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Monogenean flatworms: petite parasites, mighty models, innovative indicators?

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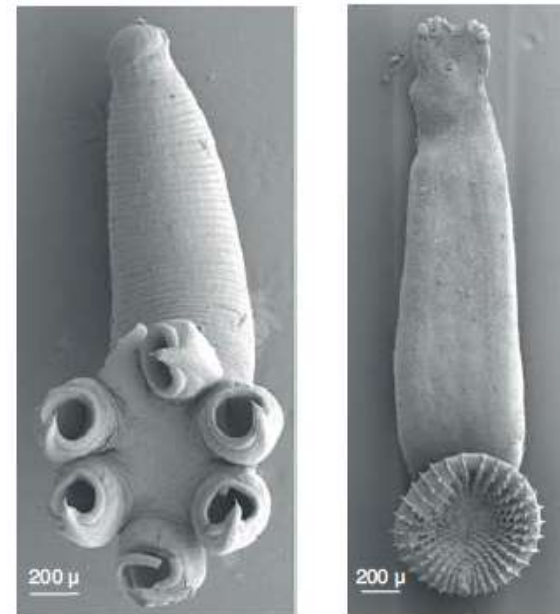


Monogeneans?



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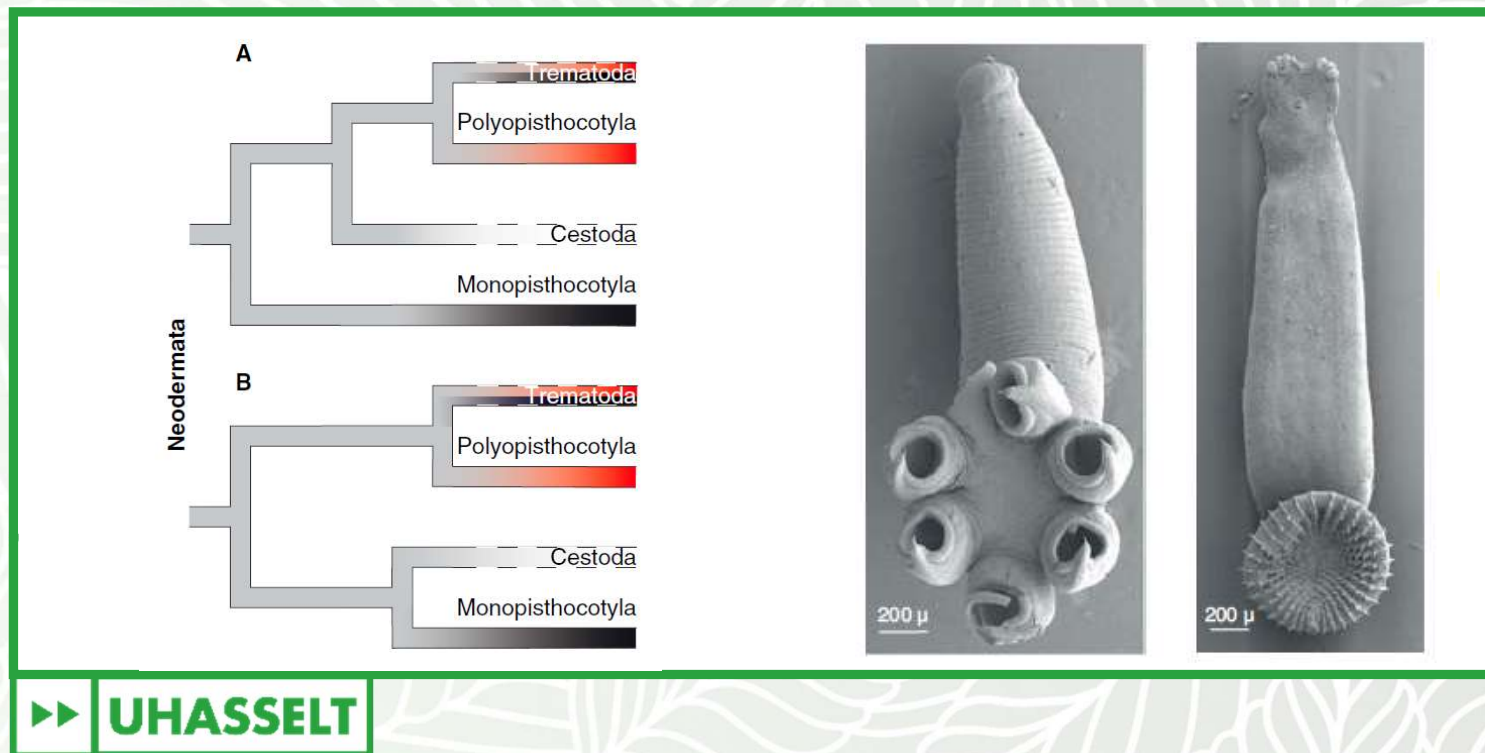
Monogeneans?



