



CMK
CENTRE FOR
ENVIRONMENTAL SCIENCES

►► **UHASSELT**

**An (inter)national network to support
the FishBase Consortium
in parasitology, pathology,
ichthyo(parasito)logical mainstreaming
and capacity development**

*Maarten Vanhove, Nikol Kmentová, Archimède Mushagalusa Mulega,
Tobias Musschoot & Maarten Van Steenberge*

The Fish of Muddy Waters, Natural History Museum Vienna

fishbase.org served by Swedish Museum of Natural History

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36100 Soorten 332100 Lokale namen 65300 Afbeeldingen 67600 Referenties 2560 Medewerkers 700000 Bezoeken/Maand

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Lokale naam

Select language:
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Wetenschappelijke naam



FishBase consortium



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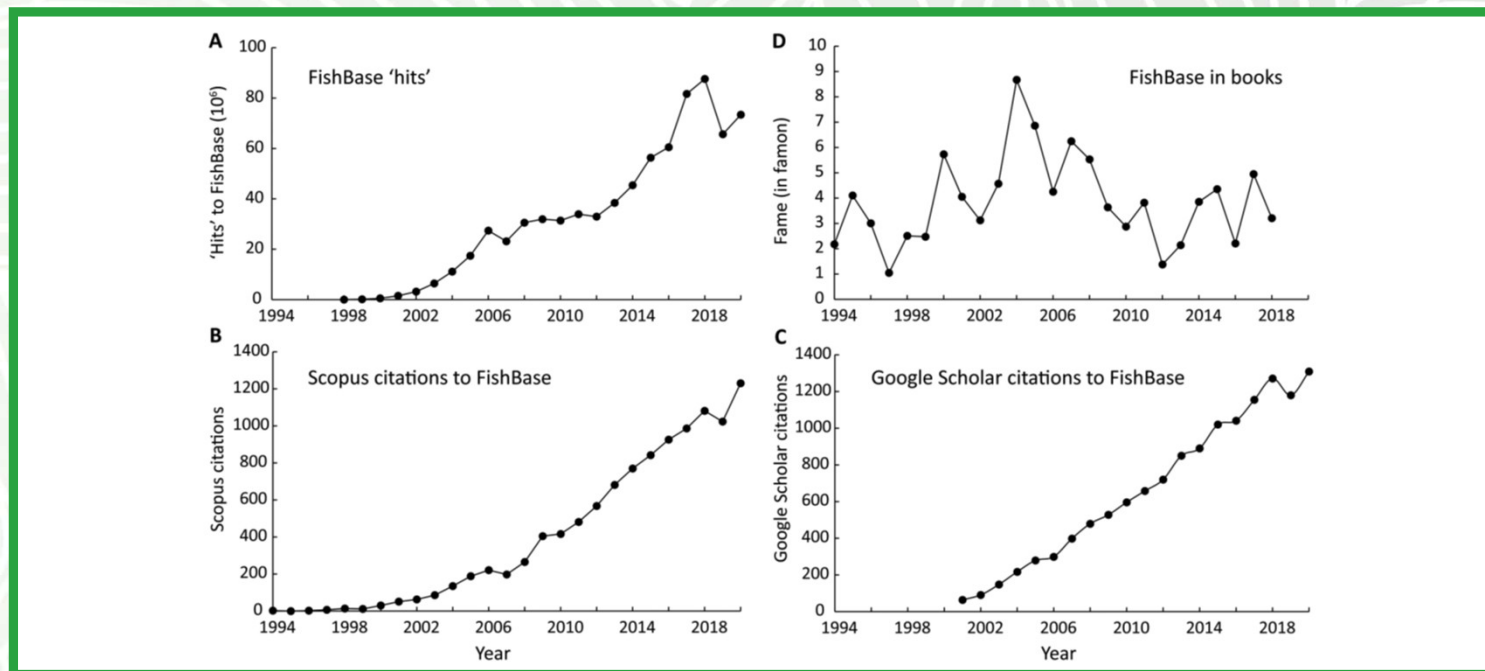
Some numbers

- top 1% of all cited items published in the 21st and 20th centuries
- > 1200 citations/year in the peer-reviewed literature
- ca. 80 million hits/month
- up to 1 million visits/month from over 300 000 unique users

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Some numbers



Humphries et al., 2023, *Cybium*

Some numbers

Table II. – The top 30 journals that have published documents citing FishBase from 1994 to 2020, based on data from Scopus (www.scopus.com, accessed on August 16, 2021).

