and camels
H1N1 (swine) influenza	Orthomyxovirus	Pigs and poultry
H5N1 (avian) influenza	Orthomyxovirus	Poultry
Severe Acute respiratory syndrome (SARS)	Coronavirus	Bats and palm civet





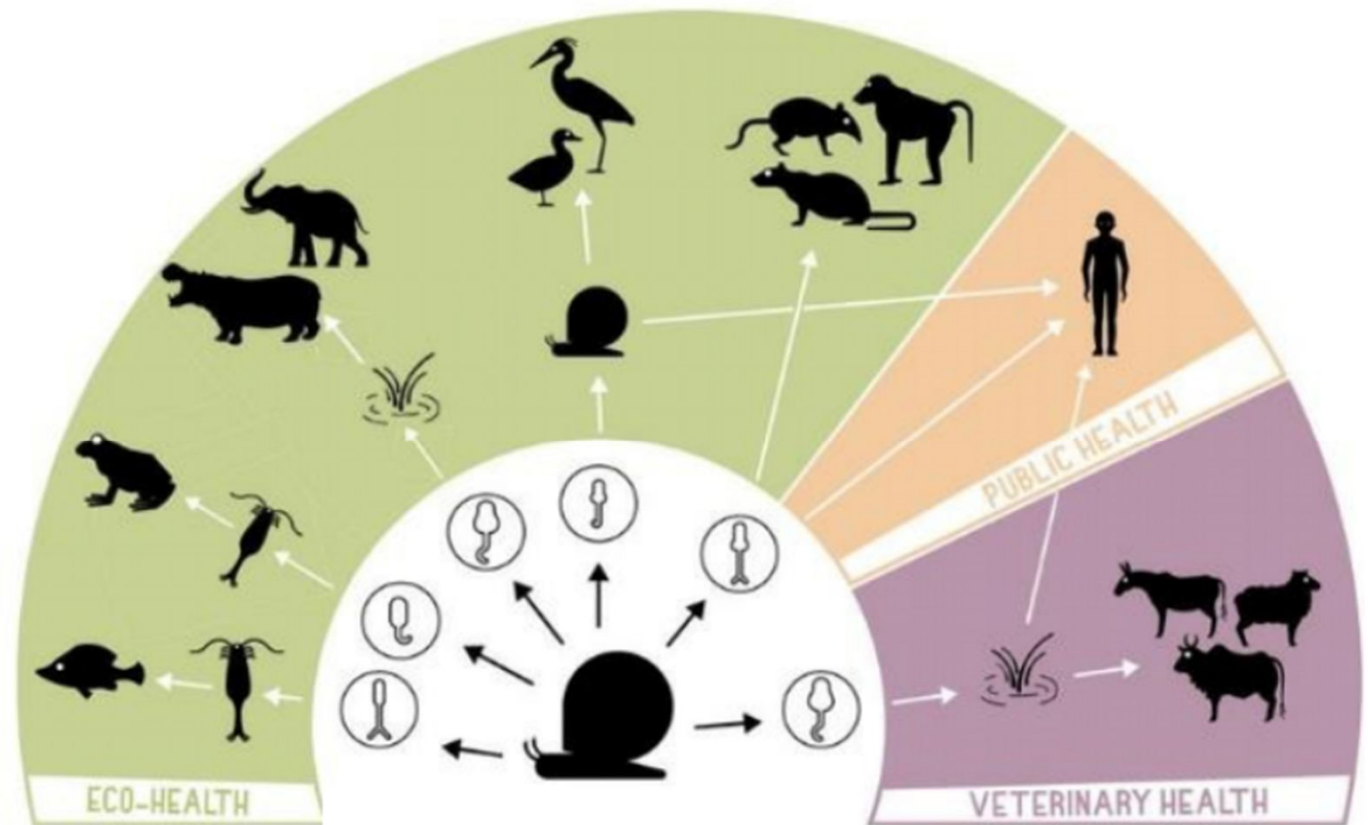
A One Health approach to tackling snail-borne diseases

Tine Huyse,
Researcher at the
Biology Department

Africa Museum

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Brussels, 27 June 2024



A One Health approach to tackling snail-borne diseases

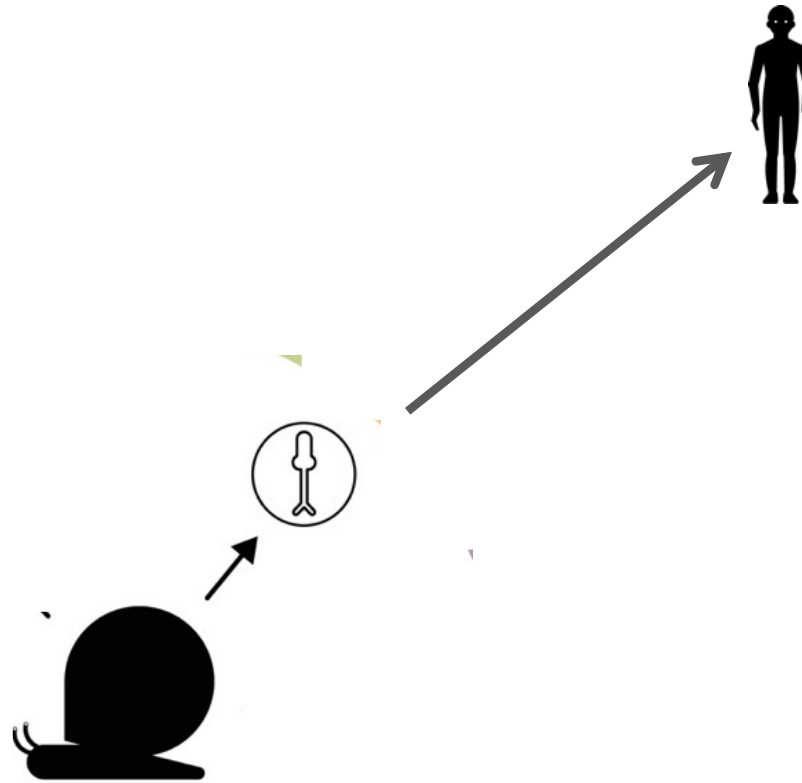


Tine Huyse

Dept. of Biology, Royal Museum for Central Africa
Dept. of Biology, KU Leuven

SNAIL-BORNE DISEASES

Affect 300 million people worldwide



SNAIL-BORNE DISEASES

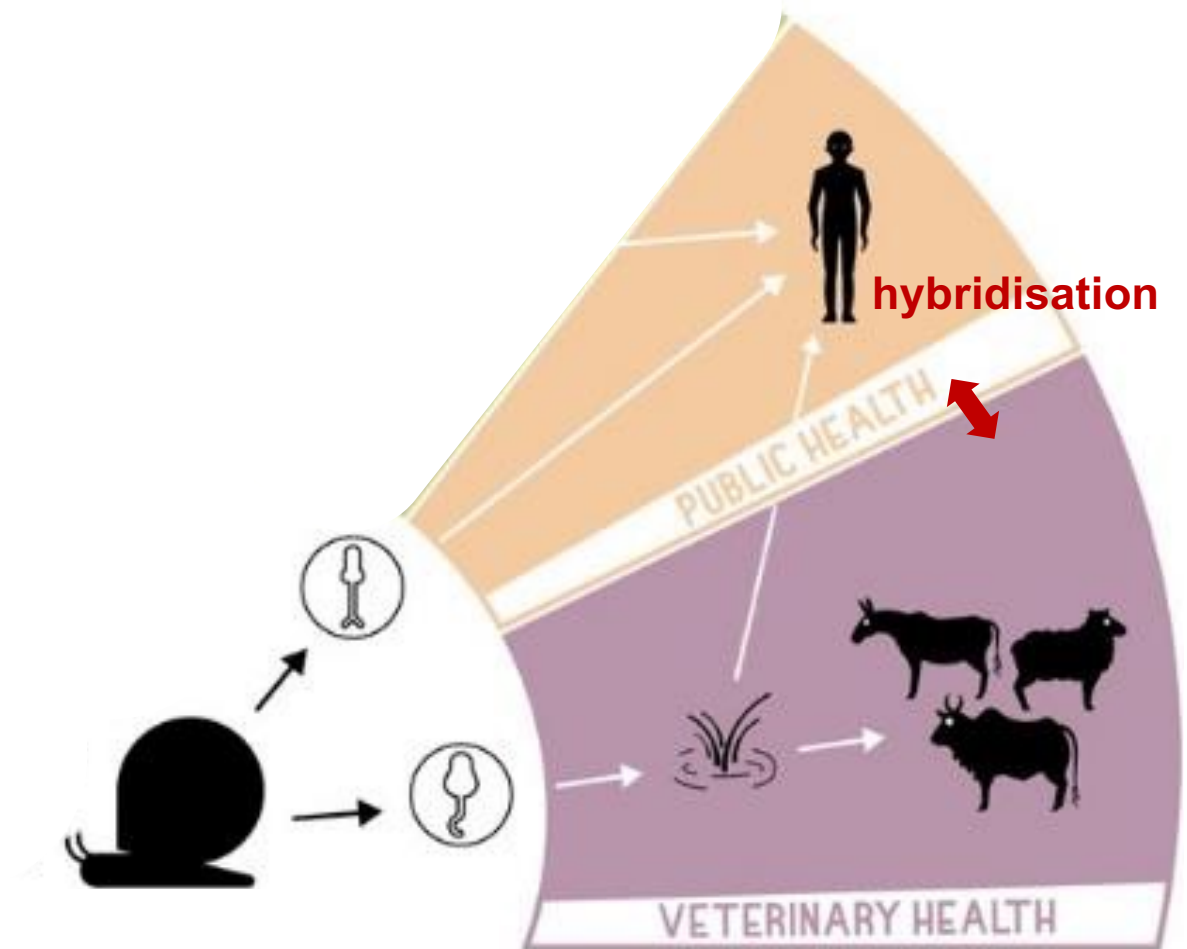
Schistosomiasis (bilharzia, snail fever)