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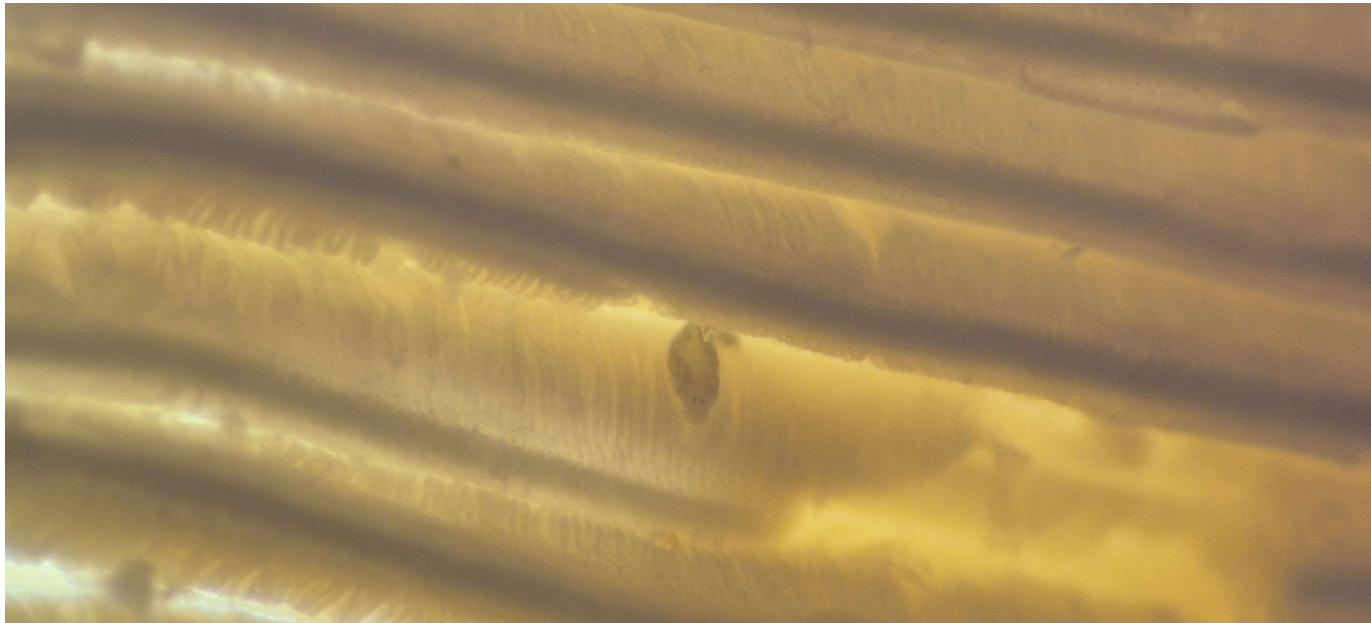
Vanhove et al. (2024, *Current Biology*)

Do monogeneans even exist?



Vanhove et al. (2024, *Current Biology*)

Monogeneans?



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Vanhove et al. (2025, *Trends in Parasitology*)

Monogeneans keep it simple!



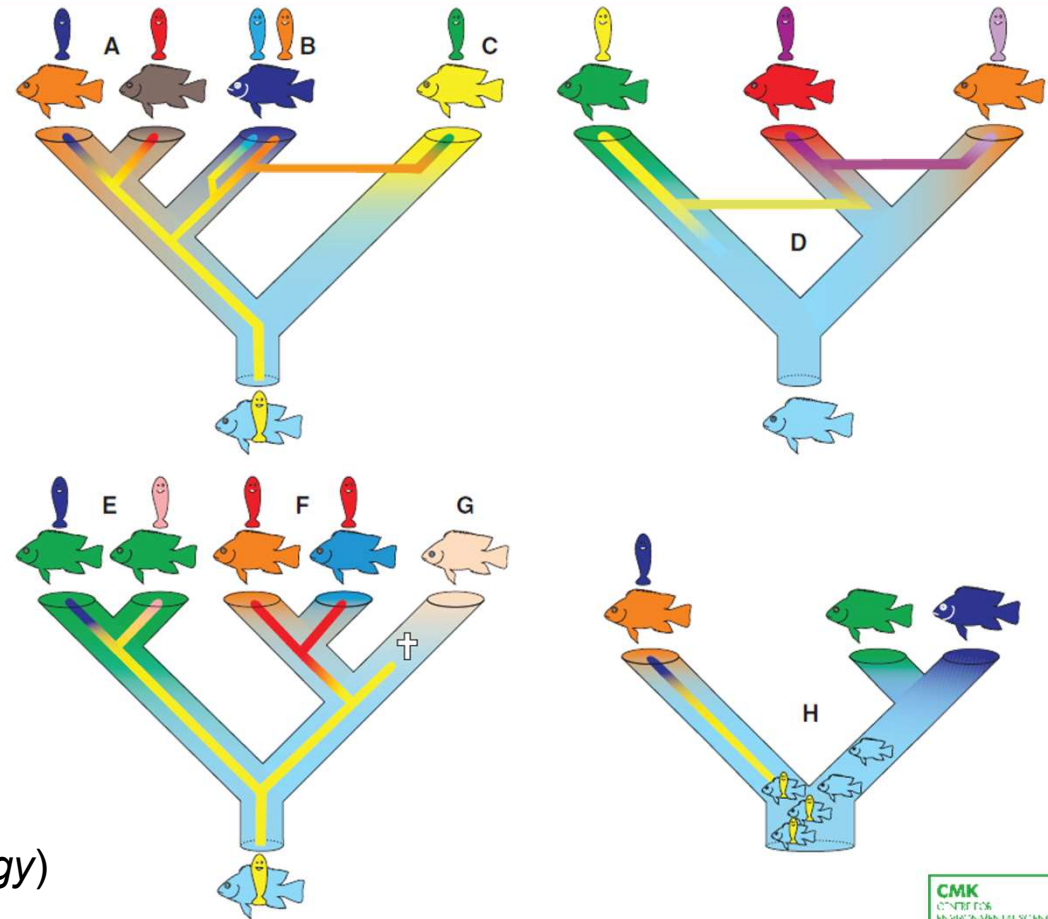
Scholz, Vanhove, Smit, Jayasundera & Gelnar (eds.)
(2018, *AbcTaxa*)



