

RESEARCH OUTPUTS / RÉSULTATS DE RECHERCHE

Downstream fish migration along the low Meuse river

Ben Ammar, Imen; Mandiki, Robert; Antipine, Sascha; Flamion, Enora; KESTEMONT, Patrick

Publication date:
2018

Document Version
Publisher's PDF, also known as Version of record

[Link to publication](#)

Citation for published version (HARVARD):

Ben Ammar, I, Mandiki, R, Antipine, S, Flamion, E & KESTEMONT, P 2018, 'Downstream fish migration along the low Meuse river', Kick-off ILEE, Namur, Belgium, 11/06/18 - 11/06/18. <<http://ilee.unamur.be/posters/ben-ammar-et-al-2018-life4fish-project>>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

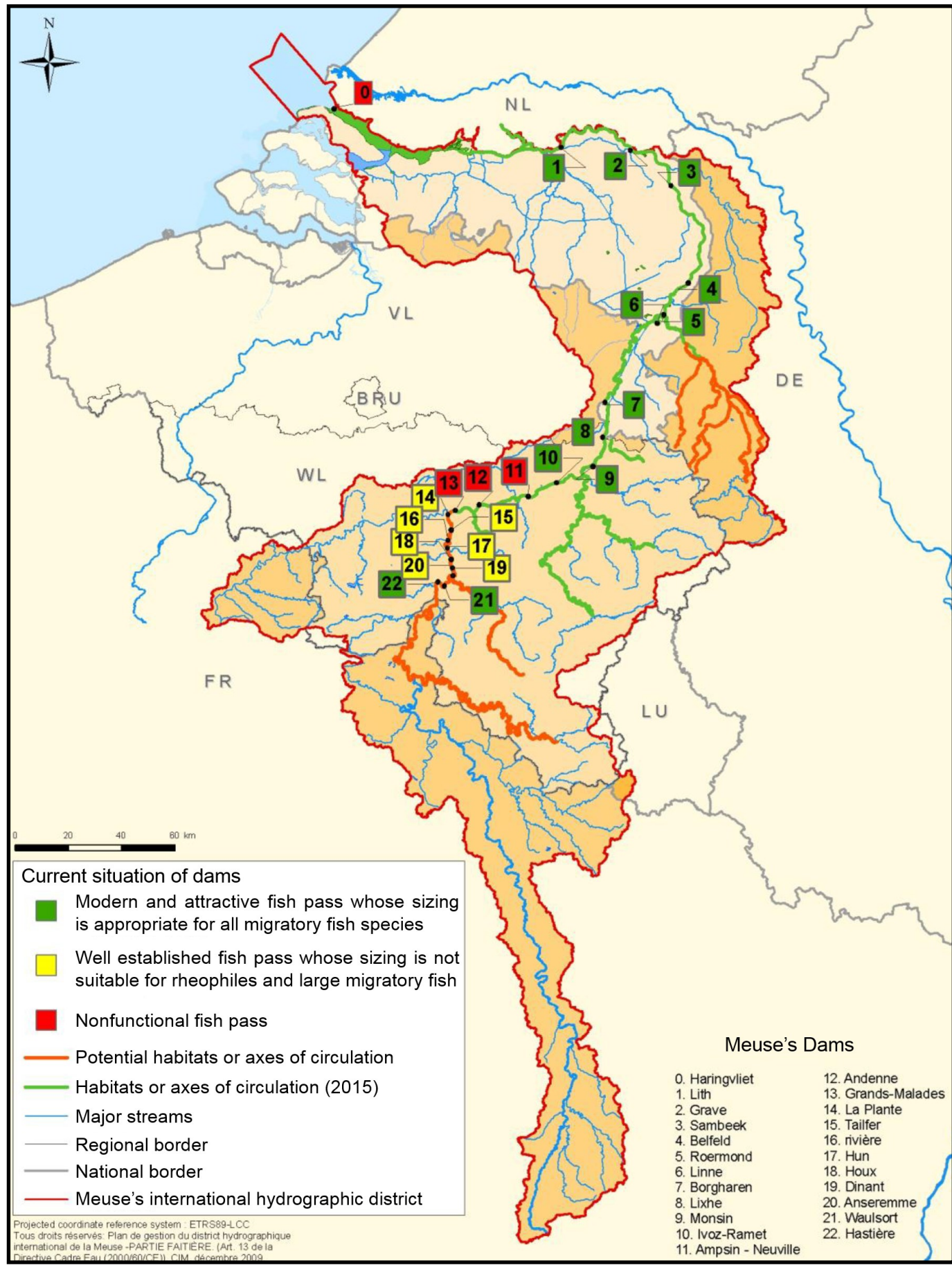
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