- Affects >200 million people
- Symptoms: liver & bladder fibrosis, infertility & Increased risk of HIV, stunted growth & school dropout, stigma & exclusion



Bidirectional Introgressive Hybridization between a Cattle and Human Schistosome Species

Tine Huyse^{1,2,9*}, Bonnie L. Webster^{3,9}, Sarah Geldof², J. Russell Stothard³, Oumar T. Diaw⁴, Katja Polman¹, David Rollinson³



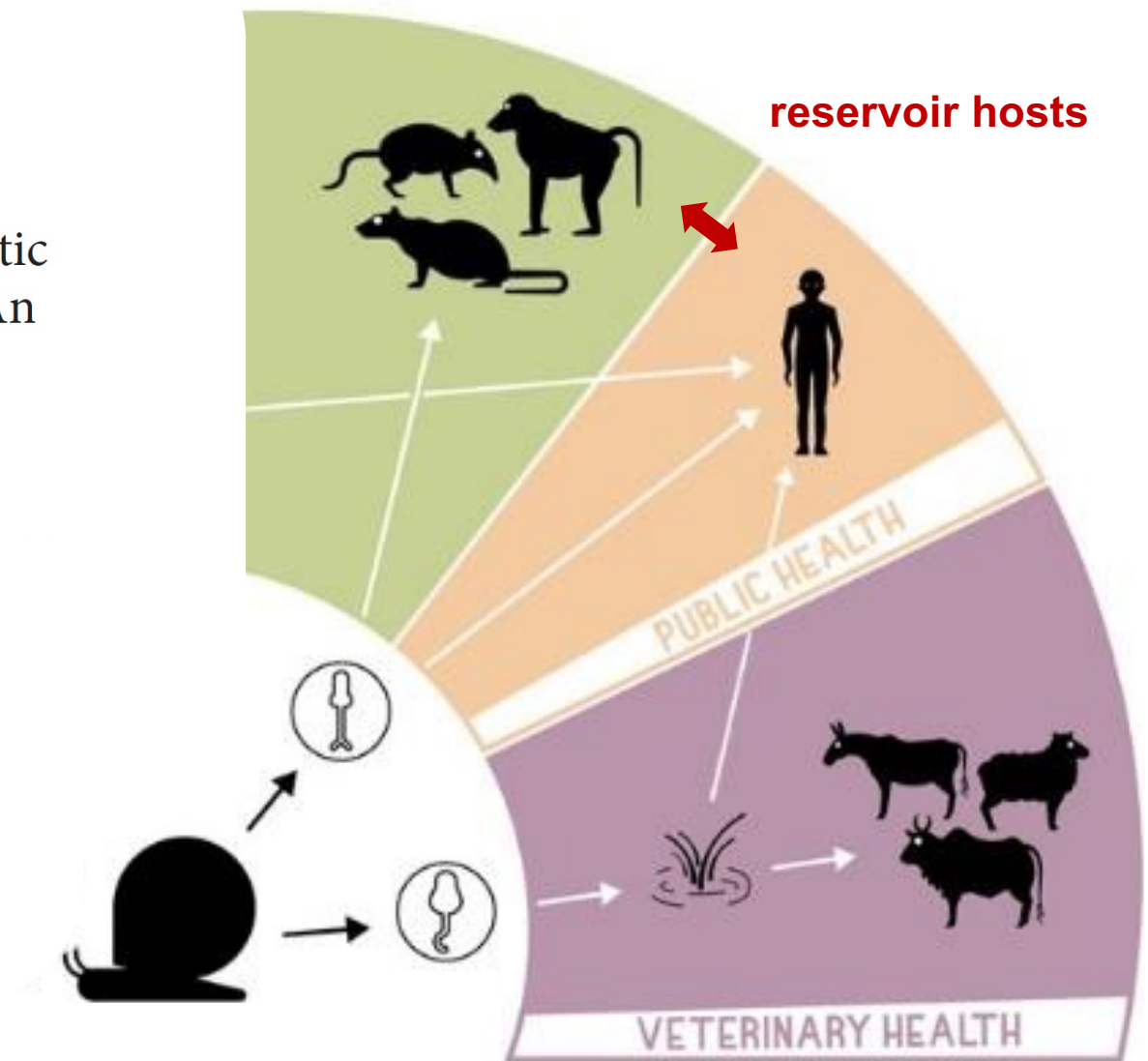
SNAIL-BORNE DISEASES

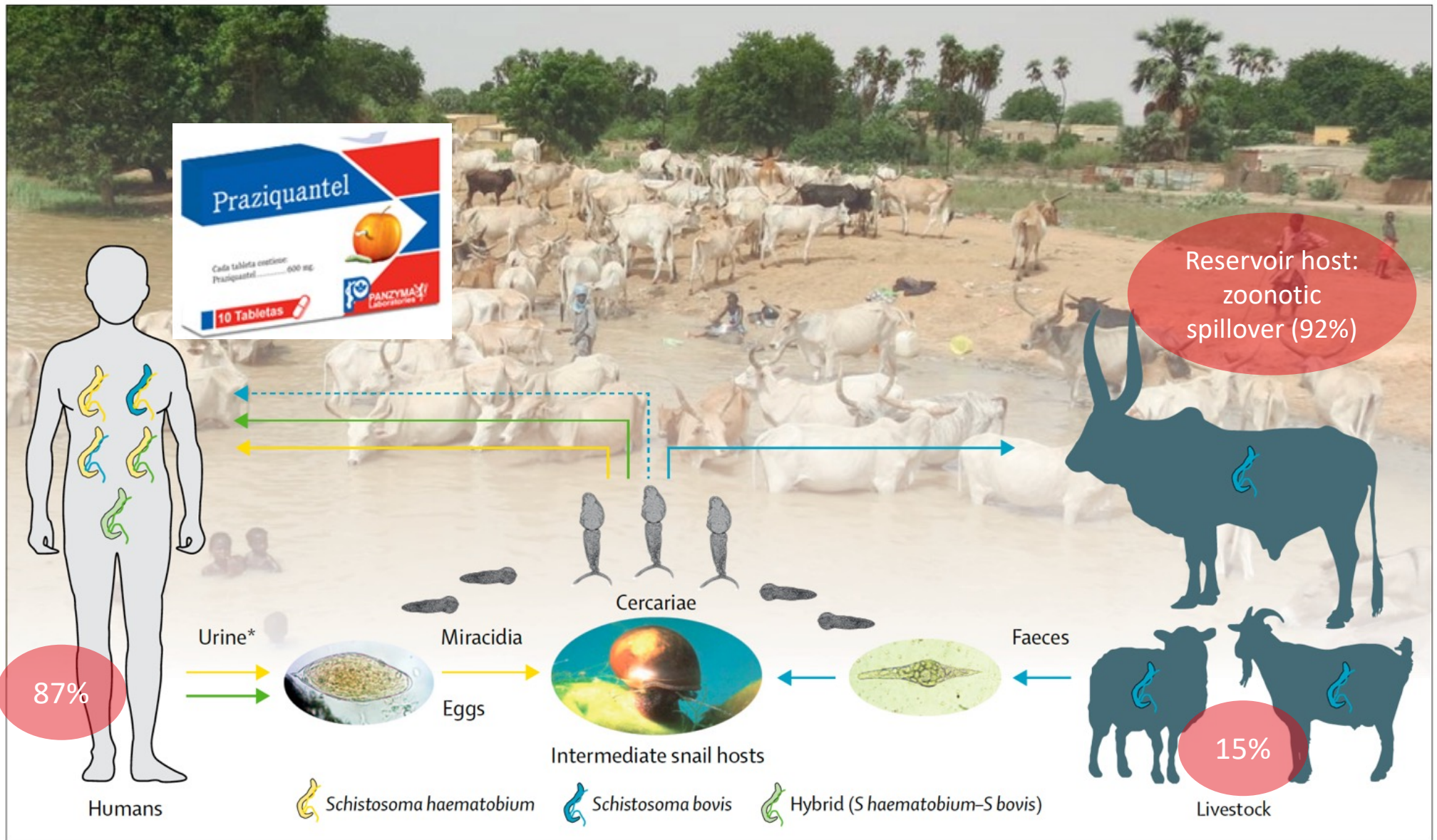
The Journal of Infectious Diseases

BRIEF REPORT

Rodents as Natural Hosts of Zoonotic *Schistosoma* Species and Hybrids: An Epidemiological and Evolutionary Perspective From West Africa