Research models: role of host history



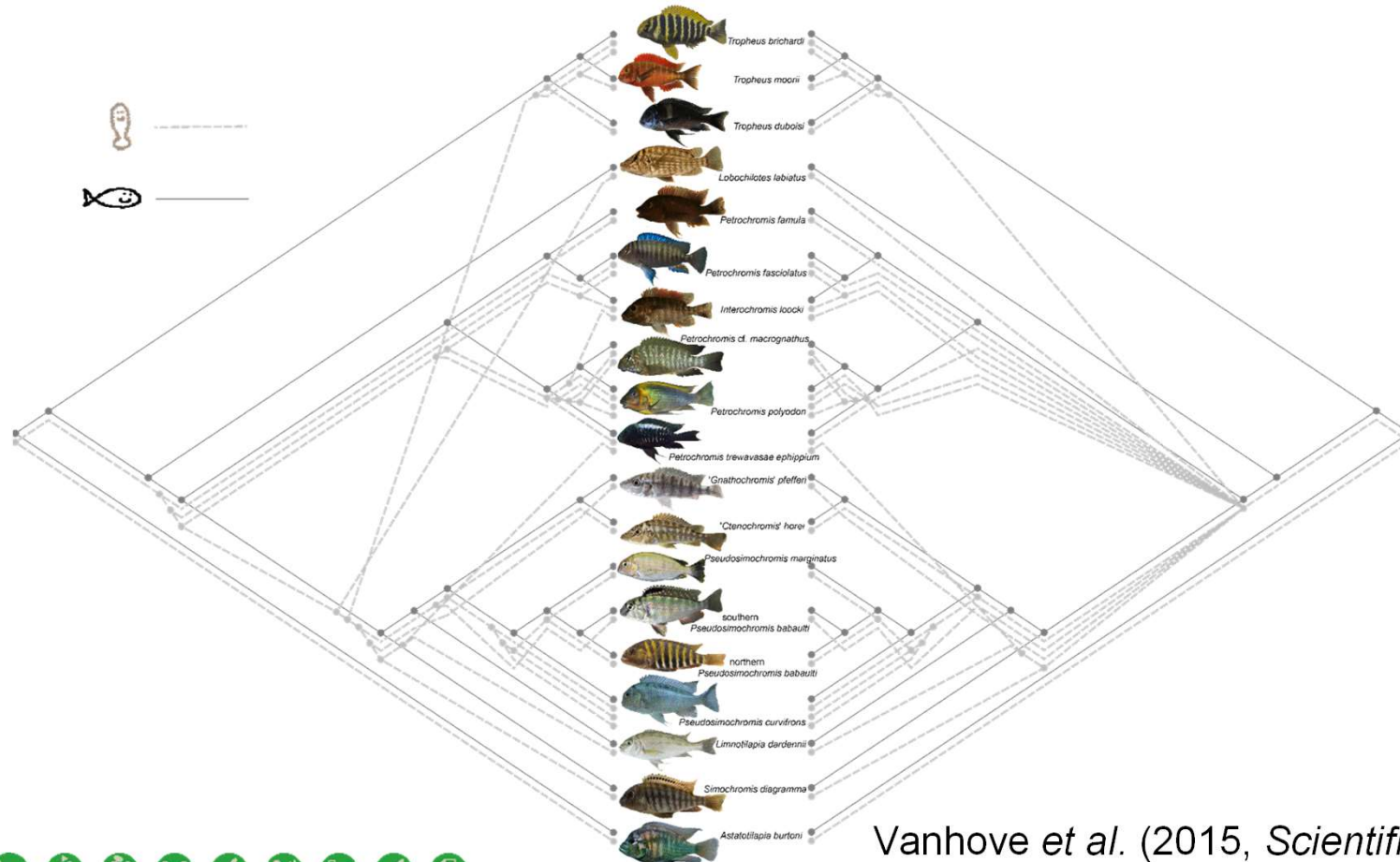
Antoine Pariselle



Vanhove et al. (2025,
Cold Spring Harbor Perspectives in Biology)



Research models: role of host history



Vanhove et al. (2015, *Scientific Reports*)

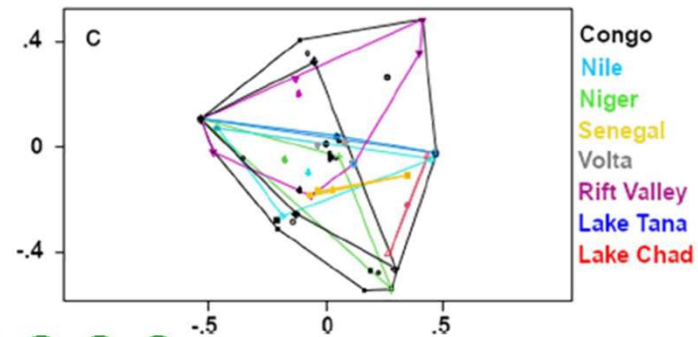
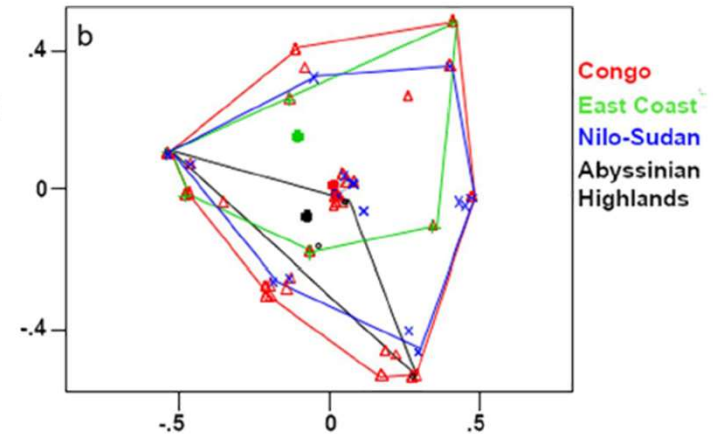
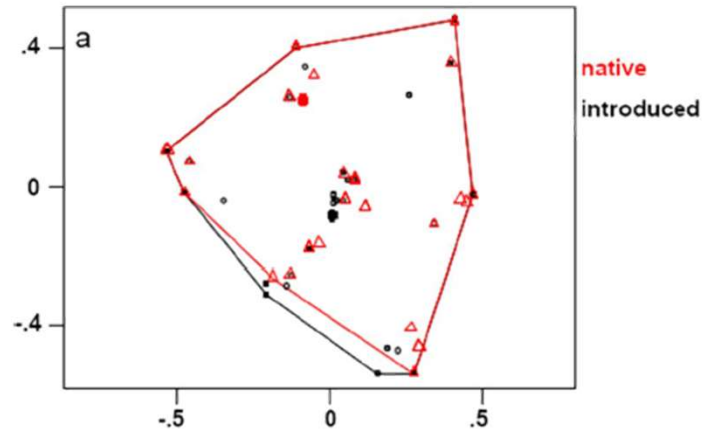
Research models: role of host ecology