DOWNSTREAM FISH MIGRATION ALONG THE LOW MEUSE RIVER

Imen Ben Ammar, Robert Mandiki, Sascha Antipine, Enora Flamion, Patrick Kestemont

THE MEUSE RIVER

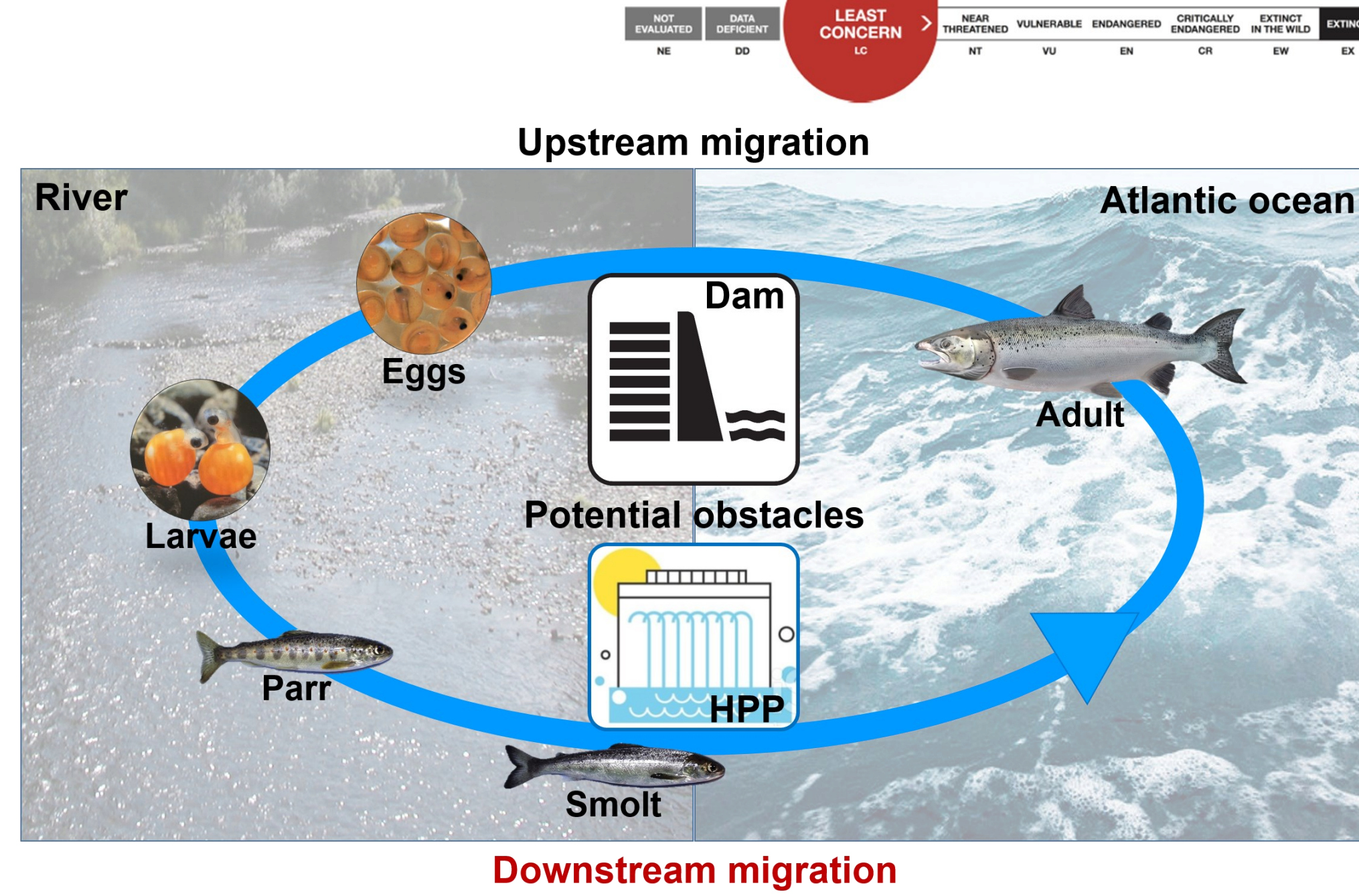
Heavily modified water body: Dam, Hydropower plant HPP