No.	Journal	Number of documents
1	Journal of Applied Ichthyology	709
2	PLoS ONE	282
3	Systematic Parasitology	244
4	Journal of Fish Biology	205
5	Marine Ecology Progress Series	197
6	Zootaxa	185
7	Acta Ichthyologica et Piscatoria	181
8	Fisheries Research	125
9	Acta Parasitologica	107
10	Journal of Ichthyology	107
11	Folia Parasitologica	104
12	ICES Journal of Marine Science	92
13	Journal Of Parasitology	90
14	Cybium	89
15	Environmental Biology of Fishes	88
16	Estuarine Coastal and Shelf Science	85
17	Parasitology Research	81
18	Fish and Fisheries	79
19	Marine Biology	77
20	Indian Journal of Geo Marine Sciences	76
21	Journal of the Marine Biological Association of the United Kingdom	74
22	Marine Biodiversity Records	74
23	Frontiers in Marine Science	73
24	Reviews in Fish Biology and Fisheries	72
25	Mitochondrial DNA	71
26	Hydrobiologia	70
27	Marine Pollution Bulletin	70
28	Scientific Reports	66
29	Turkish Journal of Fisheries & Aquatic Sciences	66
30	Ecological Modelling	63

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Scholz T (81)	Institute of Parasitology, Biology Centre CAS	Czech Republic	Fish parasites, helminths, biology and taxonomy of trematodes and fish tapeworms
Justine JL (77)	National Museum of Natural History, Paris	France	Parasitology, systematics, biodiversity, Monogenea, comparative spermatology
Pauly D (72)	University of British Columbia	Canada	Fisheries, marine ecosystems, conservation biology
Luque JL (68)	Federal Rural University of Rio de Janeiro	Brazil	Fish parasitology, parasite ecology
Hossain MY (66)	University of Rajshahi	Bangladesh	Fisheries management, aquatic resource conservation, stock assessment, fish biology and ecology, climate change, fisheries
Bray RA (63)	Natural History Museum London	UK	Parasitic worms, systematics, phylogeny, biology
Graham NAJ (53)	Lancaster University	UK	Coral reef ecology, resilience, climate change, social-ecological systems
Cribb TH (51)	The University of Queensland	Australia	Parasitology
Tavares-Dias M (51)	Embrapa Amapá	Brazil	Fish parasitology, fish farms
Nagasawa K (47)	Hiroshima University	Japan	Parasitic crustaceans, parasitic helminths, pelagic sharks, Pacific salmon
Bellwood DR (42)	James Cook University	Australia	Marine biology, coral reef fish, ecology
Stergiou KI (42)	Aristotle University of Thessaloniki	Greece	Fish biology, fisheries, fisheries ecology, fisheries management, marine ecology
Kritsky DC (41)	Idaho State University	USA	Parasitology
Kulbicki M (40)	Research Institute for Development	France	Macro-ecology, reef fish ecology, stable isotopes
Wilson SK (40)	James Cook University	Australia	Coral reef fish ecology, climate change
Ohtomi J (39)	Kagoshima University	Japan	Fisheries biology, aquatic bioproduction science, life sciences
Akyol O (38)	Ege University	Turkey	Fisheries, fisheries biology, fishing technology
Boxshall GA (38)	Natural History Museum London	UK	Copepods, parasitic crustacea
Harvey ES (38)	Curtin University	Australia	Fish ecology, marine ecology stereo-video, fisheries ecology, marine conservation
Jawad LA (38)	Auckland Fish Biodiversity Consultancy	New Zealand	Fish taxonomy
Mouillot D (37)	Montpellier University	France	Ecology, coral reefs, statistics
Friedlander AM (36)	University of Hawaii	USA	Fisheries ecology, marine protected areas, coral reefs, community-based fisheries management
Floeter SR (34)	Federal University of Santa Catarina	Brazil	Reef fish, biogeography, evolution, ecology, macroecology
Proese R (34)	GEOMAR Helmholtz Centre for Ocean Research Kiel	Germany	Fish, fisheries, biodiversity, life history strategies, bio-informatics
Adriano EA (33)	Federal University of São Paulo	Brazil	Parasitology, fish, myxozoa, taxonomy
Tsikiras AC (33)	Aristotle University of Thessaloniki	Greece	Fish biology, fisheries stock assessment, fisheries management, marine ecosystems
Mohapatra A (32)	Zoological Survey of India	India	Marine fish taxonomy, ecology
Sala E (32)	National Geographic Society	USA	Ecology, conservation biology, marine biology, food webs, fisheries
Karachle PK (31)	Hellenic Center for Marine Research	Greece	Fisheries, fish feeding, fish ecomorphology, non-indigenous species, stakeholder involvement

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Humphries et al., 2023, *Cybium*

Which gap do we want to fill?