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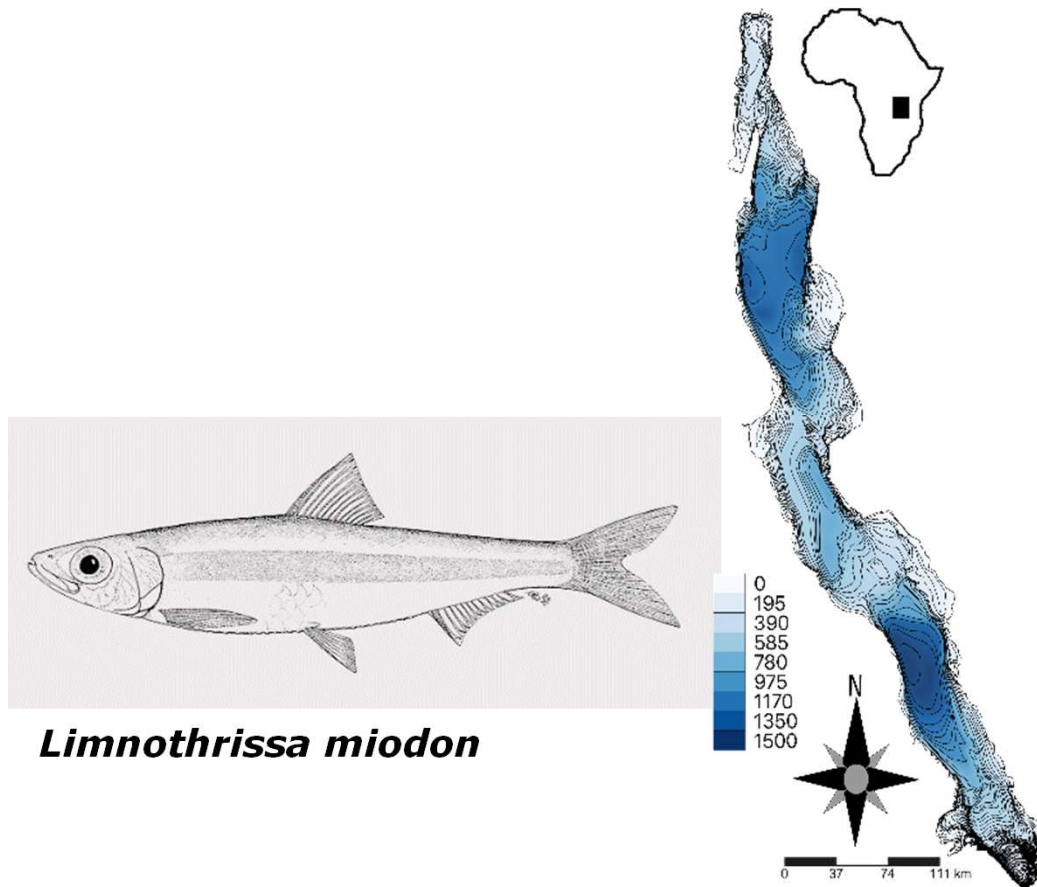


Oreochromis niloticus

Jorissen et al. (2025, *Hydrobiologia*)