Home to 10 highly migratory diadromous fish species and ≈ 30 non-diadromous species

TARGET SPECIES

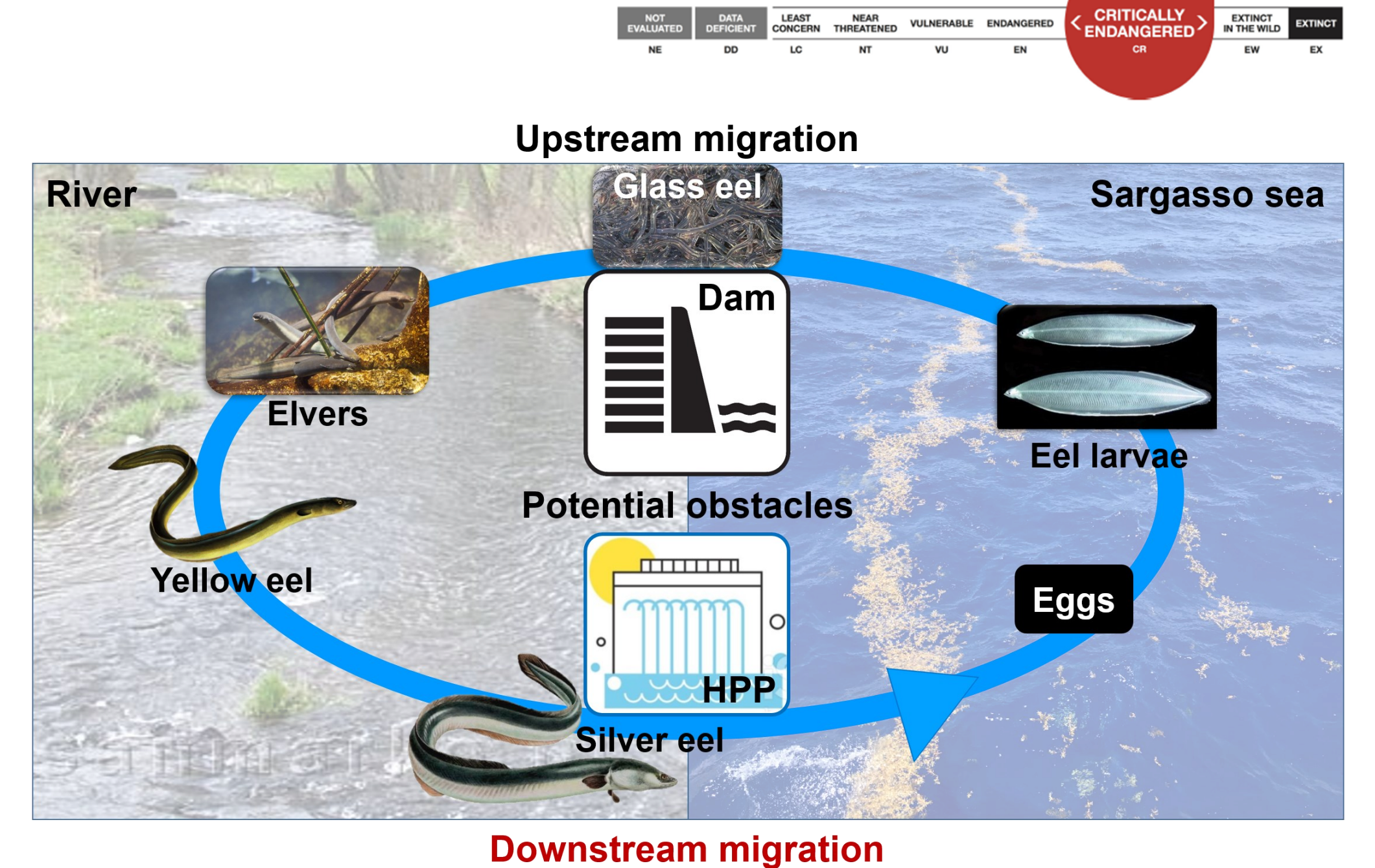
Atlantic salmon *Salmo salar*



1930s: Disappearance of *S. salar* from the Belgian Meuse basin

Reintroduction programs in Europe and Belgium (Meuse Saumon 2000)