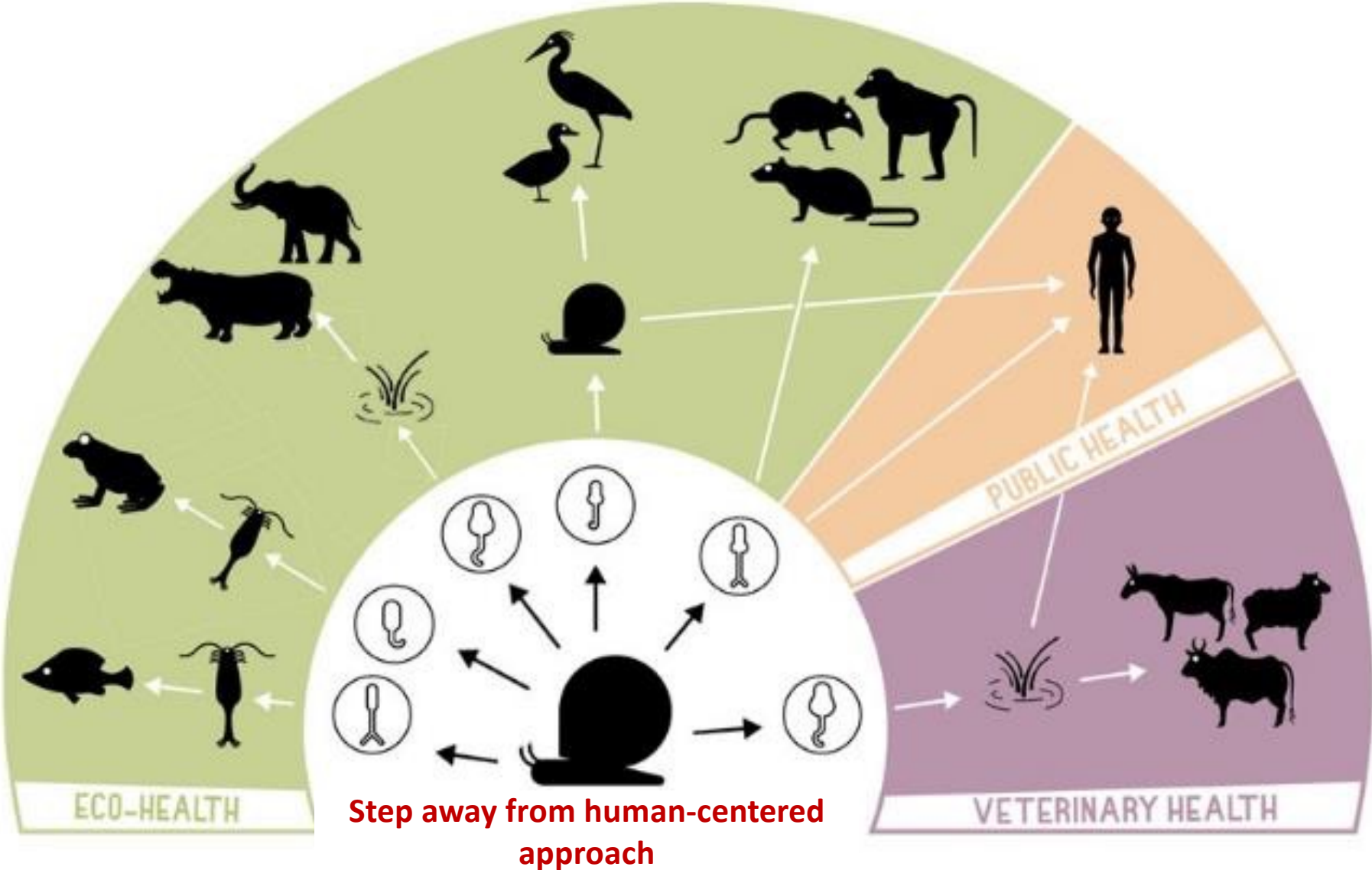
Stefano Catalano,¹ Mariama Sène,² Nicolas D. Diouf,^{2,3} Cheikh B. Fall,⁴ Anna Borlase,¹ Elsa Léger,¹ Khalilou Bâ,⁵ and Joanne P. Webster¹





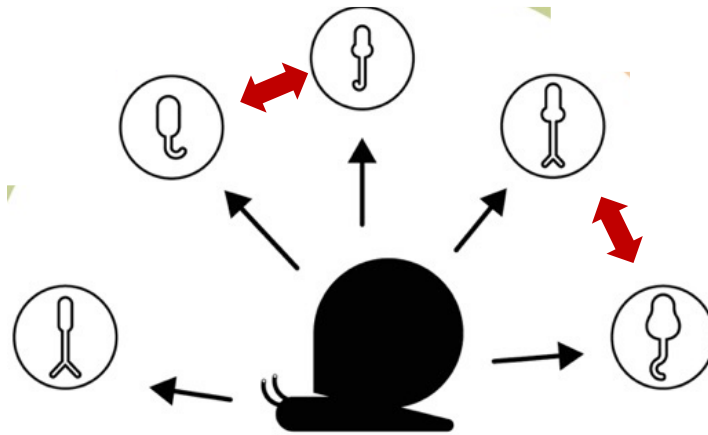
One Health approach crucial → regular monitor and treatment livestock

ONE HEALTH



What are consequences of snail co-infections?

Synergistic



antagonistic interactions

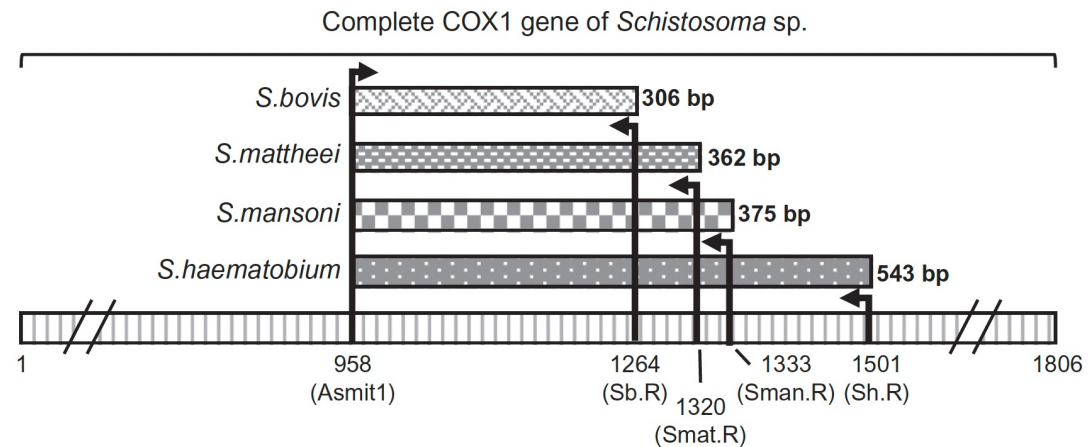
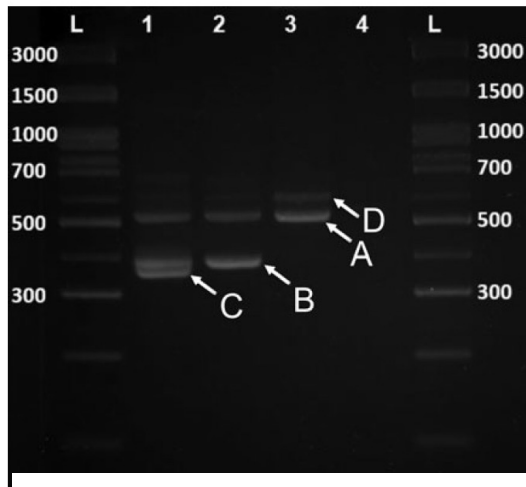
Antagonism between parasites within snail hosts impacts the transmission of human schistosomiasis

Martina R Laidemitt^{1,2*}, Larissa C Anderson^{1,2}, Helen J Wearing^{1,2,3},
Martin W Mutuku⁴, Gerald M Mkoji⁴, Eric S Loker^{1,2}



→ anthelmintic treatment of cattle increases human schistosomiasis

Important to detect co-infections



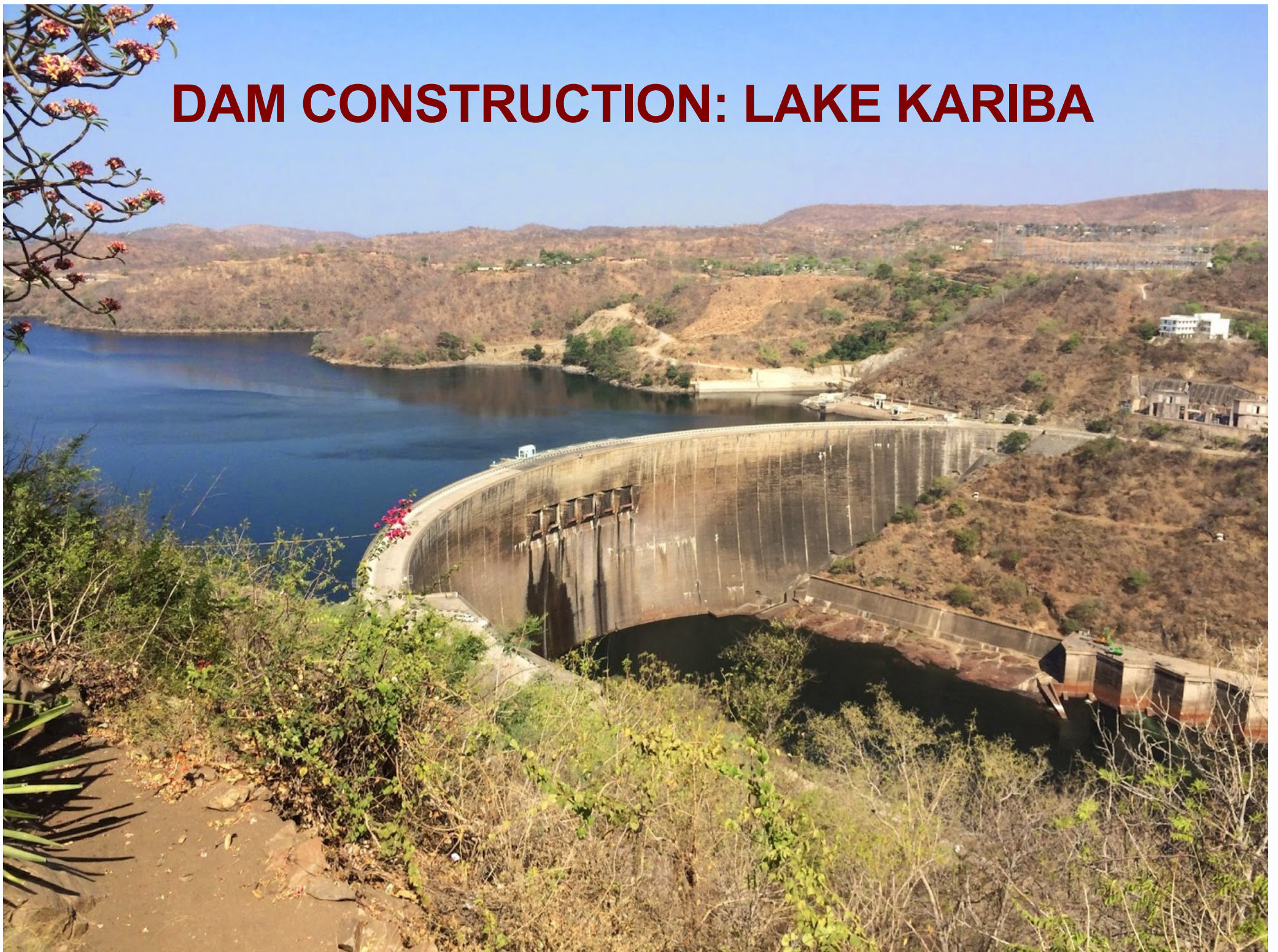
Trans R Soc Trop Med Hyg 2019; **113**: 722–729
doi:10.1093/trstmh/trz067 Advance Access publication 1 August 2019



