A Flemish Species Action Plan to safeguard European weatherfish (*Misgurnus fossilis* L.) from fading into oblivion

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Flanders
State of the Art

Life B4B kick-off meeting, 11 October 2023, Brussels

Species ID

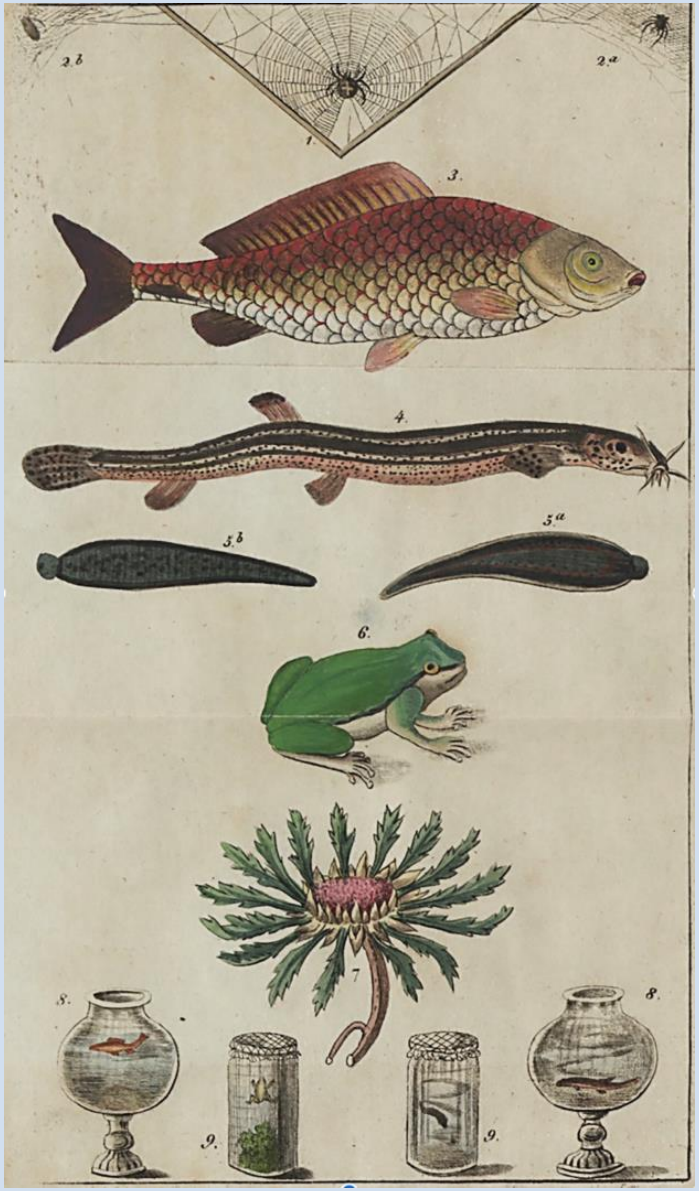
- Cobitidae
- ~ 30 cm
- 10 barbels
- small eyes
- ~ 20 years