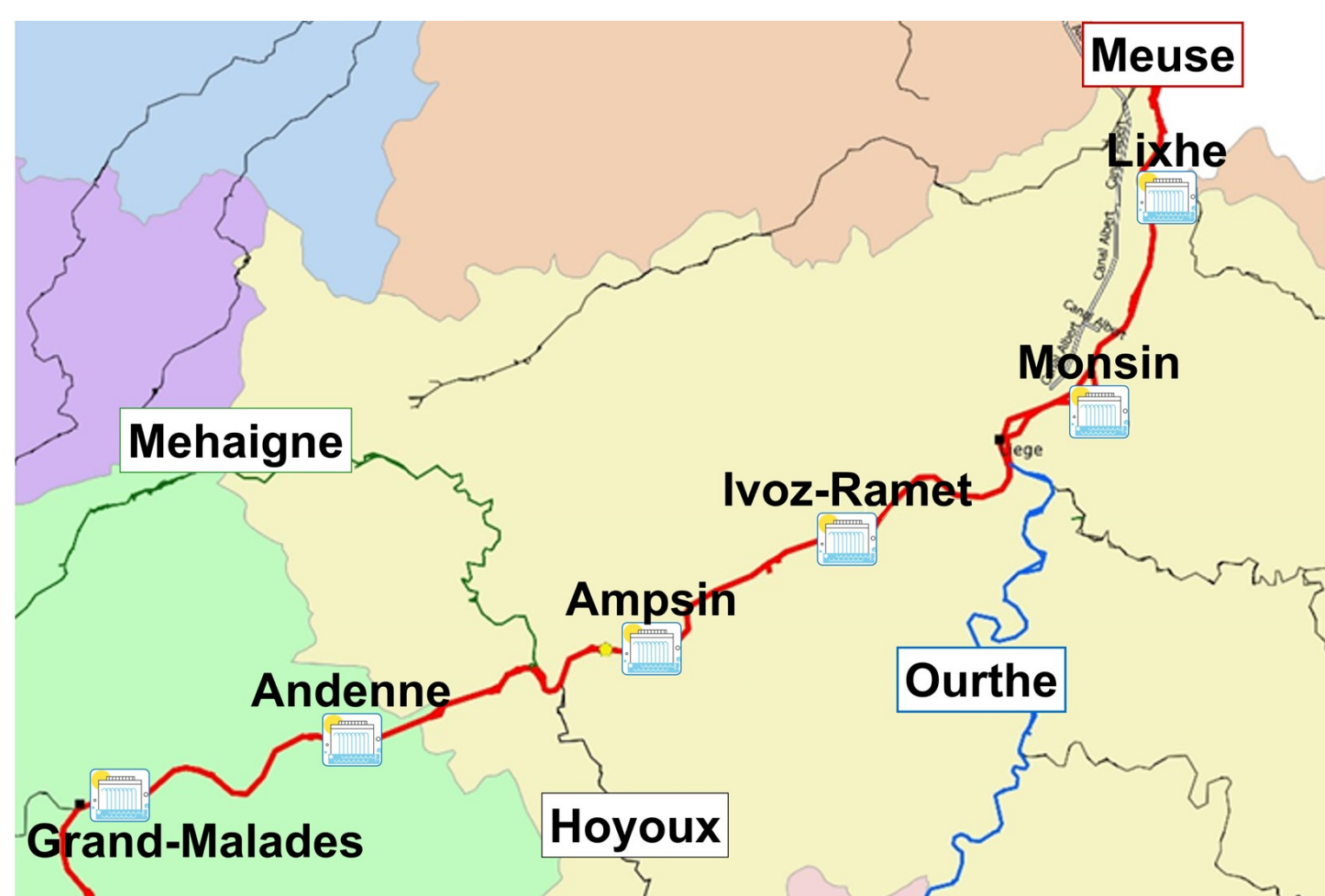
European eel *Anguilla anguilla*



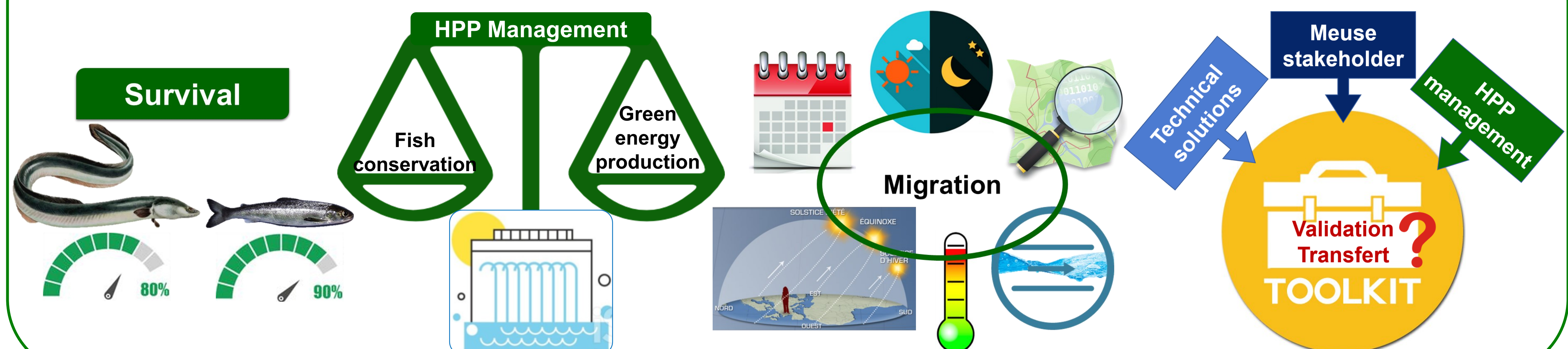
1980s: distribution area ↓, population ↓, natural recruitment of glass eels ↓

UE management plan: ↓ of all anthropogenic causes of mortality + Escapement of 40% of the biomass compared to "pristine" population