A rapid diagnostic multiplex PCR approach for xenomonitoring of human and animal schistosomiasis in a ‘One Health’ context

Ruben Schols^a, Hans Carolus^a, Cyril Hammoud^{b,c}, Stephen Mulero^d, Aspire Mudavanhu^e and Tine Huyse^{a,b,*}

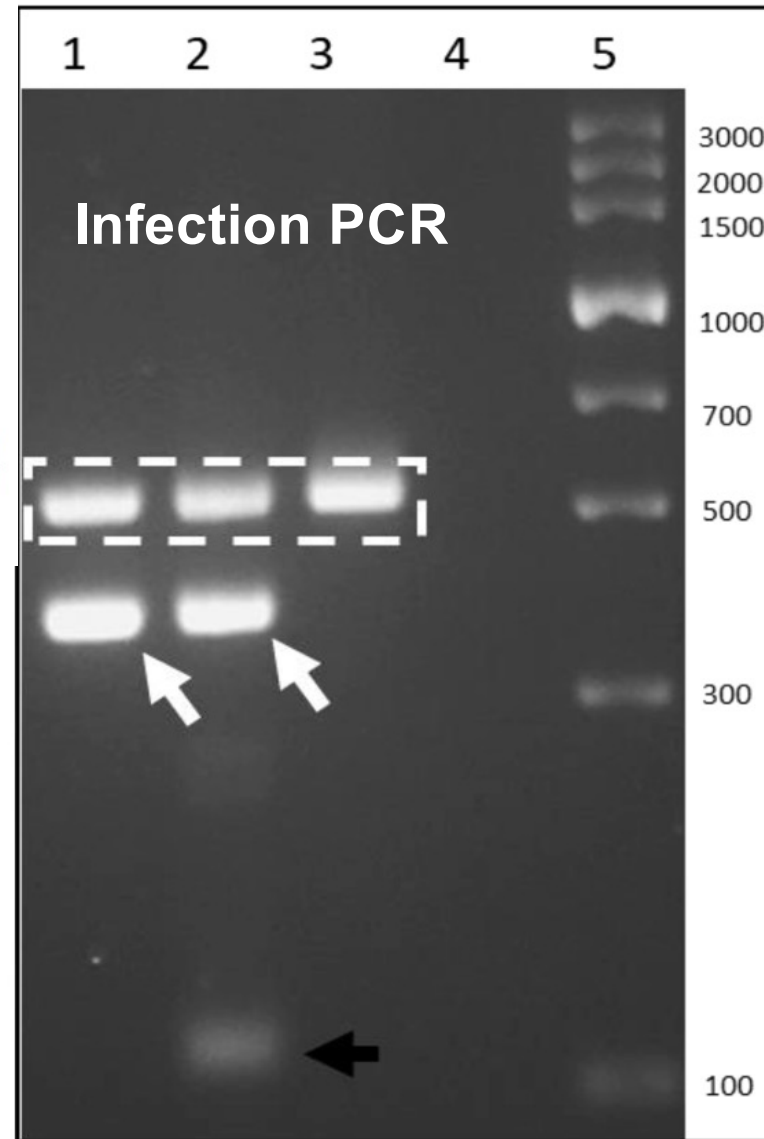
DAM CONSTRUCTION: LAKE KARIBA





... and another exotic invasive species



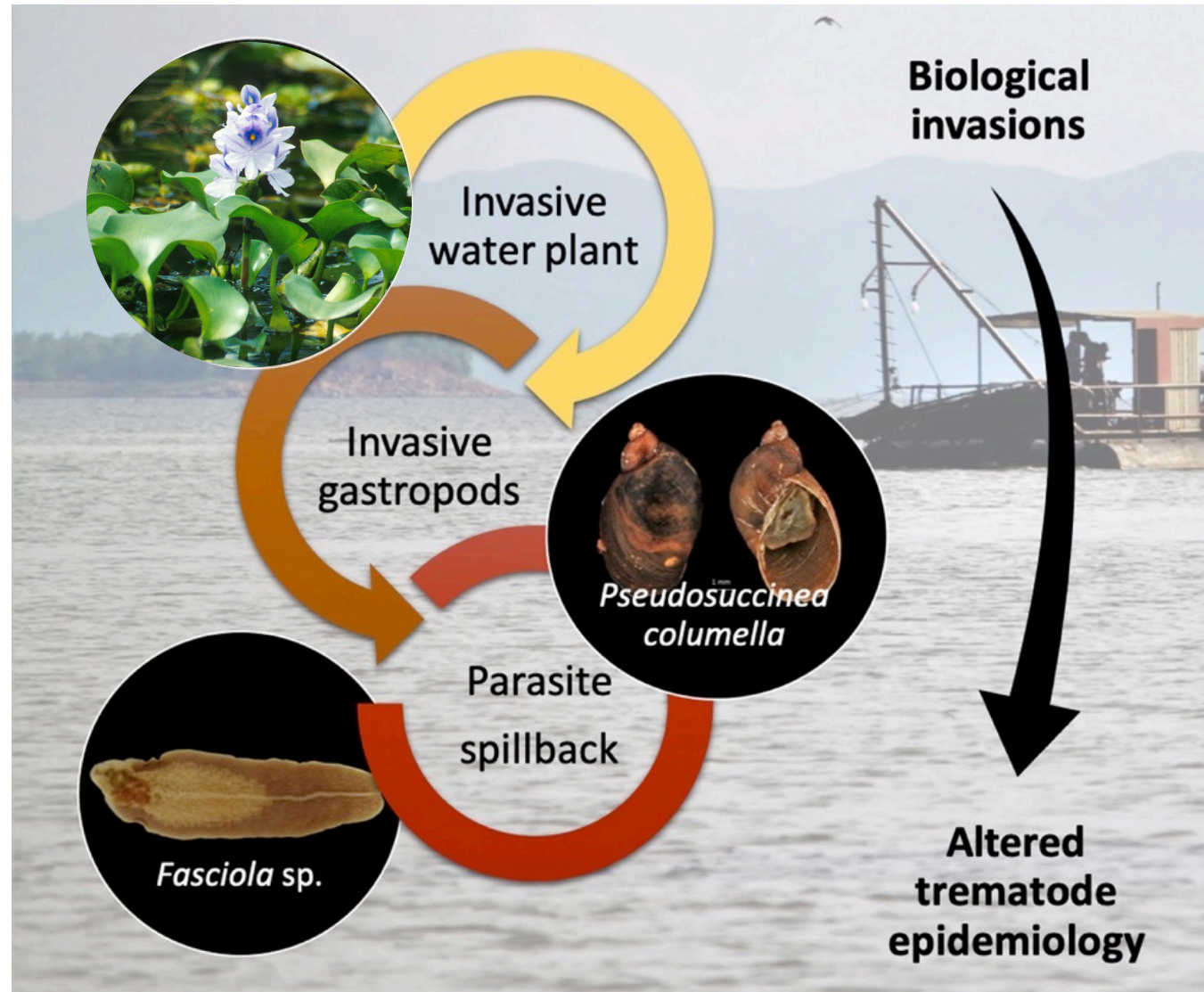


- Significant + association between water hyacinth and *P. columella* abundance
- Invasive *P. columella* snails much more abundant than native snails (competitive exclusion)

65% invasive snails infected
4.5% native snails infected

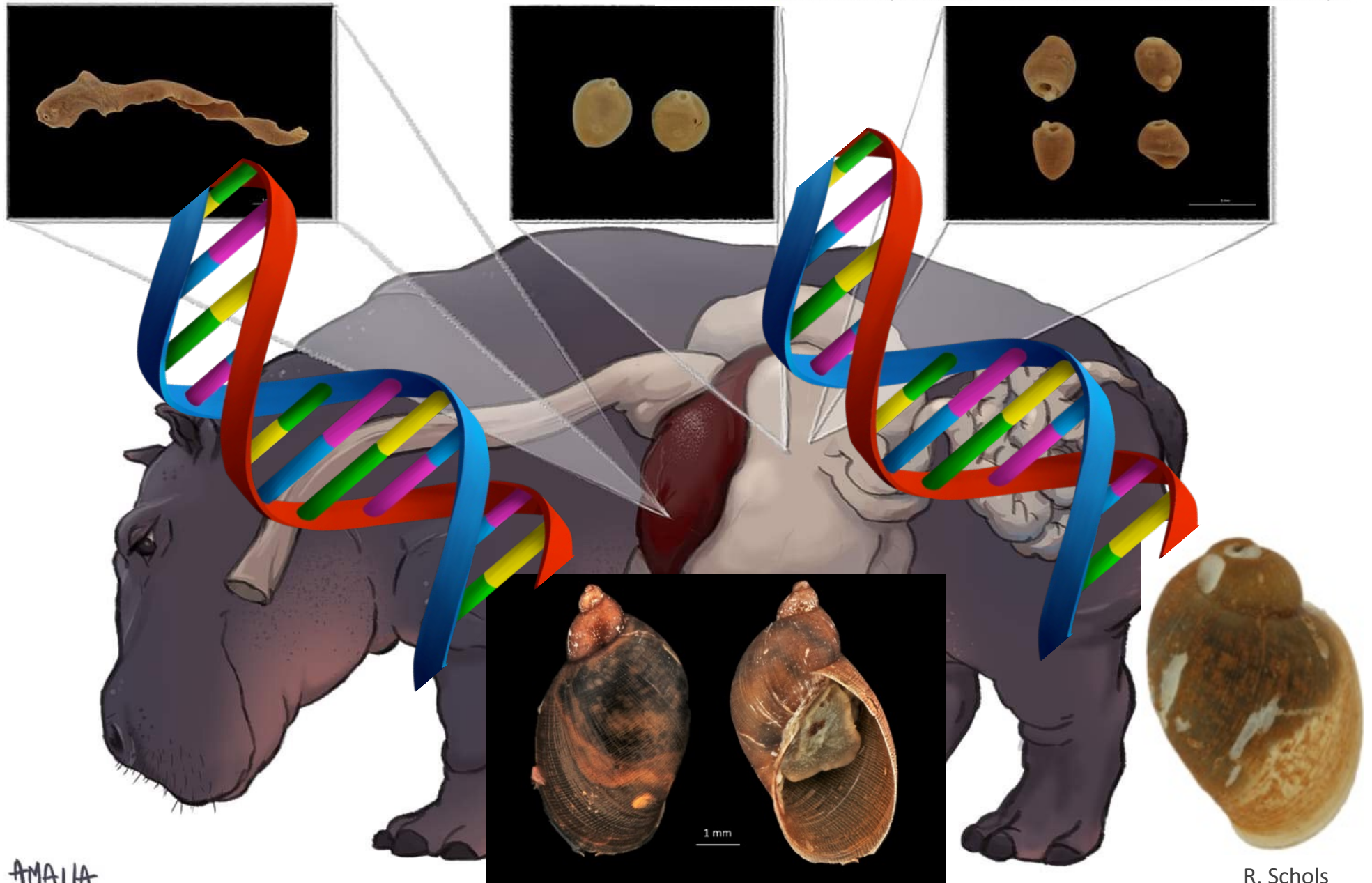
A cascade of biological invasions and parasite spillback in man-made Lake Kariba