Parasitologists mainly use FishBase to find information on fishes but not on parasites!

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Oreochromis niloticus (Linnaeus, 1758)

Nile tilapia

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Oreochromis niloticus

Picture by [Stiassny, M.L.J.](#)



Which gap did we start from?

Parasitologists mainly use FishBase to find information on fishes but not on parasites!

More information

Trophic ecology

Food items (preys)
Diet composition
Food consumption
Food rations
Predators

Ecology

Ecology
Home ranges

Population dynamics

Growth parameters
Max. ages / sizes
Length-weight rel.
Length-length rel.
Length-frequencies
Mass conversion
Recruitment
Abundance

Life cycle

Reproduction
Maturity
Maturity/Gills rel.
Fecundity
Spawning
Spawning aggregations
Eggs
Egg development
Larvae
Larval dynamics

Distribution

Countries
FAO areas
Ecosystems
Occurrences
Introductions
BRUVS - Videos

Anatomy

Gill area
Brain
Otolith

Physiology

Body composition
Nutrients
Oxygen consumption
Swimming type
Swimming speed
Visual pigments
Fish sound

Diseases & Parasites

Toxicity (LC₅₀)

Genetics

Genome
Genetics
Heterozygosity
Heritability

Human related

Aquaculture systems
Aquaculture profiles
Strains
Ciguatera cases
Stamps, coins, misc.

Outreach

Collaborators

Taxonomy

Common names
Synonyms

Pictures

References

References

Diseases & Parasites for Oreochromis niloticus



Which gap did we start from?

★ Host/prey of	★ <i>Cichlidogyrus chandrai</i> Ferdousi & Chandra, 2002 accepted as	★ <i>Cichlidogyrus tilapiae</i> Paperna, 1960	Feedingtype: ectoparasitic, Life stage: adult
★ Host/prey of	★ <i>Cichlidogyrus chloae</i> Geraerts in Geraerts, Huyse, Vanhove & Artois, 2022		Feedingtype: ectoparasitic, Life stage: adult
★ Host/prey of	★ <i>Cichlidogyrus cirratus</i> Paperna, 1964		Feedingtype: ectoparasitic, Life stage: adult
★ Host/prey of	★ <i>Cichlidogyrus dossoui</i> Douëllou, 1993		Feedingtype: ectoparasitic, Life stage: adult
★ Host/prey of	★ <i>Cichlidogyrus halli</i> (Price & Kirk, 1967) Paperna, 1979		Feedingtype: ectoparasitic, Life stage: adult
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★ Host/prey of	★ <i>Cichlidogyrus halli</i> (Price & Kirk, 1967) Paperna, 1979		Feedingtype: ectoparasitic, Life stage: adult (from synonym ★ <i>Oreochromis niloticus vulcani</i> (Trewavas, 1933))