Aziat

Habitat and behaviour

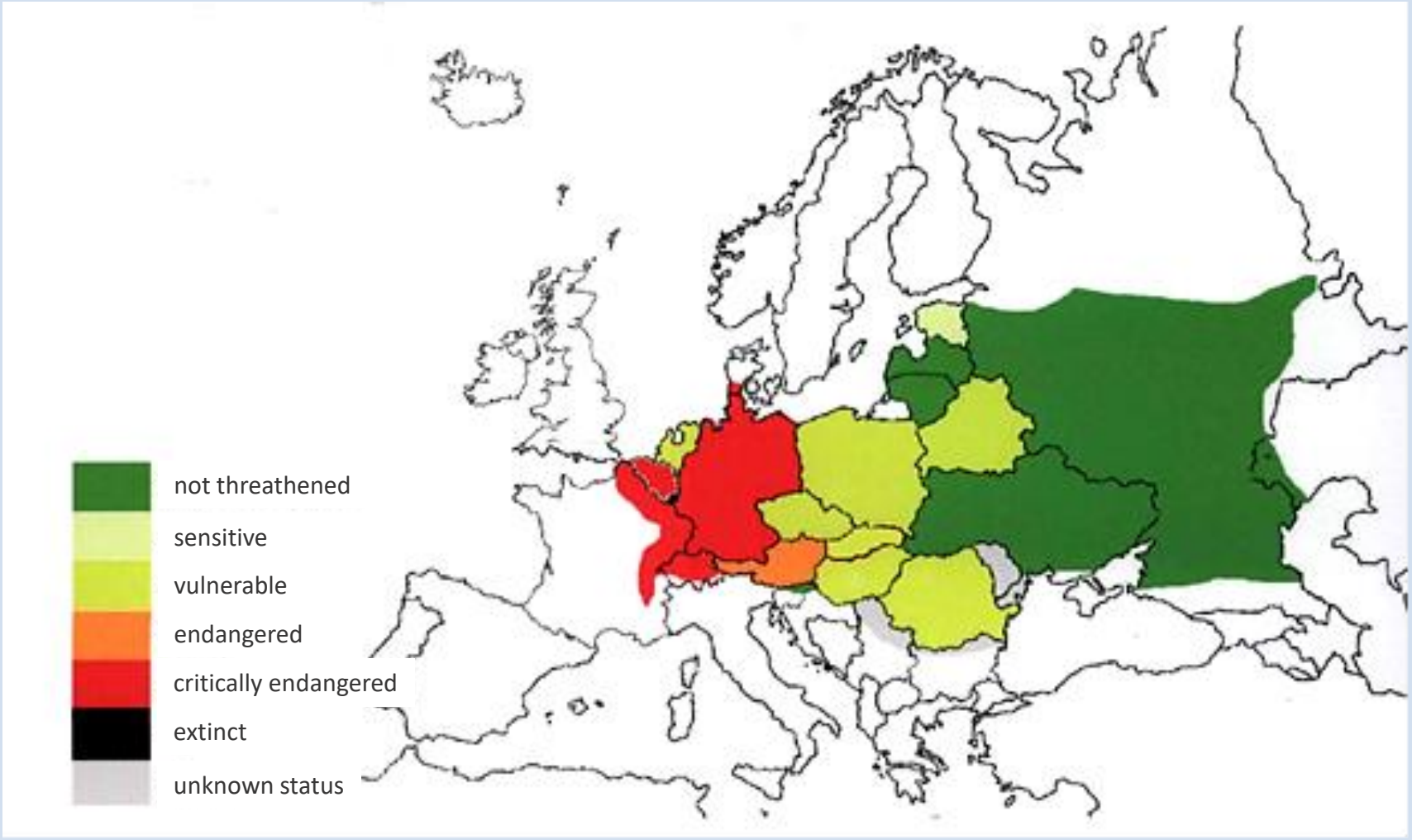
- primary habitat: oxbows, ponds, swamps in floodplains
- small homerange
- solitary
- night active
- benthic
- food: invertebrates & debris
- spawning during March-June in shallow, vegetated shorelines
- fast development
- tolerant to high temperatures, low oxygen, drought

Cultural heritage (living barometer)



Wetterfische, Laubfrösche, Blutegel und Spinnen, die sichersten Wetterverkündiger! (Gutmann, 1842)