Hans Carolus^{a,c}, Kudzai C. Muzarabani^b, Cyril Hammoud^c, Ruben Schols^c, Filip A.M. Volckaert^a, Maxwell Barson^b, Tine Huyse^{a,c,*}



Invasive snails, parasite spillback, and potential parasite spillover drive parasitic diseases of *Hippopotamus amphibius* in artificial lakes of Zimbabwe

Ruben Schols^{1,2*}, Hans Carolus^{3†}, Cyril Hammoud^{1,4}, Kudzai C. Muzarabani⁵, Maxwell Barson^{5,6,7} and Tine Huyse¹

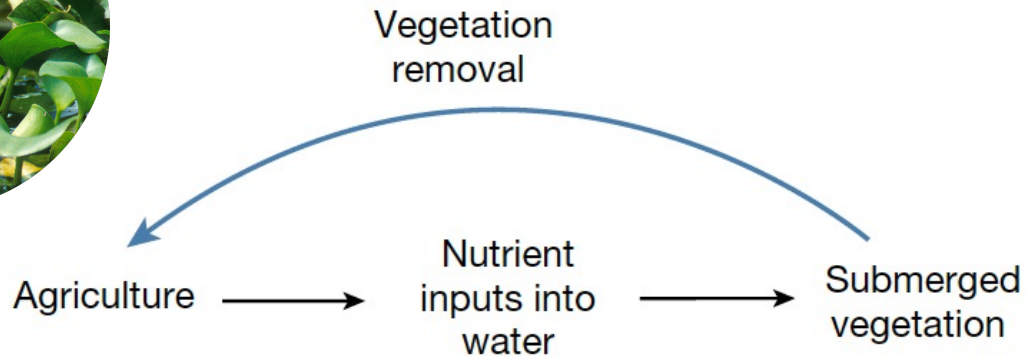


AMALIA

R. Schols

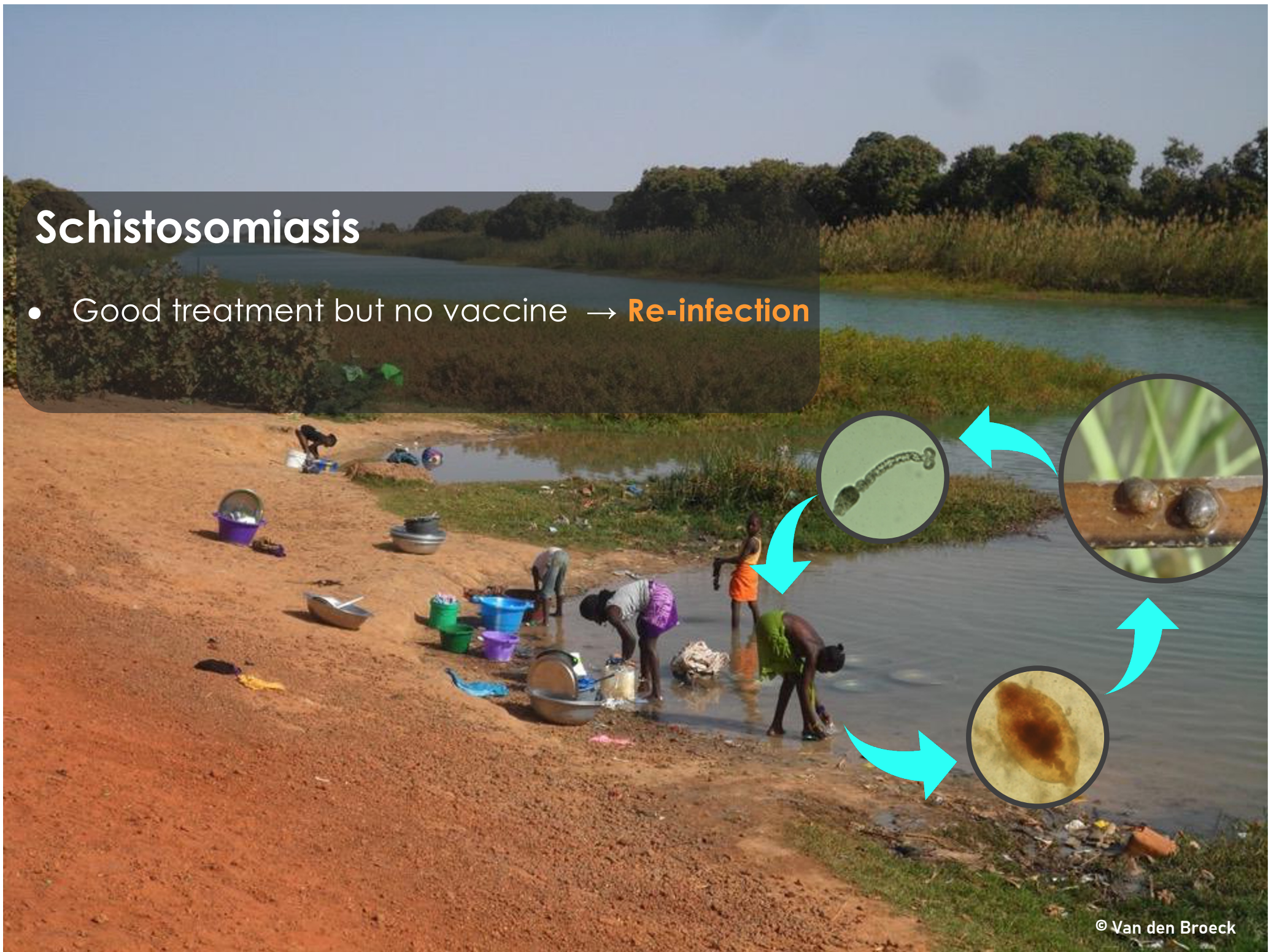
A planetary health innovation for disease, food and water challenges in Africa

[Jason R. Rohr](#) , [Alexandra Sack](#), [Sidy Bakhoun](#), [Christopher B. Barrett](#), [David Lopez-Carr](#), [Andrew J.](#)



Schistosomiasis

- Good treatment but no vaccine → **Re-infection**



Prevention

Break the cycle (WHO, 2019)

- Snail control
- Behavioral change



- lack of snail experts & data
- top-down interventions short-lived results



Citizen Science

Citizen science for monitoring diseases



Citizen scientists

Protective gear + snail scoop



Smartphone



Snail ID key



+

Reports on risky water practices



KoBoToolbox to send snail data to the cloud



Citizen science & co-design of communication tools



WORLD CAFÉ

- ❖ Key messages & preferred channels of communication
- ❖ Community mobilization



Door-to-door campaigns



Drama and songs



Educational materials

Encounter citizen scientists & policy makers to co-design policy recommendations



Conclusions

One Health

- steer away from human centered approach (targeted vector control)
- Integrative & intersectorial approaches (increased collaboration, circular solutions)
- Integrating other perspectives (citizen science, NGOs)



Mbarara University of Science and Technology, Uganda

Supported by the development Cooperation program of the Royal Museum for Central Africa with support of the Directorate-general Development Cooperation and Humanitarian Aid



Université de Kinshasa, INRB, DR Congo

Promotor MUST: Dr. Casim Umba Tolo, Prof. Kagoro, Dr. Nyakato, Dr. Albrecht, Dr Ronal Twongyirwe
Promotor DRC: Dr. Joule Madinga prof Lapika, prof Mitachi,, prof Jacobs, prof Pype, prof Poels, Prof Polman, Dr. Masquillier, prof Vranken, prof Van Rompaey, all students & citizen scientists



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One Health – a community- based perspective