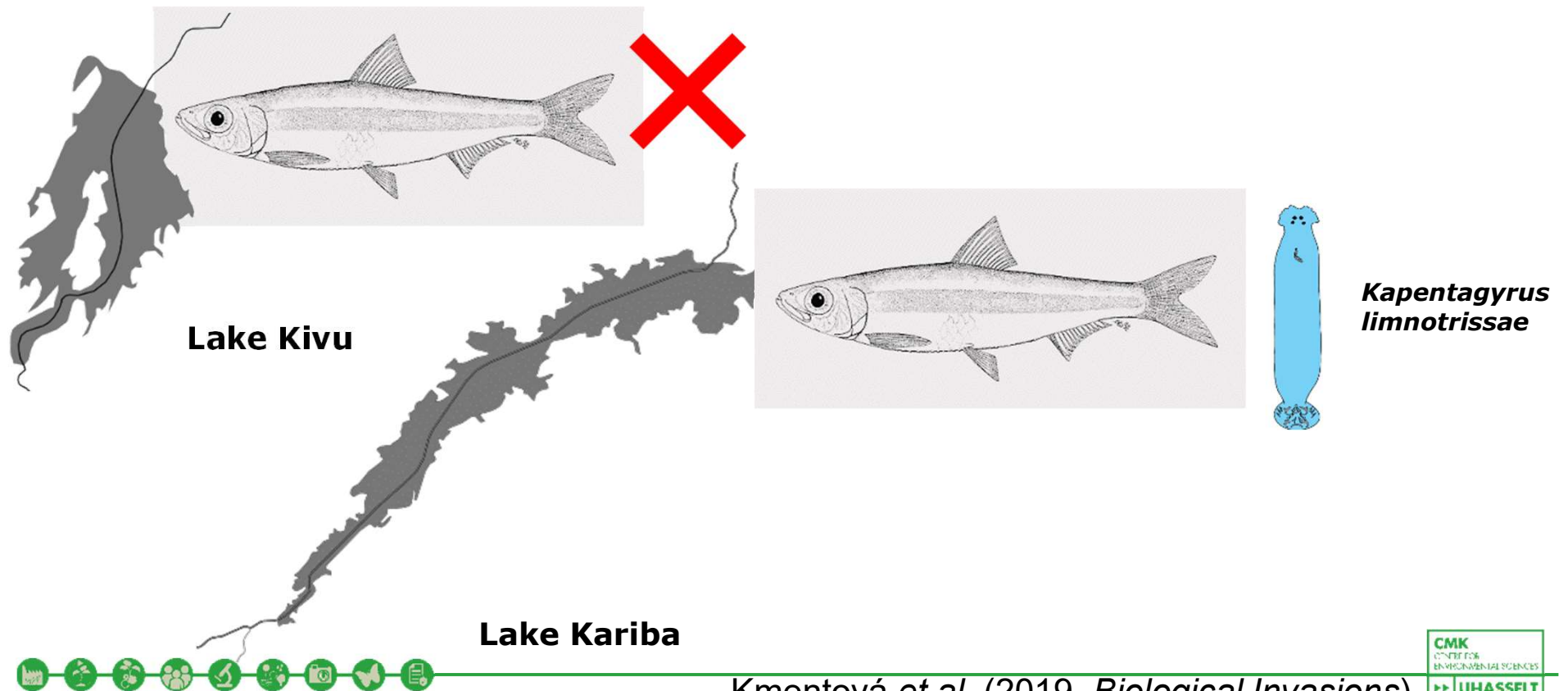
Research tools: tags for their hosts



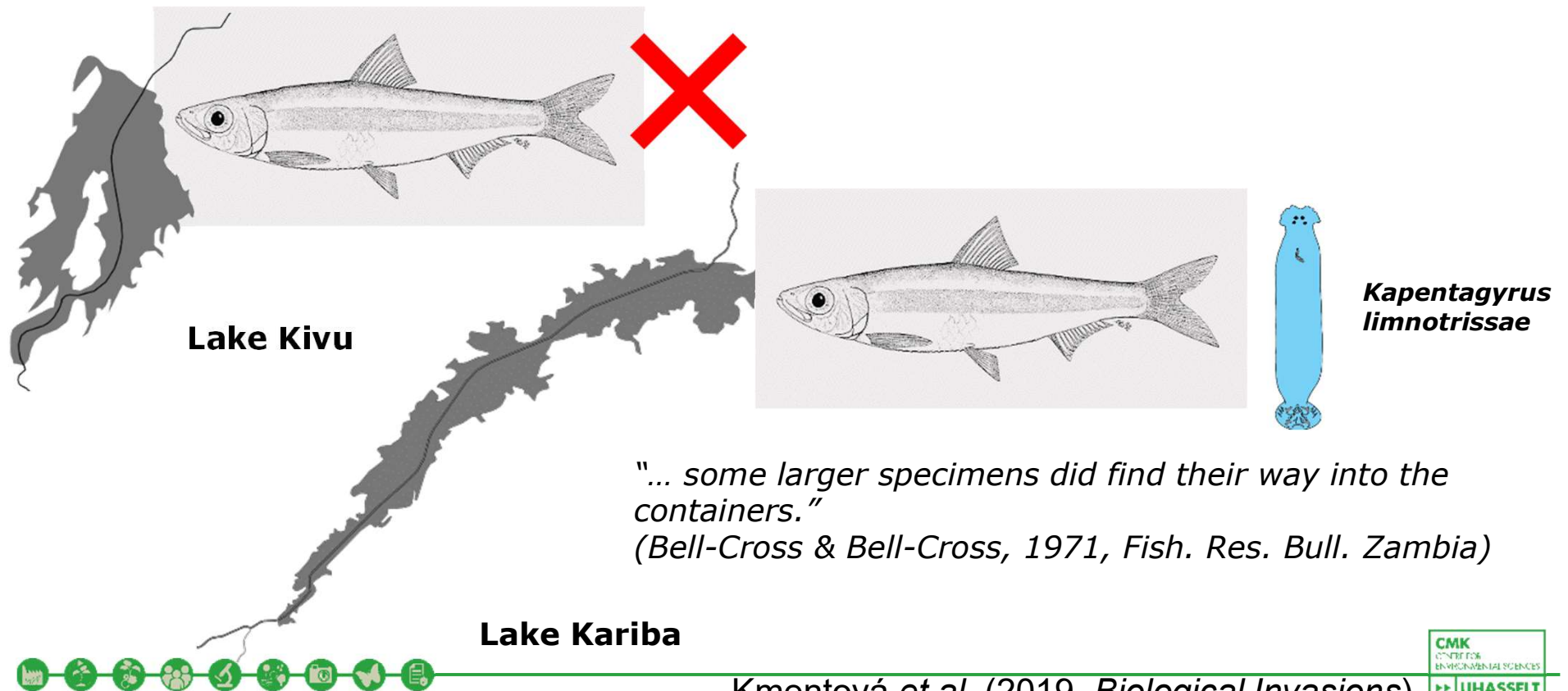
Kmentová et al. (2019, *Biological Invasions*)



Research tools: tags for their hosts



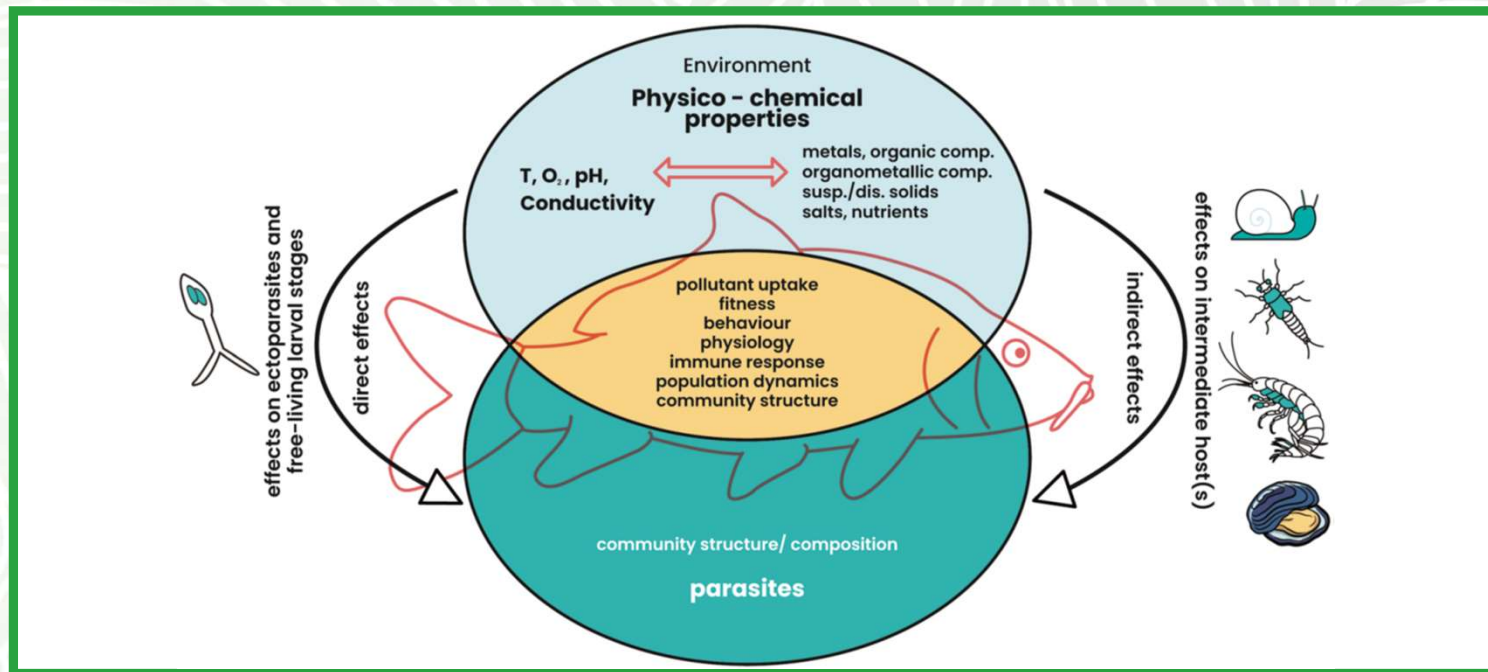
Research tools: tags for their hosts



Kmentová et al. (2019, *Biological Invasions*)