★ Host/prey of	★ <i>Cichlidogyrus halli</i> (Price & Kirk, 1967) Paperna, 1979		Feedingtype: ectoparasitic, Life stage: adult
★ Host/prey of	★ <i>Cichlidogyrus haplochromii</i> Paperna & Thurston, 1969		Feedingtype: ectoparasitic, Life stage: adult
★ Host/prey of	★ <i>Cichlidogyrus longicornis</i> Paperna & Thurston, 1969 accepted as	★ <i>Scutogyrus longicornis</i> (Paperna & Thurston, 1969) Pariselle & Euzet, 1995	Feedingtype: ectoparasitic, Life stage: adult (from synonym ★ <i>Oreochromis niloticus niloticus</i> (Linnaeus, 1758))
★ Host/prey of	★ <i>Cichlidogyrus mbinzei</i> Muterezi Bukinga, Vanhove, Van Steenberge & Pariselle, 2012		Feedingtype: ectoparasitic, Life stage: adult
★ Host/prey of	★ <i>Cichlidogyrus nematocirus</i> Paperna, 1969 accepted as	★ <i>Cichlidogyrus cirratus</i> Paperna, 1964	Feedingtype: ectoparasitic, Life stage: adult
★ Host/prey of	★ <i>Cichlidogyrus quaezio</i> Douëllou, 1993		Feedingtype: ectoparasitic, Life stage: adult
★ Host/prey of	★ <i>Cichlidogyrus rognoni</i> Pariselle, Bilong Bilong & Euzet, 2003		Feedingtype: ectoparasitic, Life stage: adult
★ Host/prey of	★ <i>Cichlidogyrus sclerosus</i> Paperna & Thurston, 1969		Feedingtype: ectoparasitic, Life stage: adult
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★ Host/prey of	★ <i>Cichlidogyrus thurstonae</i> Ergens, 1981		Feedingtype: ectoparasitic, Life stage: adult
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★ Host/prey of	★ <i>Cichlidogyrus thurstonae</i> Ergens, 1981		Feedingtype: ectoparasitic, Life stage: adult
★ Host/prey of	★ <i>Cichlidogyrus tiberianus</i> Paperna, 1960		Feedingtype: ectoparasitic, Life stage: adult (from synonym ★ <i>Oreochromis niloticus niloticus</i> (Linnaeus, 1758))
★ Host/prey of	★ <i>Cichlidogyrus tilapiae</i> Paperna, 1960		Feedingtype: ectoparasitic, Life stage: adult (from synonym ★ <i>Oreochromis niloticus niloticus</i> (Linnaeus, 1758))
★ Host/prey of	★ <i>Cichlidogyrus tilapiae</i> Paperna, 1960		Feedingtype: ectoparasitic, Life stage: adult
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★ Host/prey of	★ <i>Cichlidogyrus tubicirrus magnus</i> Paperna & Thurston, 1969 accepted as	★ <i>Cichlidogyrus magnus</i> Paperna & Thurston, 1969 accepted as	★ <i>Cichlidogyrus halli</i> (Price & Kirk, 1967) Paperna, 1979 Feedingtype: ectoparasitic, Life stage: adult