Krizia Vieri,
One Health Advisor

Doctors of the World
Belgium

BELGIUM

Brussels, 27 June 2024





MEDECINS DU MONDE



**One Health approach -
A community-based
perspective**



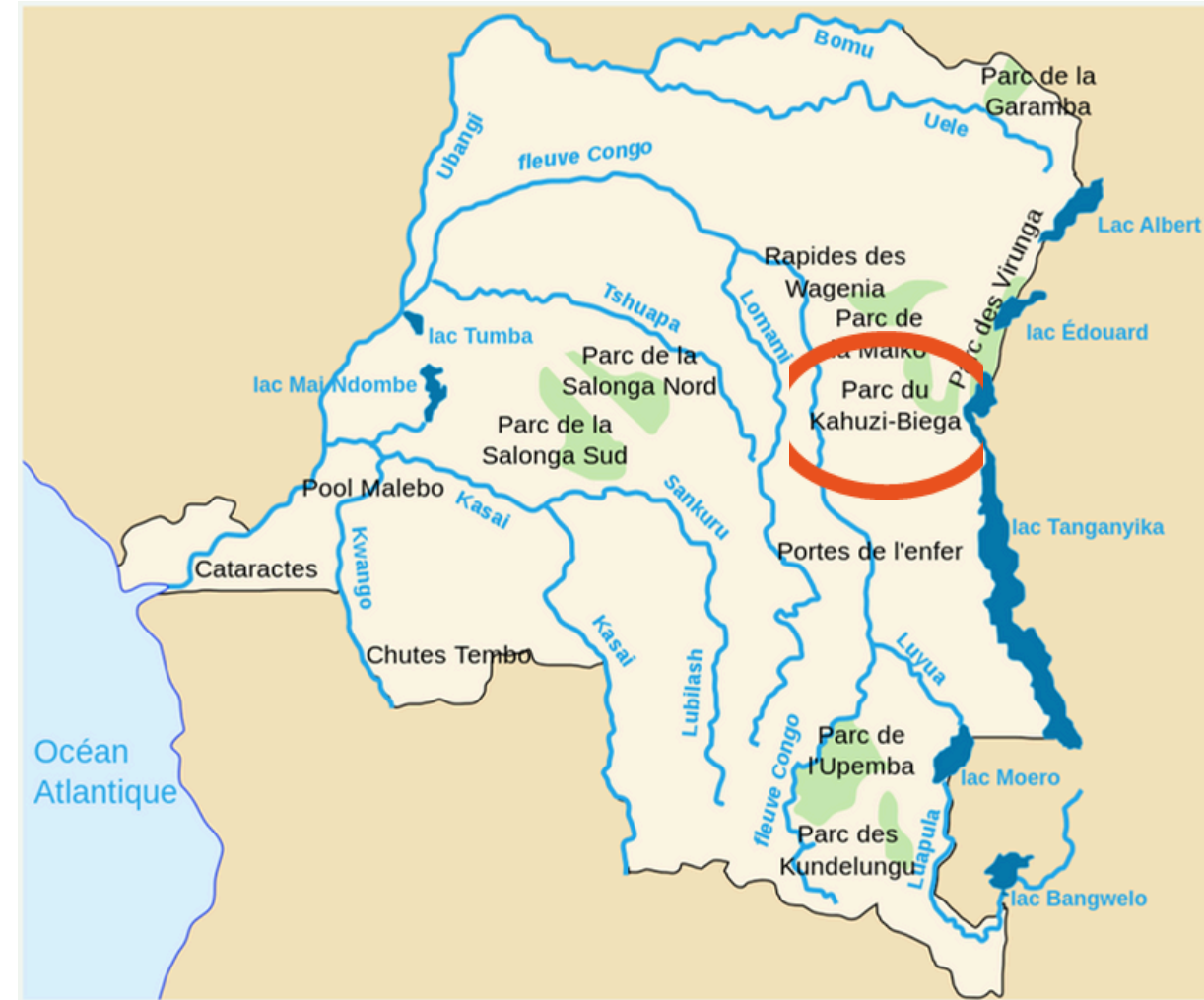
INTERVENTION AXES

1. Zoonoses
2. Food security and malnutrition
3. Antimicrobial resistance
4. Environmental degradation and climate change



SOUTH KIVU

PNKB



DECOLONIAL APPROACH



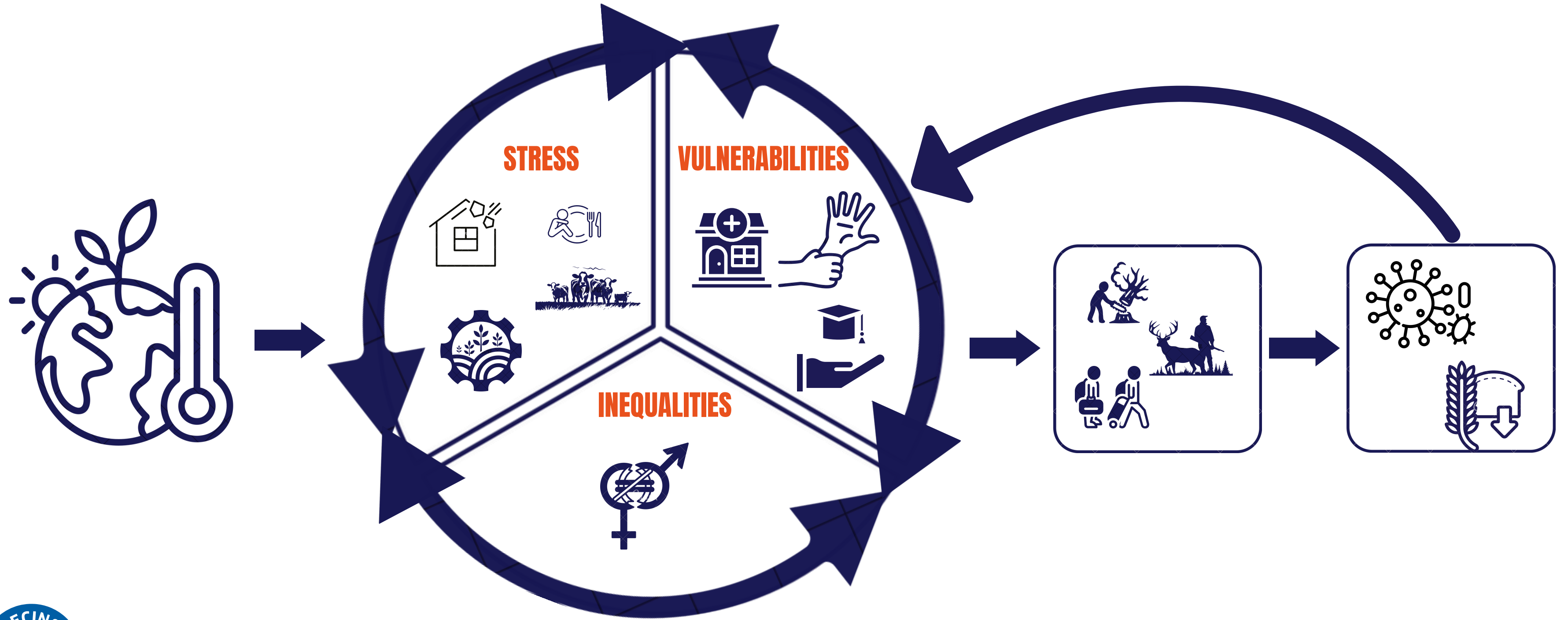
Aim: Rethink knowledge production

Challenge: Questioning the dominance of knowledge systems created in the global north and transferred to the global south.

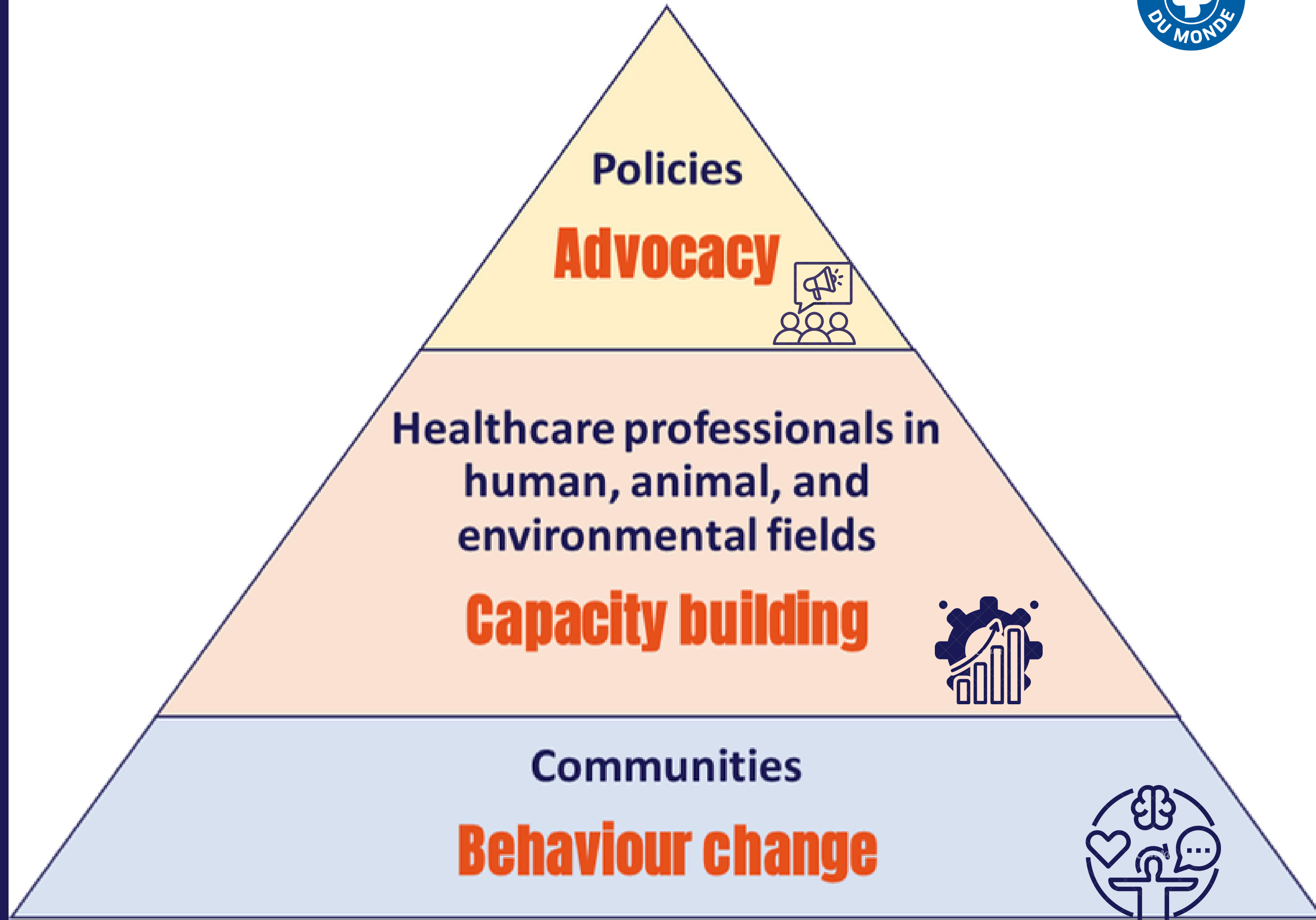
Focus: Valuing local epistemologies and knowledge systems.