STUDY AREA: LOW MEUSE

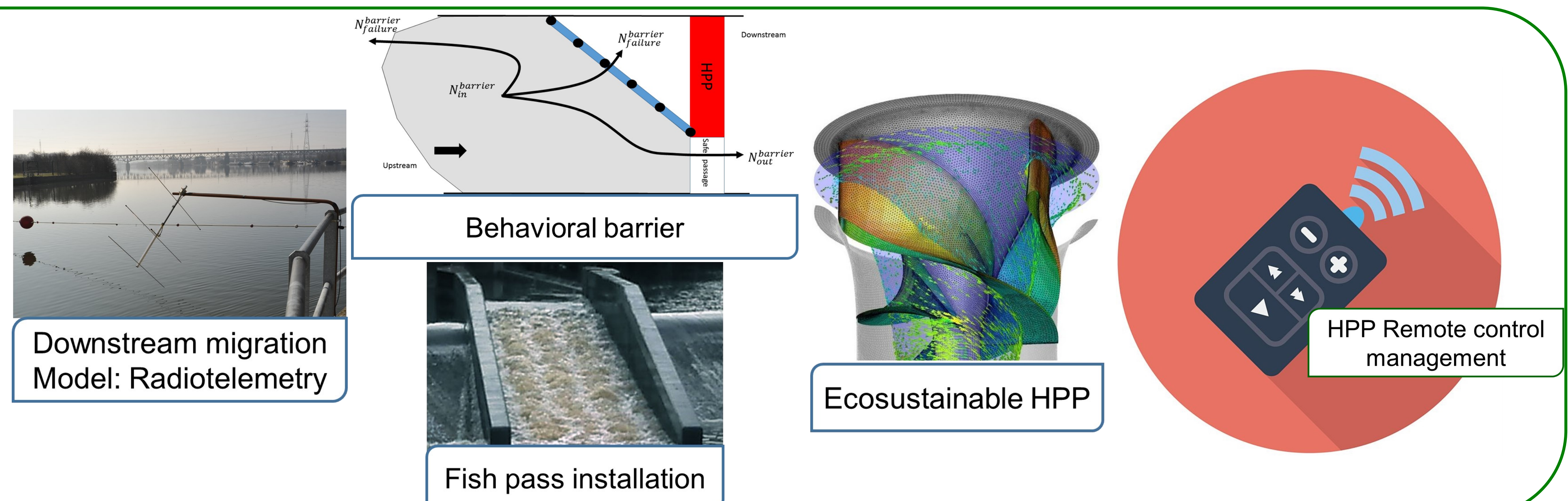


PROJECT OBJECTIVES



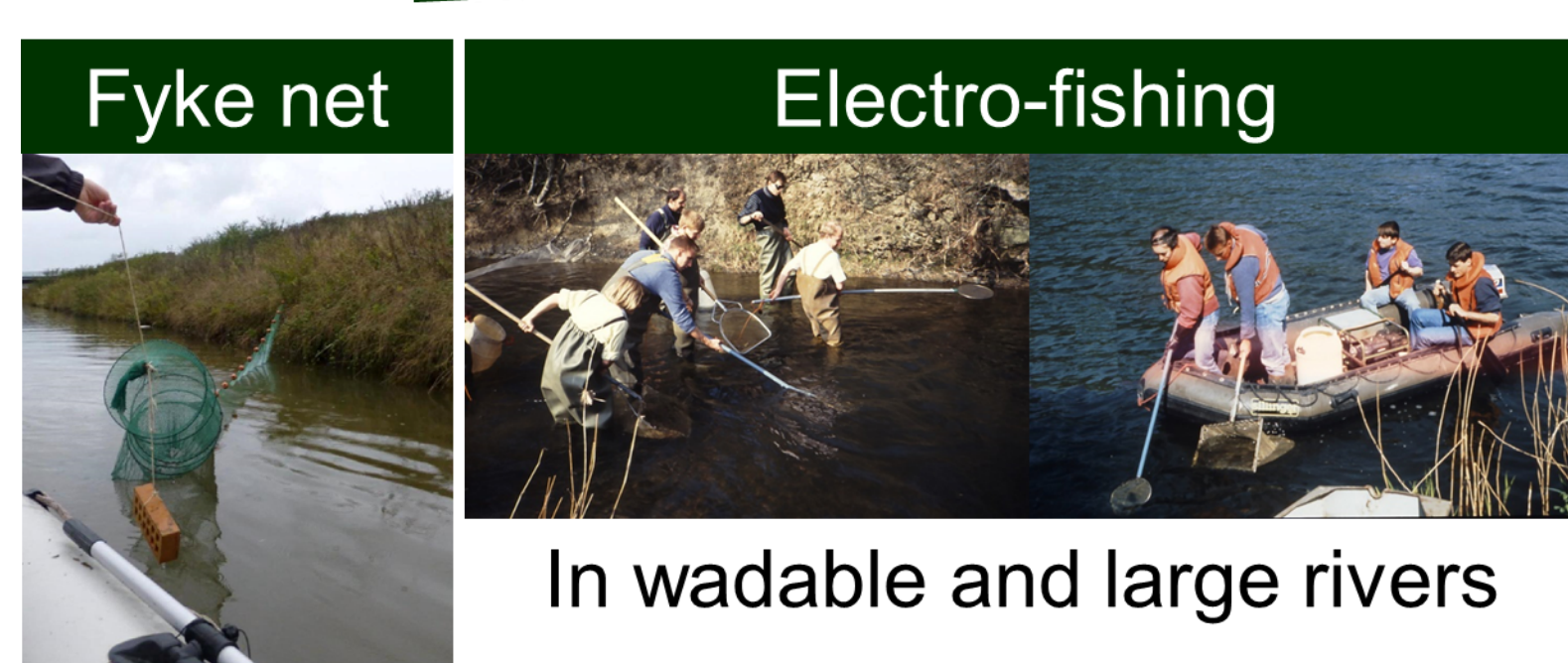
STUDY AXIS

1. Downstream migration model
2. Hydrodynamic modelisation
3. Resident populations: characterization
4. Impact of hydropower plant on fish
5. Performance indicators: definition/evaluation