Home range



van Eekelen & van den Berg 2006

IUCN status: least concern

Threats

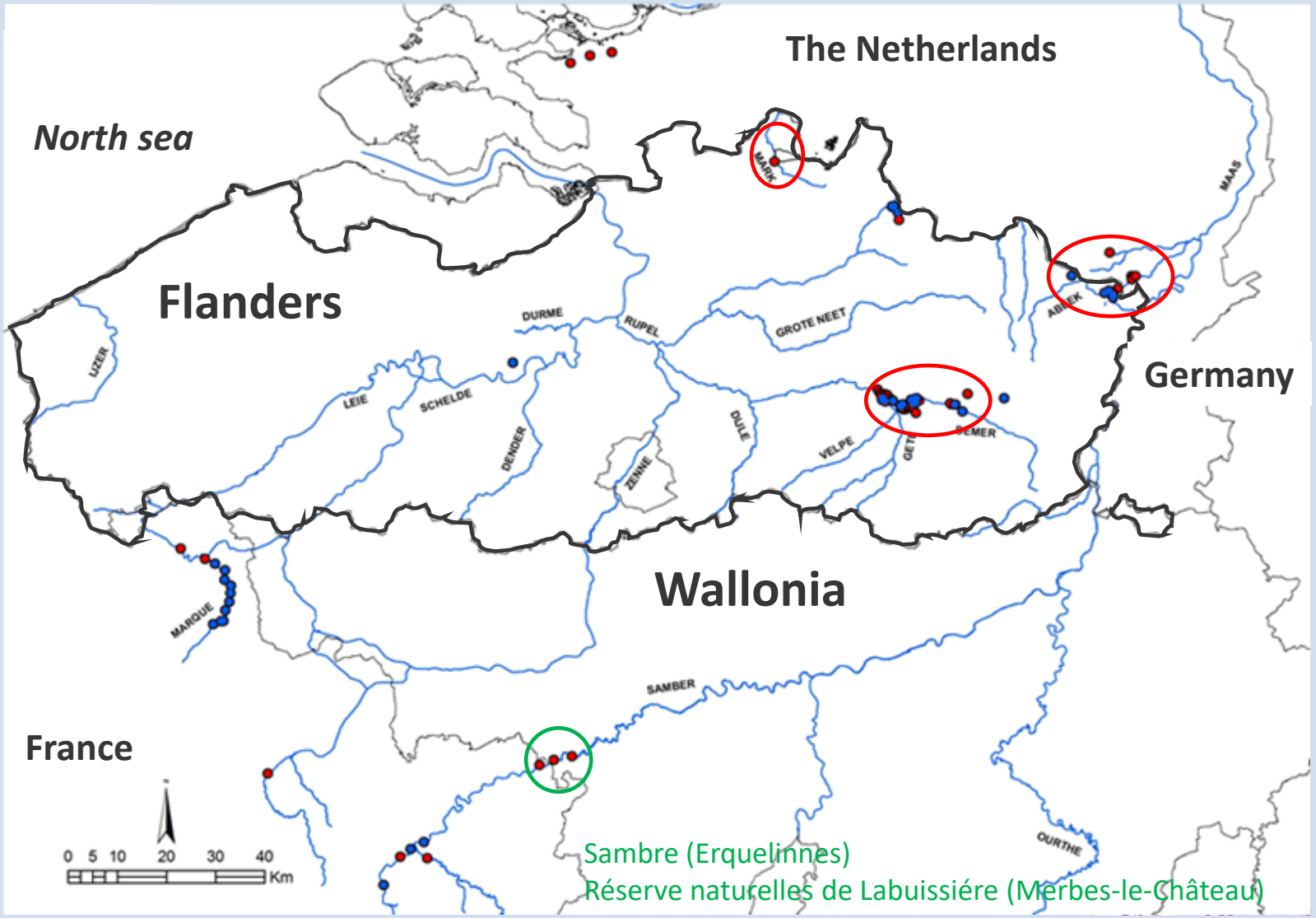
water regulation (loss of habitats)

intensified agriculture (loss of habitat, eutrophication)

maintenance (loss of habitats, high mortality)

Climate change (reproduction failure)

Relic populations in Flanders (after 2000)



- fishery
- eDNA detection

Species Protection Plan (2021-2025)

Aim:

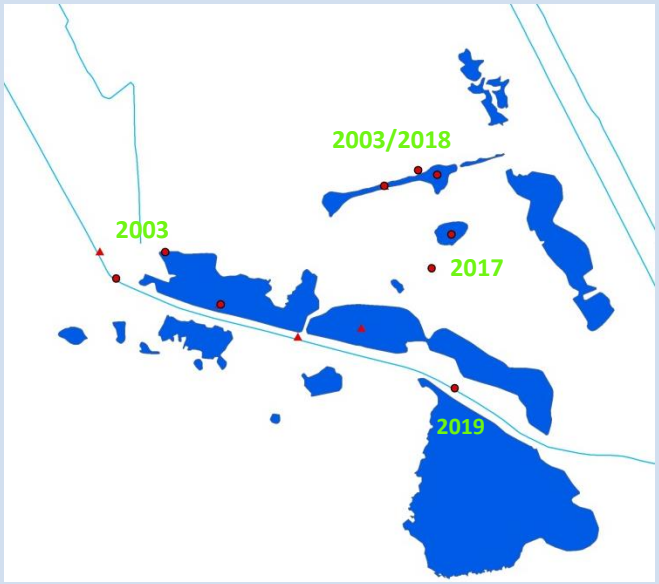
- restore a sustainable meta-population in Flanders