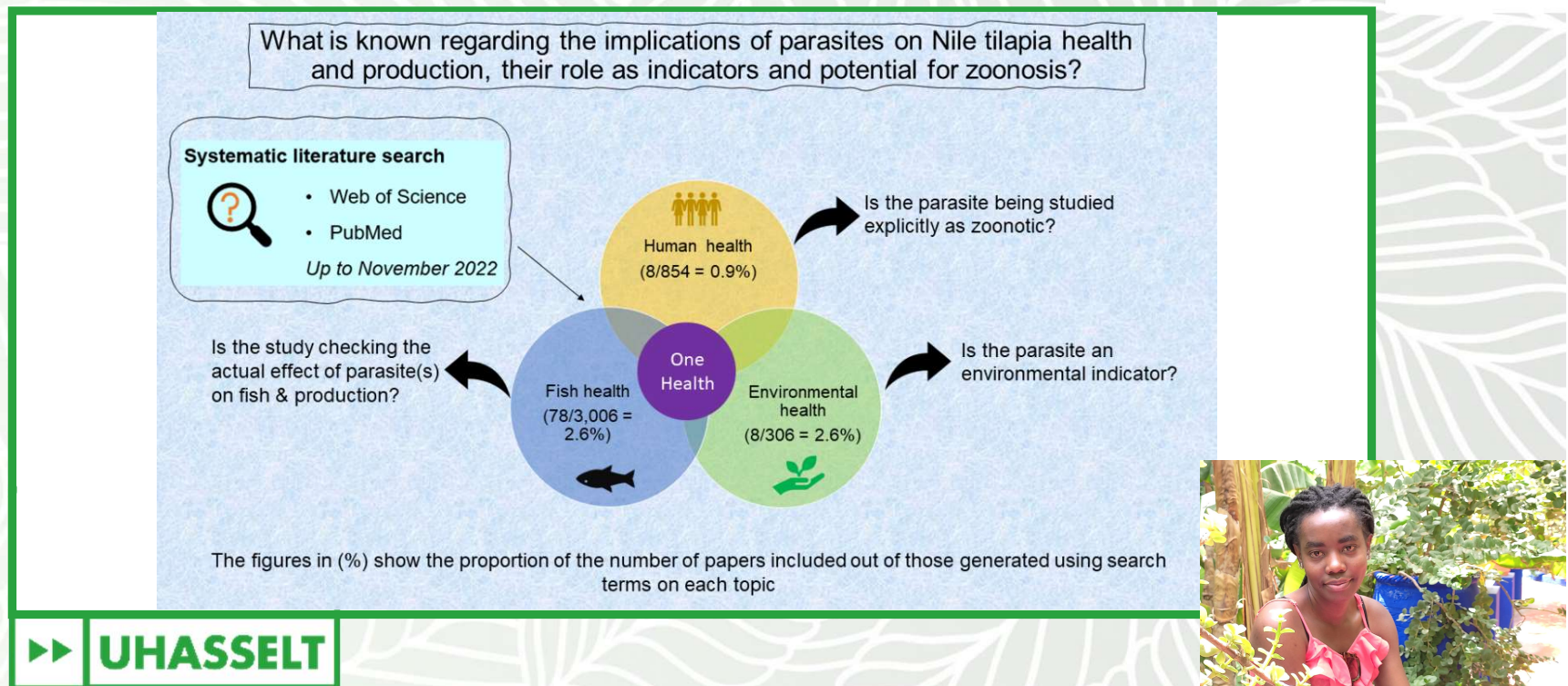
Environmental parasitology

- interactions between parasites and pollutants (and other anthropogenic stressors)
- combined effects of parasites & stressors on host health
- parasites as indicators of pollutants and other environmental changes



Sures *et al.* (2025) in:
*Aquatic parasitology: Ecological and environmental concepts
and implications of marine and freshwater parasites*

Environmental parasitology



Shigoley et al. (2025, *Hydrobiologia*)

Effects of pharmaceuticals?

TABLE 4 Prevalence and mean abundance (P; A $\pm$ SD) of parasites on 3+ carp at the polluted (Cezarka) and control (Oustrata Velka) sites in the spring and summer of 2017