FIELD RESEARCH CENTRE HASSELT UNIVERSITY

AQUATIC BIODIVERSITY TEAM:

3 post-docs: 3 nationalities

9 PhD students: 5 nationalities

13 defended PhDs: 8 nationalities



FIELD RESEARCH CENTRE HASSELT UNIVERSITY

AQUATIC BIODIVERSITY TEAM:

We work on monitoring, conservation and ecosystem services of parasites and their aquatic hosts in a One Health context. This research is rooted in a fundamental understanding of their taxonomy, diversification, and distribution. We contribute to more equitable science through capacity building efforts. Our research translates into policy advice.



Goals 2026-2028

1: Update and expand parasitological info and tools in FishBase/SeaLifeBase and related databases

- updating information on host-parasite links and taxonomy underlying parasitological and pathological tools within FishBase/SeaLifeBase
- expanding these tools for diagnostics

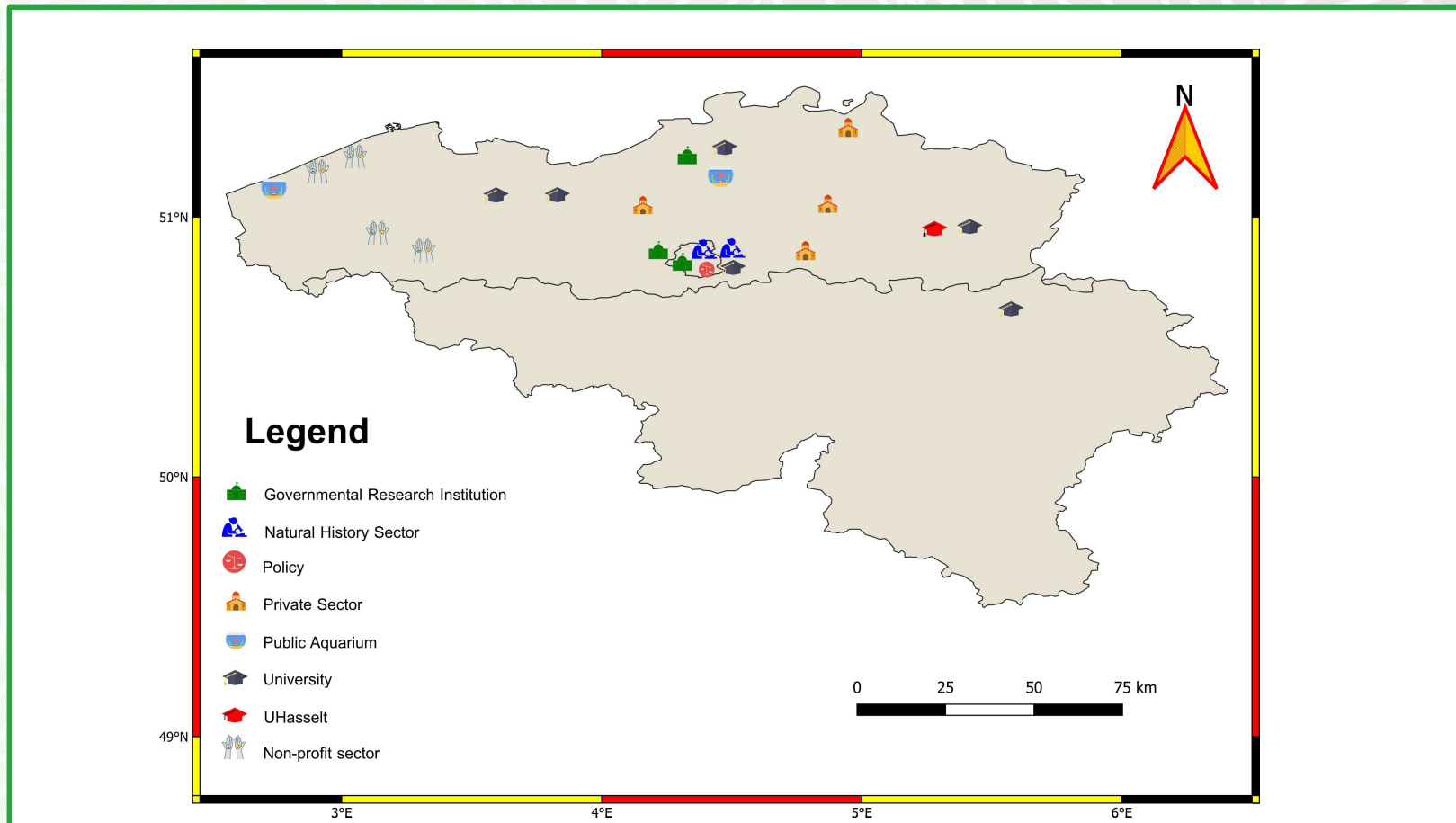
2: Mainstreaming ichthyo(parasito)logical information in science, society, and policy

- responding to priorities proposed by stakeholders: improve user-friendliness, obtain data, prioritise information, service requests and case studies...
- baseline on fish parasites under artificial conditions (captivity)

3: Awareness raising and capacity building on FishBase/SeaLifeBase, data standards, (fish) parasitology