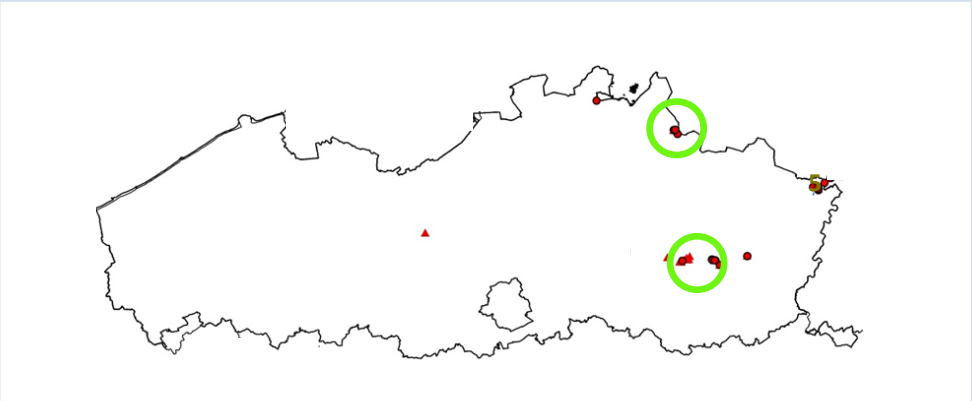
By:

- habitat restoration (re-wetting)
- improving water management
- re-introductions

2 focal areas

Goorke (Arendonk)