Parasite species	Polluted site		Control site	
	Spring	Summer	Spring	Summer
<i>Dactylogyrus extensus</i>	45; 1.8 $\pm$ 2.6	100; 13.9 $\pm$ 8.9	90; 2.1 $\pm$ 1.5	100; 16.5 $\pm$ 11
<i>D. achmerovi</i>		30; 0.4 $\pm$ 0.6	95; 5.7 $\pm$ 4.1	
<i>D. molnari</i>		45; 0.6 $\pm$ 0.8	100; 8.1 $\pm$ 5.5	100; 54.4 $\pm$ 32.3
<i>D. anchoratus</i>		30; 0.4 $\pm$ 0.6		
<i>D. falciformis</i>				100; 46.1 $\pm$ 32.2
<i>Gyrodactylus cyprini</i>			95; 12 $\pm$ 26	
<i>G. katharineri</i>			90; 6.0 $\pm$ 13.1	85; 2.8 $\pm$ 2.1
<i>Gyrodactylus</i> sp. 1			100; 6.1 $\pm$ 13.1	
<i>Gyrodactylus</i> sp. 2			80; 3.1 $\pm$ 6.5	25; 0.3 $\pm$ 0.6
<i>G. sprostonae</i>			85; 3.2 $\pm$ 6.7	
<i>Eudiplozoon nipponicum</i>		10; 0.1 $\pm$ 0.3	65; 3.5 $\pm$ 8.6	55; 1.0 $\pm$ 1.5
<i>Diplostomum pseudospathaceum</i> (larv.)	60; 1.7 $\pm$ 1.9	75; 1.9 $\pm$ 1.6	15; 0.7 $\pm$ 1.7	50; 2.2 $\pm$ 4.4
<i>Tylodelphys clavata</i> (larv.)	5; 0.05 $\pm$ 0.2		5; 0.2 $\pm$ 0.7	
<i>Atractolytcestus huronensis</i>	45; 0.8 $\pm$ 1.2	5; 0.05 $\pm$ 0.2		25; 0.6 $\pm$ 1.2
<i>Khawia sinensis</i>	65; 1.1 $\pm$ 1.0	65; 2.3 $\pm$ 3.1	20; 0.4 $\pm$ 0.7	45; 2.9 $\pm$ 7.9
<i>Valipora campylancristrota</i> (larv.)	5; 0.1 $\pm$ 0.4	10; 0.2 $\pm$ 0.7		10; 0.5 $\pm$ 1.7
<i>Pseudocapillaria tomentosa</i>	10; 0.2 $\pm$ 0.7			
<i>Contracaecum</i> sp. (larv.)				5; 0.05 $\pm$ 0.2
<i>Neoechinorhynchus rutili</i>				5; 0.05 $\pm$ 0.2
<i>Argulus coregoni</i>		10; 0.3 $\pm$ 0.6	90; 2.6 $\pm$ 2.4	100; 11.2 $\pm$ 5.5
<i>Hemiclepsis marginata</i>		5; 0.5 $\pm$ 2.2		

Abbreviations: (larv.), Larval stage.

Good for fish health?

Desirable outcome?

- ESS of parasites
- "sterile" fishes



Pravdová et al. (2022, *Aquaculture Research*)

Effects of pharmaceuticals?

Morley (2009, *Environmental Toxicology and Pharmacology*):

- "risk that 'wild' parasites can be affected by environmentally realistic concentrations of antiparasitic agents"
- "low concentrations of antiparasitic agents in the environment may also encourage the development of resistant strains of parasites"

Melchiorre *et al.* (2023, *Ecosphere*):

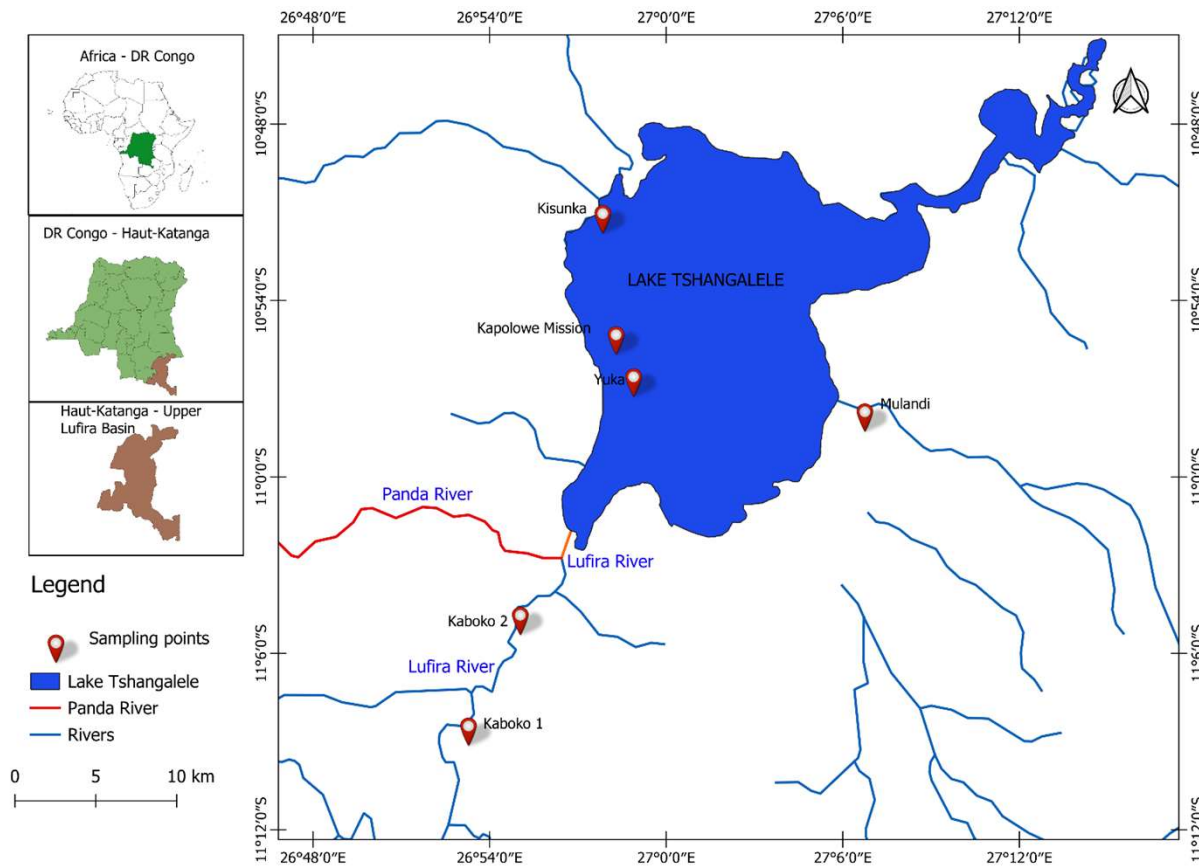
potential increase in schistosomiasis burden



A case study from the D.R. Congo



A case study from the D.R. Congo



Kasembele et al. (in prep.)