OUR CURRENT STUDIES

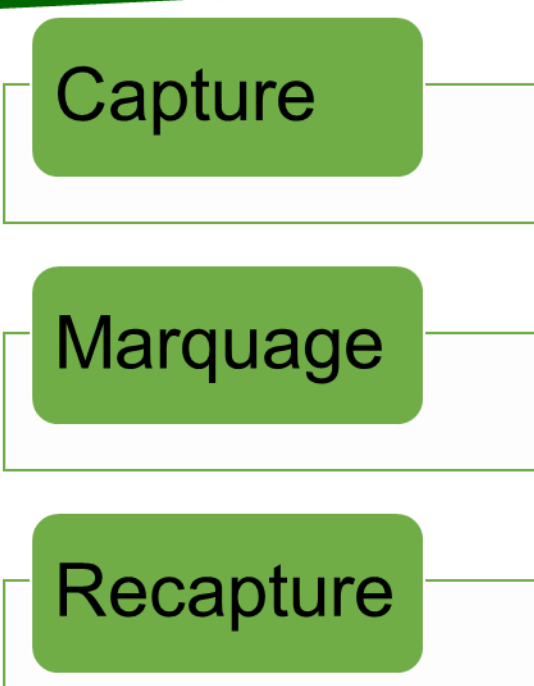
1. Stock assessment



Morphology & health status

- ✓ External & internal examination (X-ray)
- ✓ Parasitism/pathology
- ✓ Herpes virus (RT-PCR) (eel)

2. Stock estimation

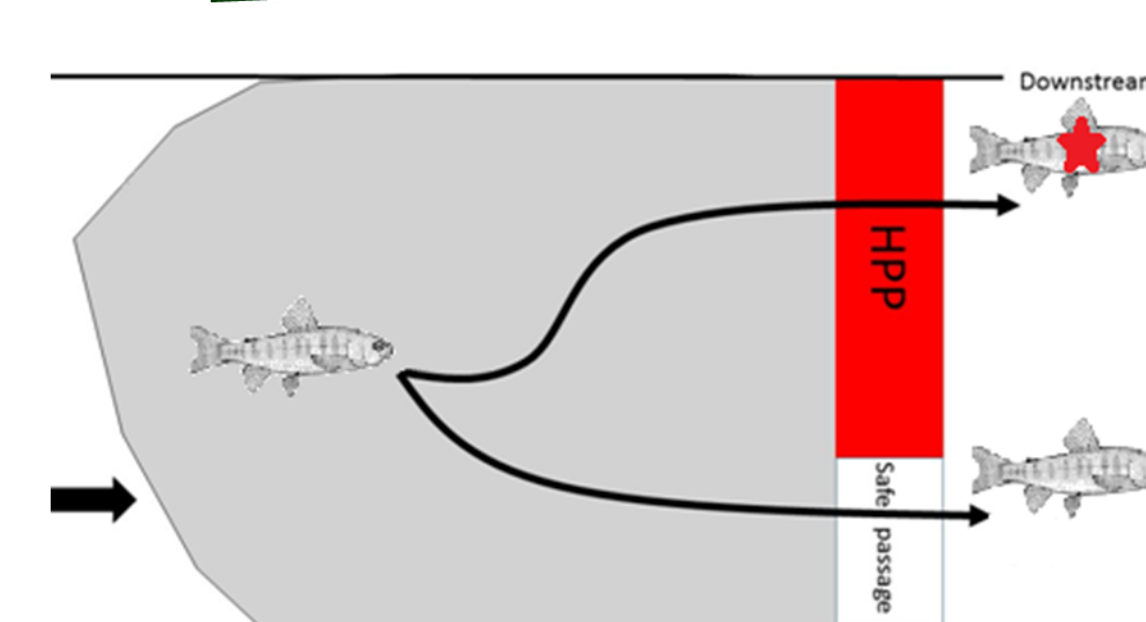


4. Characterisation of fish population

Physiological/immune status

- ✓ Cortisol
- ✓ HSP70 and 90
- ✓ Growth & thyroid hormones
- ✓ Immunological activities
- ✓ Immune gene expression

3. HPP impact on fish



Swimming ability / Behavioral responses

Use of swimming tunnel

- ✓ Ventilation rate
- ✓ Escape speed
- ✓ Locomotion