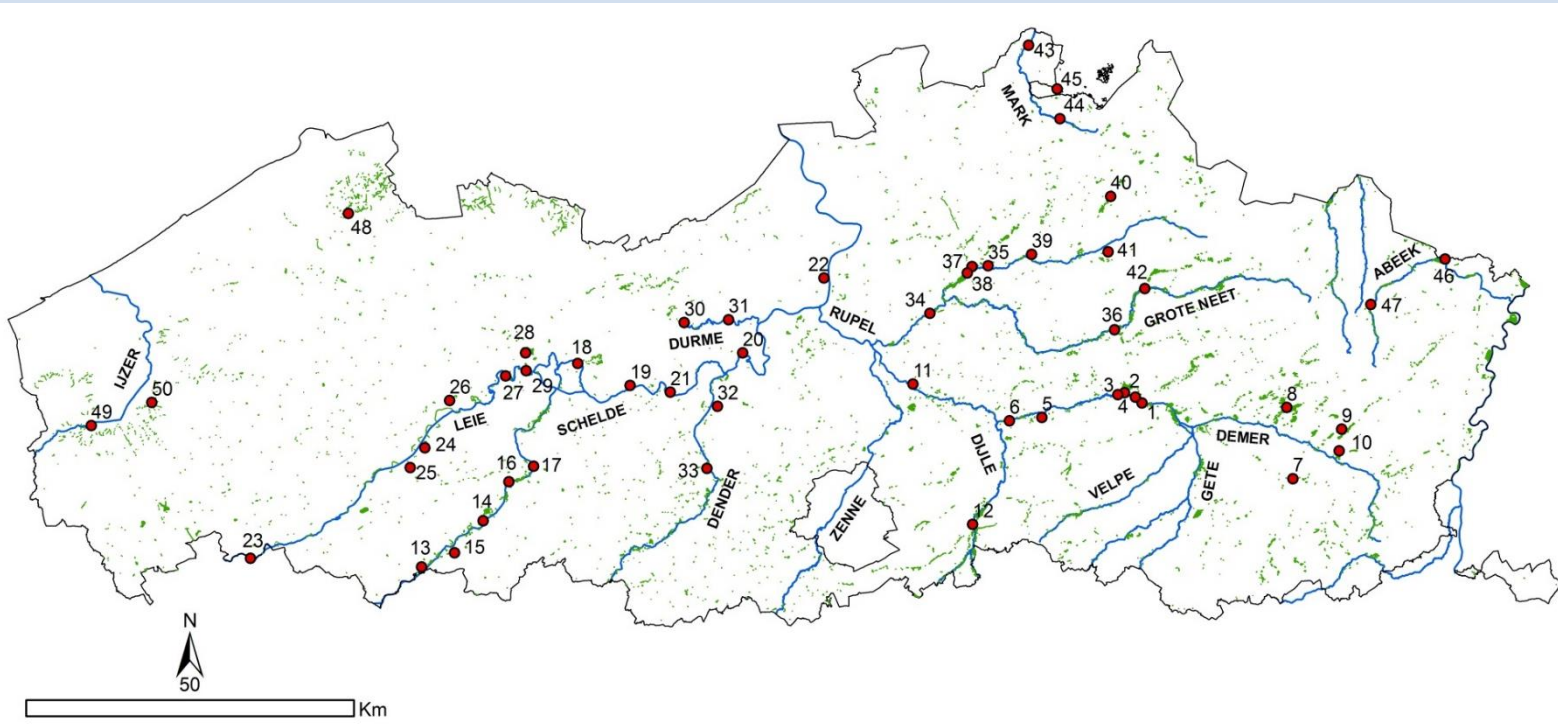


Abdijsite Herkenrode (Hasselt)

Prioritizing habitats with high potential

- historical records
- vicinity of relic populations
- current or planned restoration initiatives
- legal status (protection)
- size
- geographical distribution

→ 50 high priority areas (nature reserves)