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A case study from the D.R. Congo

Kasembe et al. *Parasites & Vectors* (2023) 16:48
<https://doi.org/10.1186/s13071-022-05637-5>

Parasites & Vectors

RESEARCH Open Access

First record of monogenean fish parasites in the Upper Lufira River Basin (Democratic Republic of Congo): dactylogyrids and gyrodactylids infesting *Oreochromis mweruensis*, *Coptodon rendalli* and *Serranochromis macrocephalus* (Teleostei: Cichlidae)

Gyrhaiss Kapepula Kasembe^{1*}, Auguste Chocha Manda¹, Emmanuel Abwe^{1,2,6}, Antoine Pariselle^{3,4}, Fidel Muterezi Bukinga⁵, Tine Huyse^{2,6}, Michiel Willem Paul Jorissen^{2,7}, Emmanuel Jean Willem Michel Nzambemalamu Vreven², Wilmien Jacoba Luus-Powell⁸, Willem Johannes Smit⁸, Joseph Roderick Sara⁹, Jos Snoeks^{2,6} and Maarten Pieterjan Maria Vanhove^{2,6,7,9,10}

 **animals** 

Article

New Records and Descriptions of Three New Species of *Quadriacanthus* (Monopisthocotyla: Dactylogyridae) from Catfishes (Teleostei: Siluriformes, Clariidae) in the Upper Congo Basin

Gyrhaiss K. Kasembe^{1,2}, Maarten P. M. Vanhove^{2,3,4,5,*}, Archimède Mushagalusa Mulega^{2,6,7}, Auguste Chocha Manda¹, Michiel W. P. Jorissen^{2,3}, Wilmien J. Luus-Powell⁸, Willem J. Smit⁸, Charles F. Bilong Bilong⁹ and Dieu-ne-dort Bahanak¹⁰

   ZOOLOGIA 41: e23090
 ISSN 1984-4689 (online)
 sciendo.br/zool

RESEARCH ARTICLE
 PROCEEDINGS OF THE XV ISFB

Diversity of *Quadriacanthus* (Monogenea: Dactylogyridae) in the Upper Congo Basin: new geographical records and description of five new species from the gills of *Clarias ngamensis* (Siluriformes: Clariidae)

Gyrhaiss K. Kasembe¹, Maarten P.M. Vanhove^{2,3,4,5}, Auguste Chocha Manda¹, Michiel W.P. Jorissen^{2,3}, Wilmien J. Luus-Powell⁸, Willem J. Smit⁸, Charles F. Bilong Bilong⁹, Dieu-Ne-Dort Bahanak¹⁰

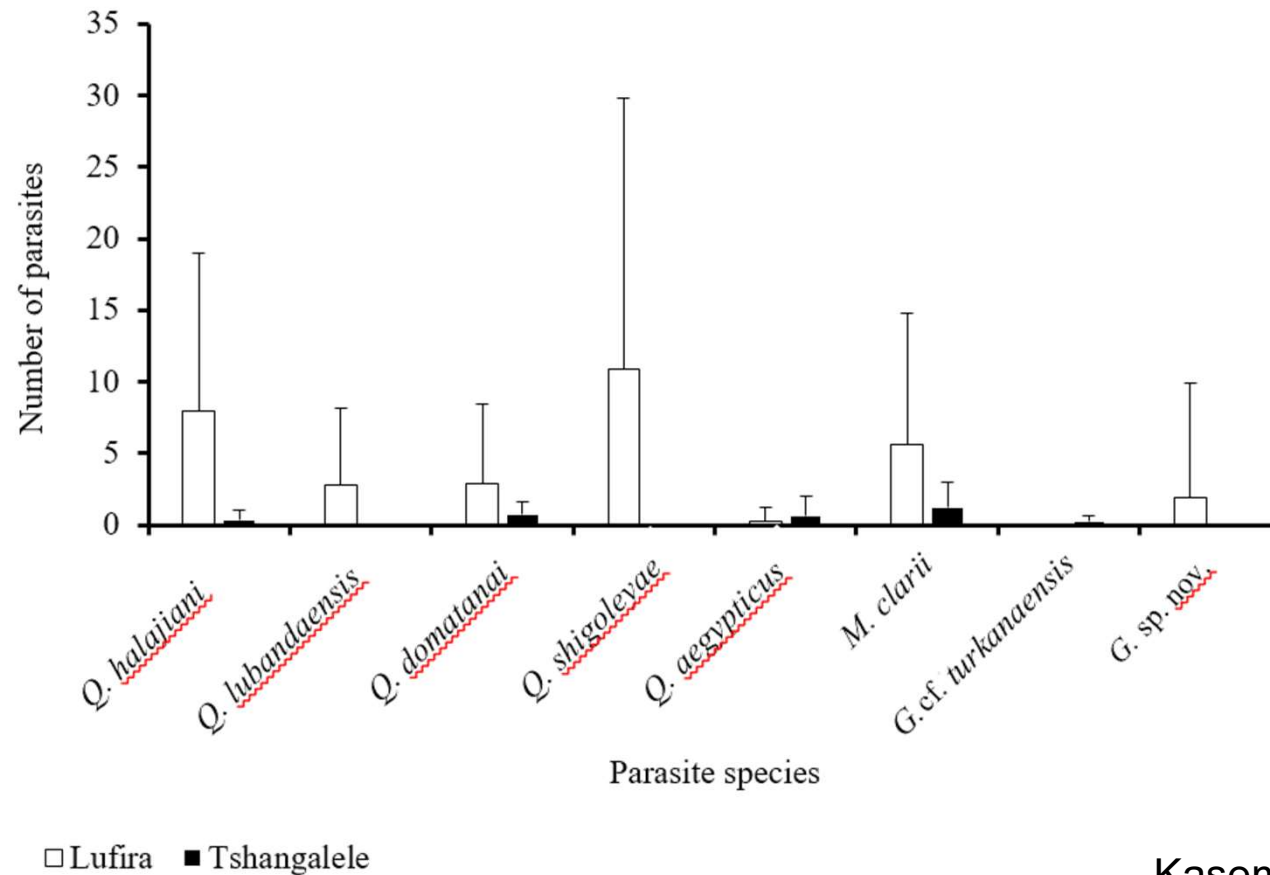

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A case study from the D.R. Congo



Kasembele *et al.* (in prep.)



Conclusions and perspectives

- monogenean flatworms as models for ecological/evolutionary parasitology
- underexplored in empirical approaches to One Health
- importance of baseline wildlife parasitology
- species-specific response

Thanks for your attention!

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Survey on
perception of
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