- training, e.g., DarwinCore
- guest lectures
- workshops in the Global South

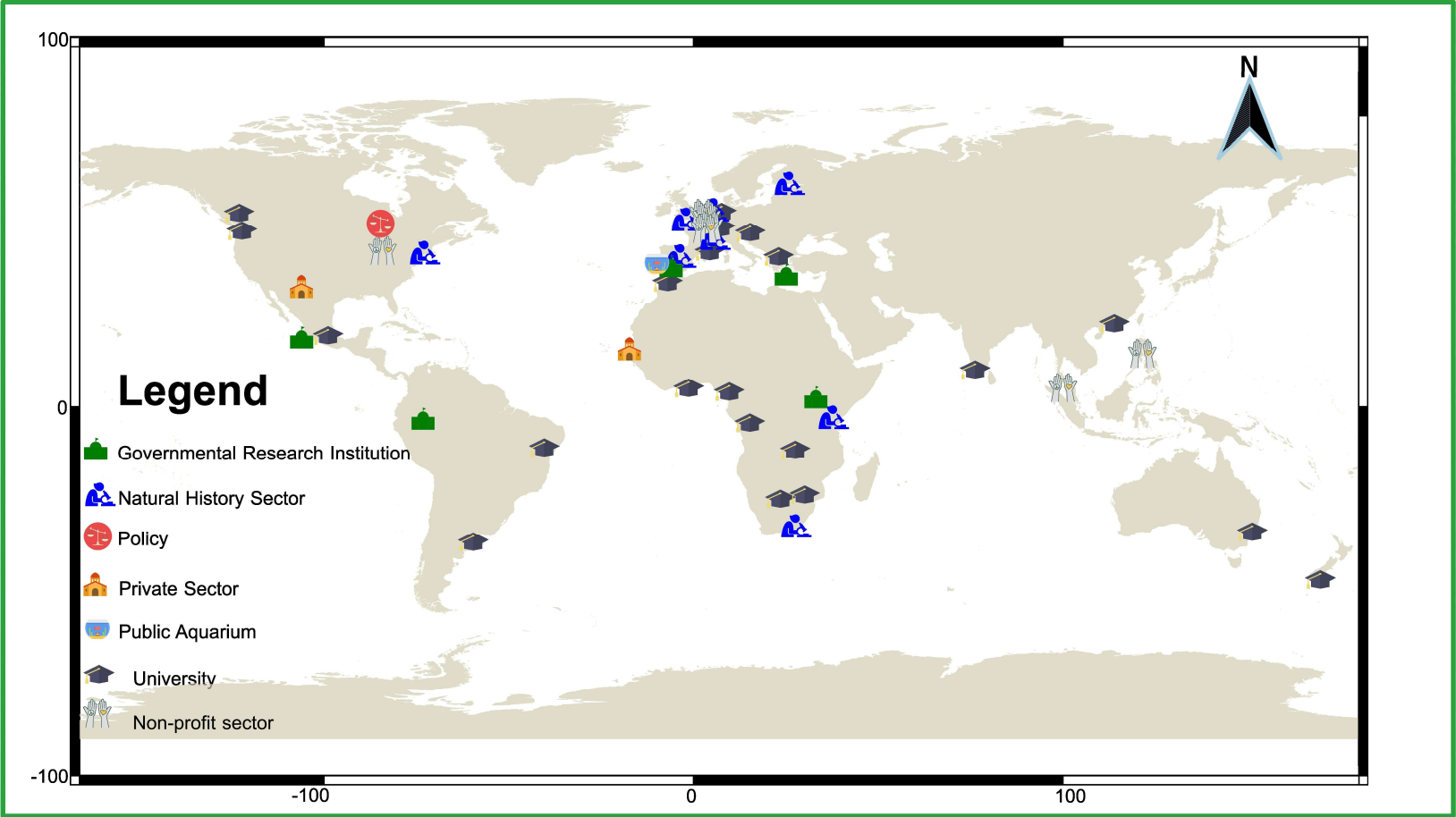
Belgian partners



Belgian partners



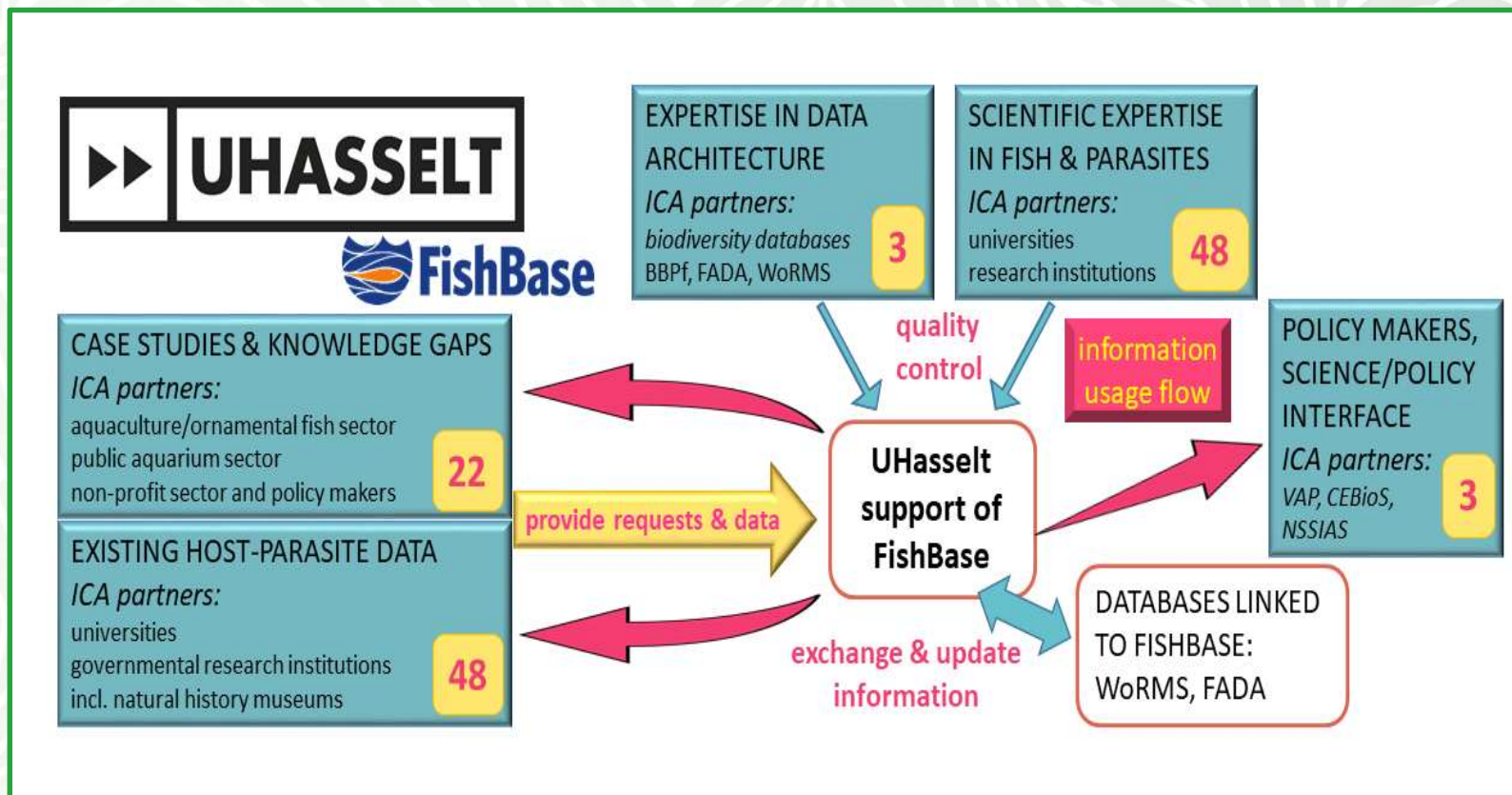
Non-Belgian partners



Non-Belgian partners

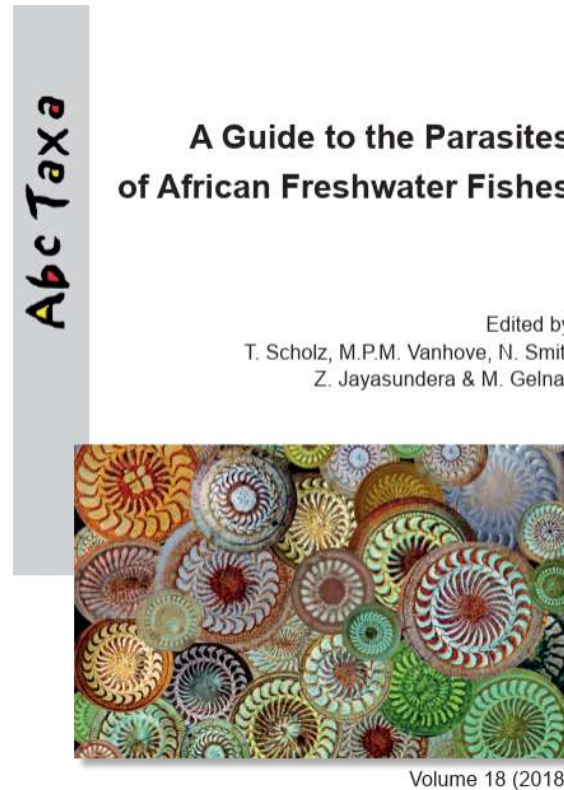


Main information flows planned



Some short-term plans (low-hanging fruits) agreed upon

- **Fish parasites of Africa – translation of an existing peer-reviewed publication (2018) edited by our teams (> 3000 host-parasite combinations)**



Volume 18 (2018)



Some short-term plans (low-hanging fruits) agreed upon

- **partners sharing their host-parasite (collection) data**
- **establishing connection of WoRMS and SeaLifeBase for selected parasite taxa**
- **student projects to fill in gaps linked to the topic as obligatory practice in our team**
- **training of colleagues and students from the Global South**
- **priorities – farmed and other captive species, species with low genetic diversity**



Input needed!