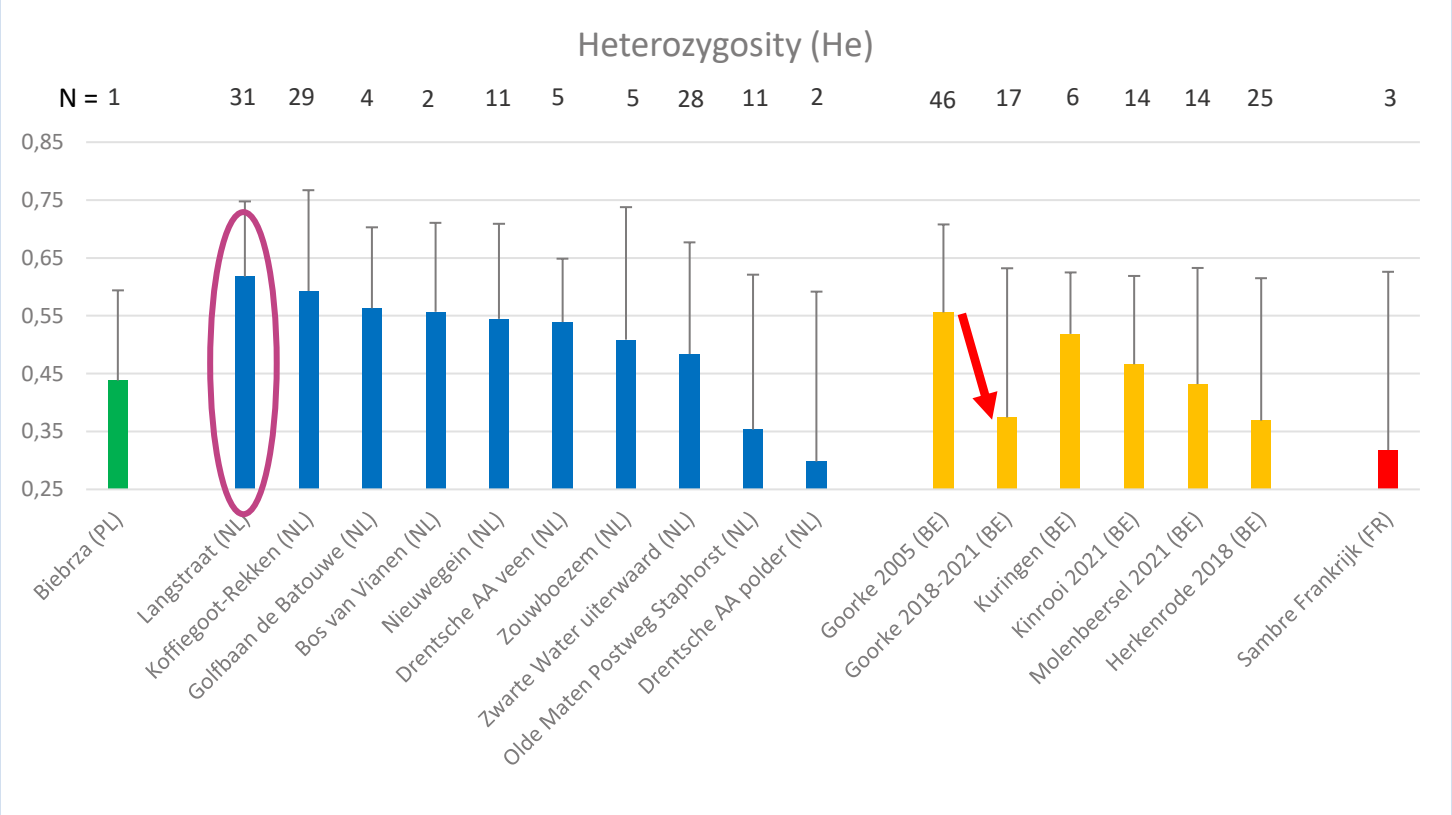


eDNA-monitoring

- detection of hidden relic populations
- evaluate success of habitat restoration and re-introductions

Genetic analysis

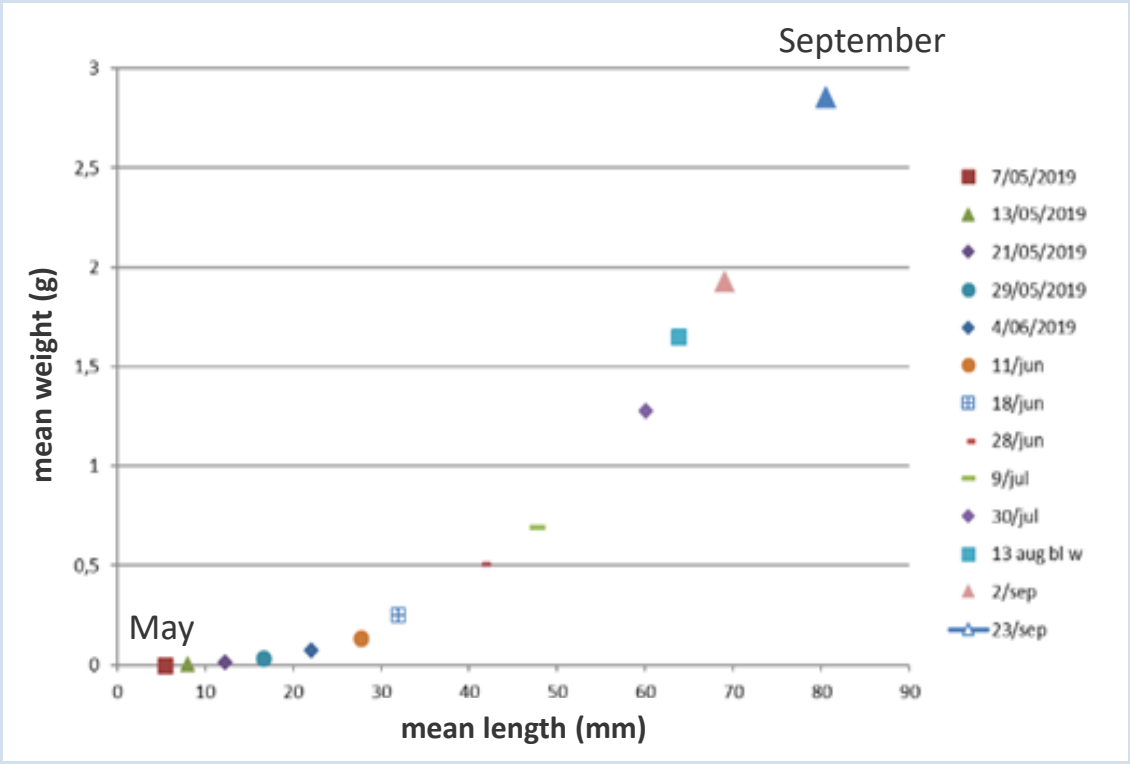
heterozygosity 9 microsat-loci (finclips)