PRECARITY



IMPLEMENTATION STRATEGY





IMPLEMENTATION STRATEGY

PARTICIPATORY ACTION RESEARCH

PARTICIPATORY

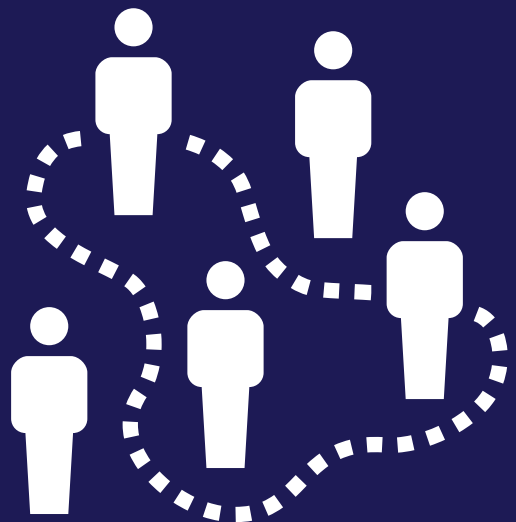
- ❖ Inclusivity
- ❖ Empowerment
- ❖ Ownership

ACTION

- ❖ Practical Solution
- ❖ Immediate impact
- ❖ Relevance

RESEARCH

- ❖ Systematic Inquiry
- ❖ Knowledge generation
- ❖ Evaluation



CHALLENGES



❖ Challenges to address :

- **Social Hierarchies: Difficulties in achieving inclusive participation.**
- **Past Aid Influence: Focus on immediate needs vs. sustainable change.**
- **Reexamine power imbalance**

RECOMMENDATIONS FOR POLICY AND PRACTICE



1) Promote Inclusive Participation

Address social hierarchies to ensure equitable involvement.

2) Integrate Decolonial Methods

Apply decolonial approaches in health and environmental programs.

3) Secure Sustained Support

Provide continuous backing for community-led initiatives

4) Ensure Multisectoral Collaboration

Foster synergies between human, animal, and environmental sectors.



TAKE HOME MESSAGES



1. Environmental challenges amplified for vulnerable populations



2. Importance of One Health Approach



3. Reflective community engagement is crucial

4. Utilize PAR for innovative and sustainable solutions

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One Health approach

Kahuzi-Biega National Park

South Kivu, DR Congo

An epidemio-surveillance
system for the three
Community-based
One Health Services

Joep van Mierlo, VSF-B

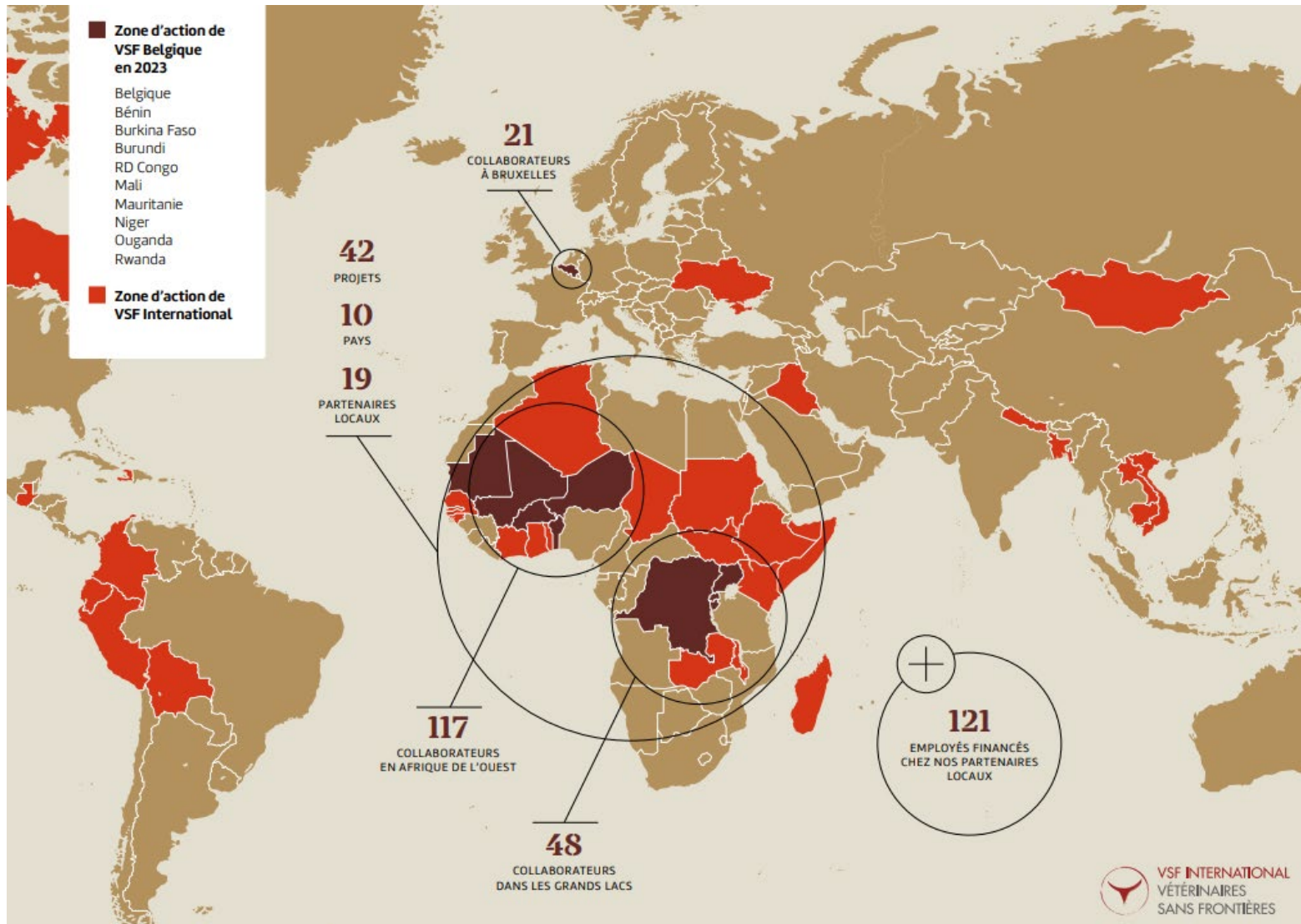
BELGIUM

Brussels, 27-6-2024



VSF-Belgium

Who are we and where do we work

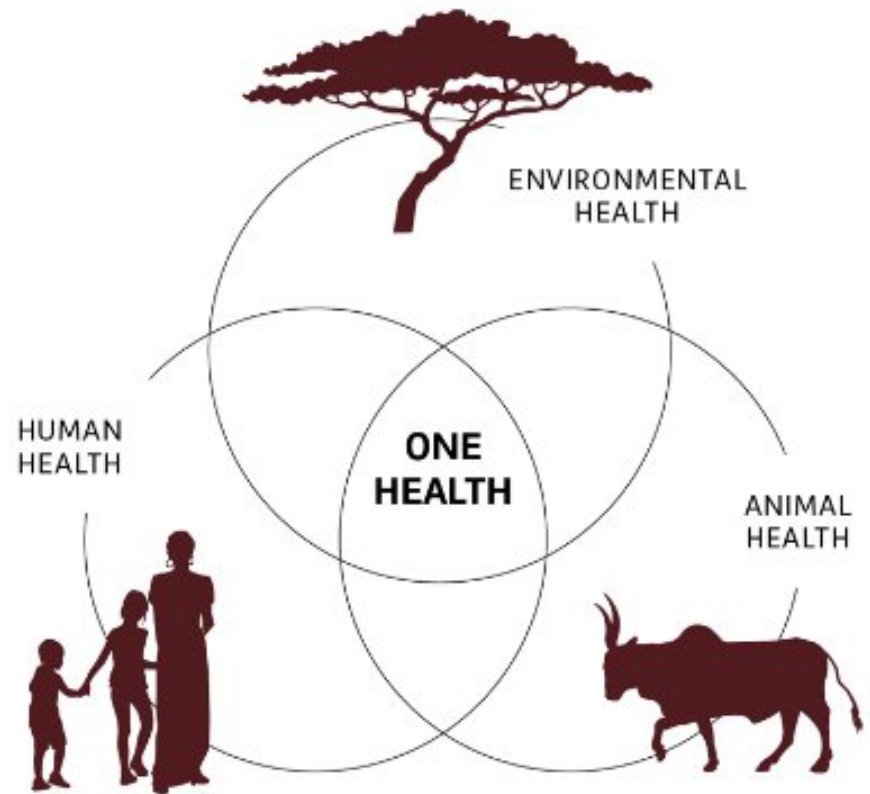


The One Health - VSF approach



Definition

- **Interdependence** between animal health, public health & ecosystem health
- **Multidisciplinary** and **multi-sector** collaboration
- Global, **systemic** approach (long-term results)



For us One Health means

(e.g. Preventing the next pandemic)



Preparedness & Response

(early detection, vaccination, treatment, awareness raising)

+



Prevention

(nature conservation, agroecological production, ecosystem restoration)

=



Promoting the One Health approach

(through participatory community-based health services)