Prioritisation of 15 yearly species for parasite checklists

farmed species (year 1)

wild fisheries targets (year 2)

ornamental species (year 3)

Partners contributing to one or more of these species groups

Which non-academic stakeholders may share concerns?

Which communication channel to handle requests?

What is regarded as a credible/published data source?

Gaps in parasitological data and user-friendliness of interface

A proposal?

Let us look at the main character of the day...

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Misgurnus fossilis (Linnaeus, 1758)

Weatherfish

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Misgurnus fossilis

Picture by [Tveskov, E.](#)



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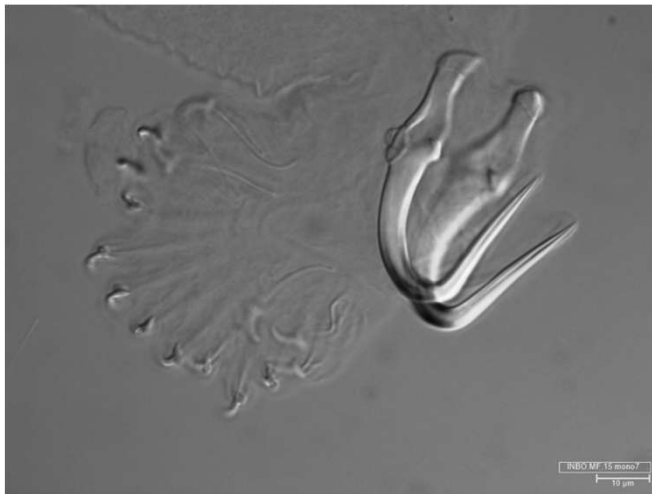
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Related species



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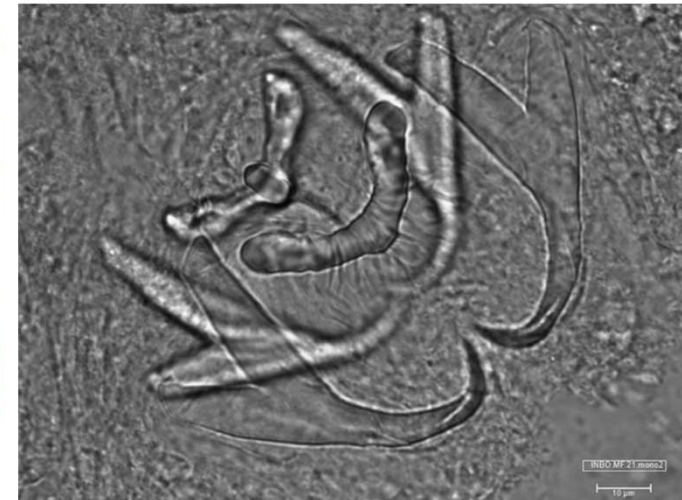
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Misgurnus fossilis

Picture by [Tveskov, E.](#)



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More information

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Reproduction
Maturity
Maturity/Gills rel.
Fecundity
Spawning
Spawning aggregations
Eggs
Egg development
Larvae
Larval dynamics

Distribution

Countries
FAO areas
Ecosystems
Occurrences
Introductions
BRUVS - Videos

Anatomy

Gill area
Brain
Otolith

Physiology

Body composition
Nutrients
Oxygen consumption
Swimming type
Swimming speed
Visual pigments
Fish sound
Diseases & Parasites
Toxicity (LC50s)

Genetics

Genome
Genetics
Heterozygosity
Heritability

Human related

Aquaculture systems
Aquaculture profiles
Strains
Ciguatera cases
Stamps, coins, misc.

Outreach

Collaborators

Taxonomy

Common names
Synonyms
Morphology
Morphometrics
Pictures

References

References



A proposal?

Let us look at the main character of the day...

More information

Trophic ecology

Food items (preys)
Diet composition
Food consumption
Food rations
Predators

Ecology

Ecology
Home ranges

Population dynamics

Growth parameters
Max. ages / sizes
Length-weight rel.
Length-length rel.
Length-frequencies
Mass conversion
Recruitment
Abundance

Life cycle

Reproduction
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Thank you for your attention!