He= Gini-Simpson index =$(1-Som(p_i^2))$

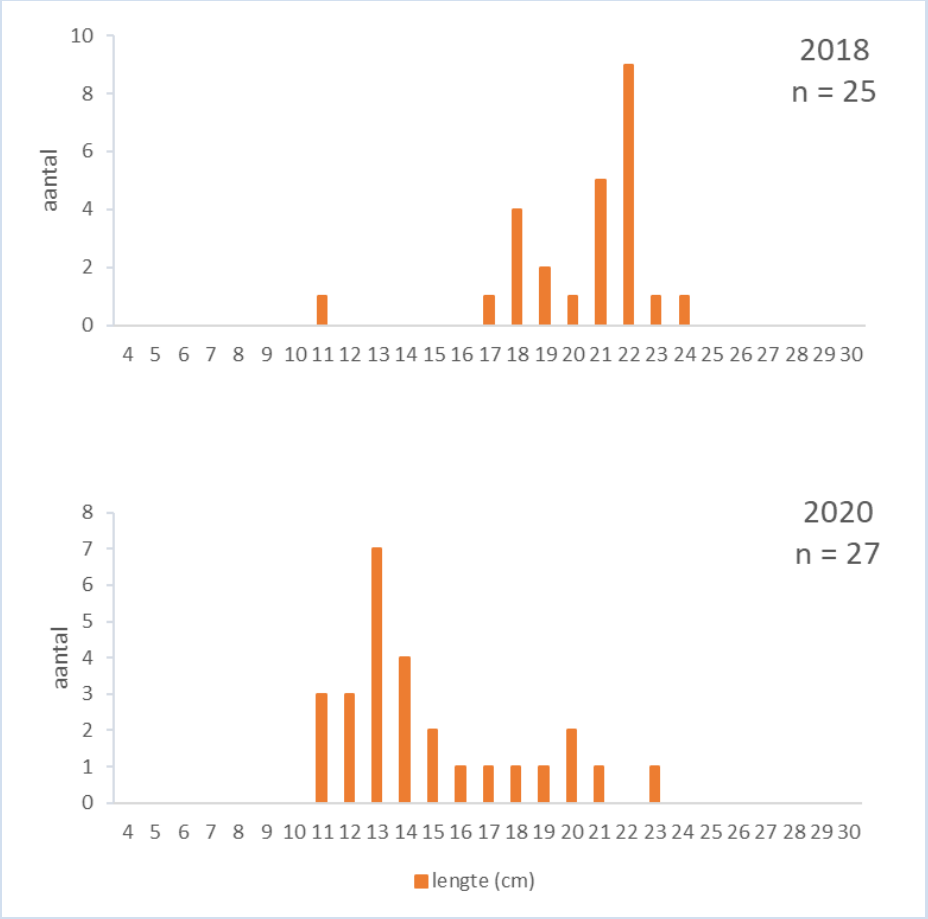
Ex-situ breeding program (LIFE B4B)

- Dutch source population
- artifical reproduction
- difficulties with synchronization
- low egg survival
- but: fast growth rates
  - 8.5 cm after 5 months in indoor basins
  - 16 cm after 6 months in ponds



Re-introduction

- Herkenrode: 3500 juv. in 2019 (re-juvenation)



- Goorke: 370 juv. in 2022 (enrichment)
- De Zig (Molenbeersel) in 2022: 158 juv. (enrichment)
- GOG Kruibeke-Bazel-Rupelmonde in 2023: 520 juv. (new population)