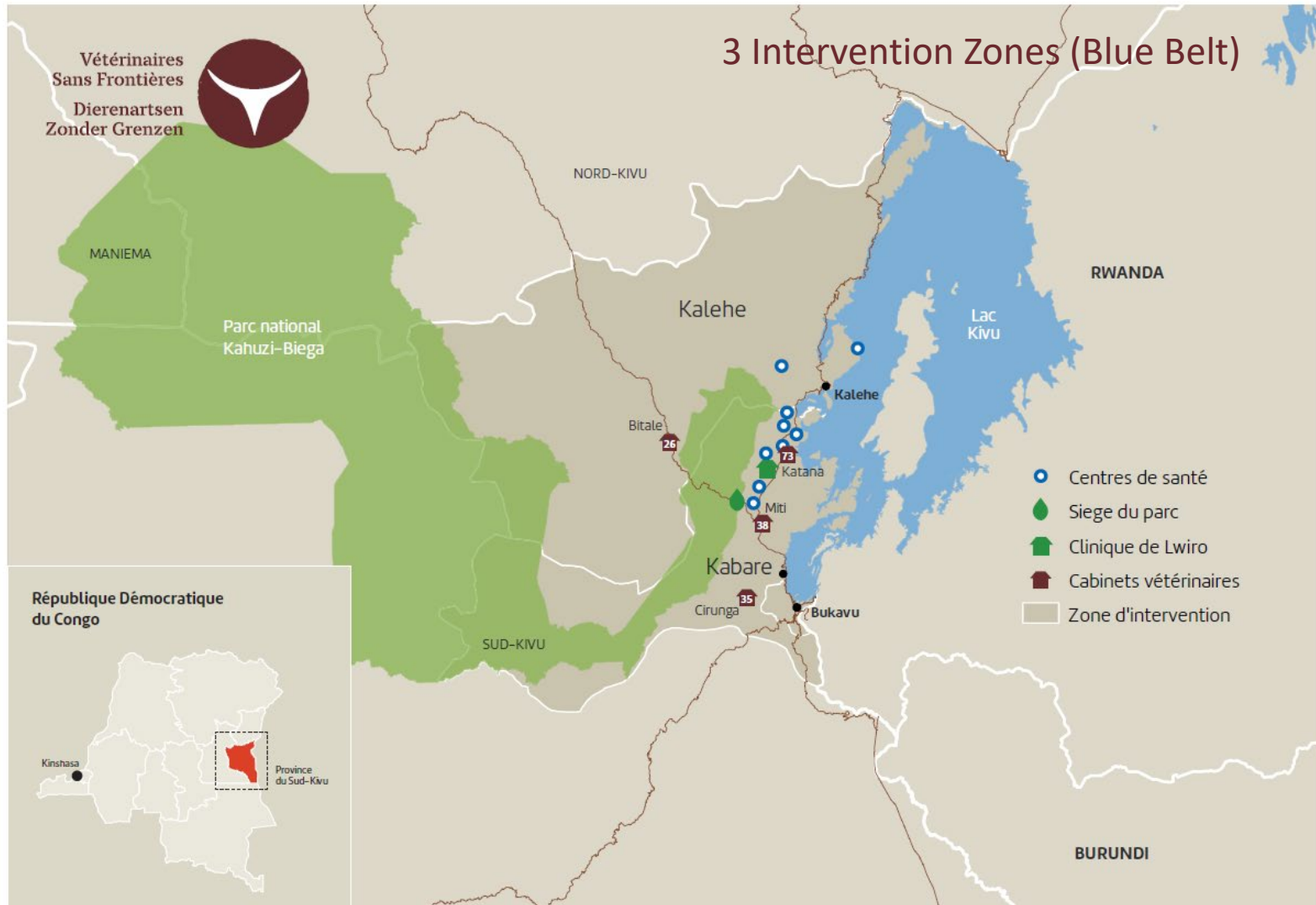
The case of Kahuzi Biega National Park, South Kivu, DR Congo (MdM / ADMR & VSF-B)



Park = 600,000 ha Exceptionnel Biodiversity



high diversity and endemism: 130+ large mammals & 1000+ plants



... under pressure in a complex environment



- High population density
- Economic and food vulnerability
- Agricultural and pastoral rivalries
- Major population movements
- Insecurity



Posing high health risks: next pandemic ?



For the environment

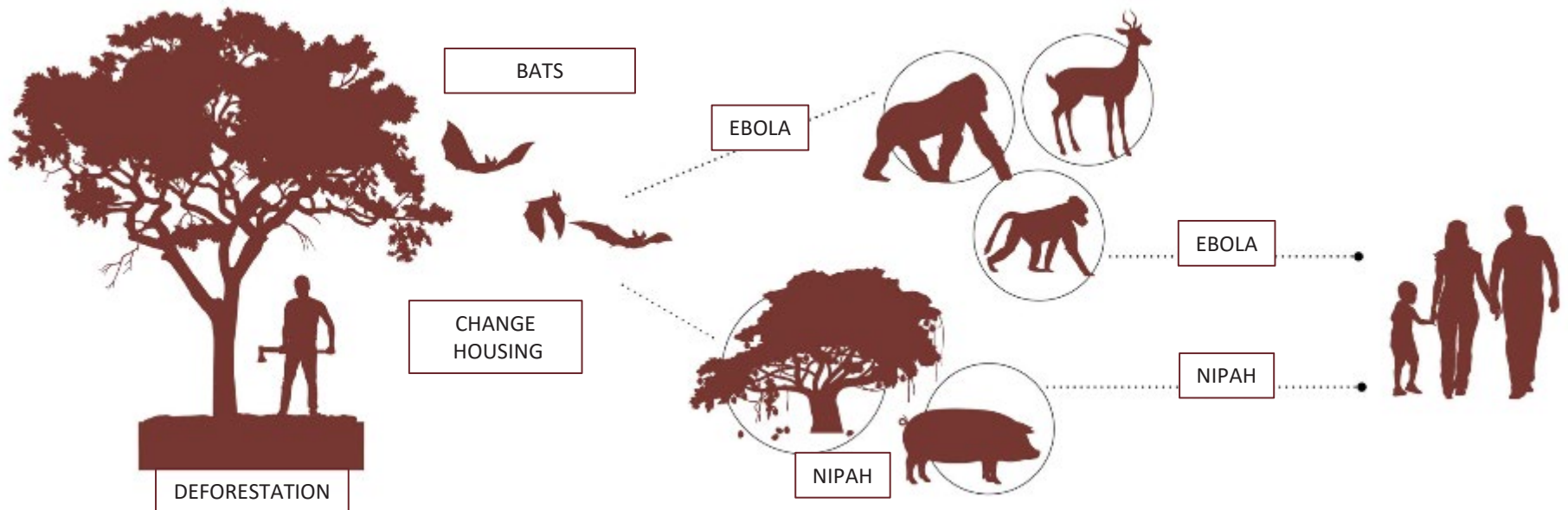
- 13.4% of forest degraded

For animals

- Increased infectious risks for wildlife and domestic animals (Tb gorillas)

For humans

- Increased zoonotic risks (Tb rangers)



Our response: a *One Health* project



Focus on the 'blue belt': an asset from a *One Health* perspective

Private vets = essential front-line players in disease prevention, detection & rapid response

- Local and proximity players
- A dense and sensitive network
- Fast, accurate detection
- Profitable and sustainable players
- Awareness-raising and social mobilisation players





Challenges of the One Health approach

Operationalization

- working at community level
- health service provision is fragile/absent
- OH institutions and active stakeholders in place and effective
- Sensitive epidemio surveillance system (in)effective, in inaccessible and/or highly insecure areas
- Diagnosis is slow and needs to be improved (mobile/proximity labs lacking)
- Involvement of local players and local populations, with taking into account their culture and traditional knowledge
- create the conditions for cultural appropriate and accepted responses in the event of a new epidemic (e.g. Ebola in North Kivu).

One Health = good practice

- Partnerships & Multi-stakeholder (bottom-up)
- Systemic analysis of problems and solutions

Implementing the One Health for VSF



ONE HEALTH IMPLEMENTATION IN THE GLOBAL SOUTH

A HOLISTIC APPROACH TO ADDRESS
THE KEY CHALLENGES OF
LIVESTOCK-DEPENDENT COMMUNITIES

Vétérinaires Sans Frontières
International
Avenue des Arts 7-8
1210 Brussels - Belgium
info@vsf-international.org
vsf-international.org

Common guiding principles

1. Adopting a **global**, but bottom-up, integrated and systemic **approach**
2. Include **local communities and knowledge**, youth and women
3. Developing **pilot projects** and innovative solutions
4. Focus on **sustainability**

The image shows the cover of a technical paper titled "ONE HEALTH IMPLEMENTATION IN THE GLOBAL SOUTH: A HOLISTIC APPROACH TO ADDRESS THE KEY CHALLENGES OF LIVESTOCK-DEPENDENT COMMUNITIES". The cover features the VSF logo and a photograph of a woman in a blue uniform walking with a cow in a rural setting. The text on the cover includes the title, subtitle, and a QR code. Below the cover, there is a QR code and a small text box that reads: "1 One Health implementation in the Global South: a holistic approach to address the key challenges of livestock-dependent communities. vsf-international.org/project/one-health-implementation-paper/".

The image shows the cover of a policy brief titled "Community-Based Animal Health Workers (CAHWs): Guardians for quality, localised animal health services in the global South". The cover features the VSF logo and a photograph of a woman in a blue uniform walking with a cow in a rural setting. The text on the cover includes the title, subtitle, and a QR code. Below the cover, there is a QR code and a small text box that reads: "2 Community-Based Animal Health Workers (CAHWs): Guardians for quality, localised animal health services in the global South. vsf-international.org/project/community-based-animal-health-workers-policy-brief/".

Policy Brief, June 2020: OH in Global South
Policy Brief, November 2023: OH & CAHW
→

<https://vsf-international.org/project/why-and-how-to-integrate-oh-cahw/>





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Thank you for your attention

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j.vanmierlo@vsf-belgium.org

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