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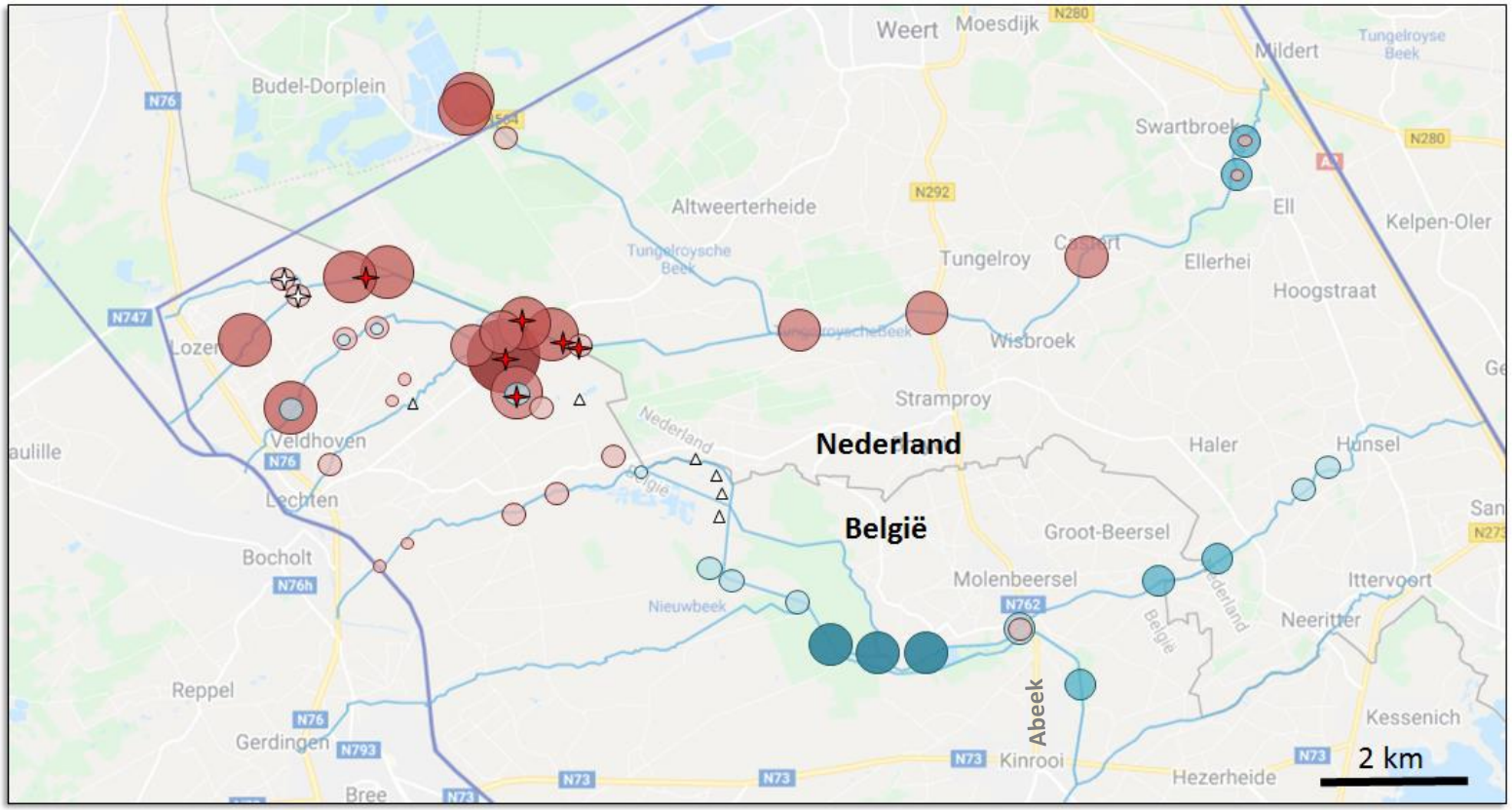
The northern weatherfish – a new threat

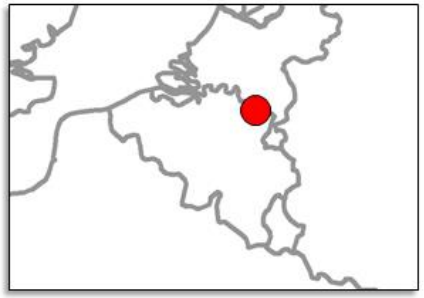
(*M. bipartitus* Sauvage & Dabry de Thiersant 1874)

- first detected in 2012 in The Netherlands
- strong invasion in Flemish weatherfish territories since 2019



M. bipartitus

M. fossilis



- > 20000
- 5000 – 1001
- 1000 – 501
- 500 – 100
- < 100

- 1000 – 501
- 500 – 251
- 250 – 100
- < 100

eDNA conc. (copies/L)

- competitive exclusion
- parasites
- hybridization

- surveillance (eDNA)
- eradication (fyke-netting)
- strategic dams

Conclusions

- weatherfish status in Belgium is (still) dramatical
- but: tides are turning (climate warming)…
- increasing awareness for ‘wet species and habitats’
- weatherfish as ambassador for the shift in water management (re-wetting, room for rivers, eflows,…)
- What in Wallonia?

Life

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NATURA 2000