

RESEARCH OUTPUTS / RÉSULTATS DE RECHERCHE

Downstream fish migration along the low Meuse river

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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>>

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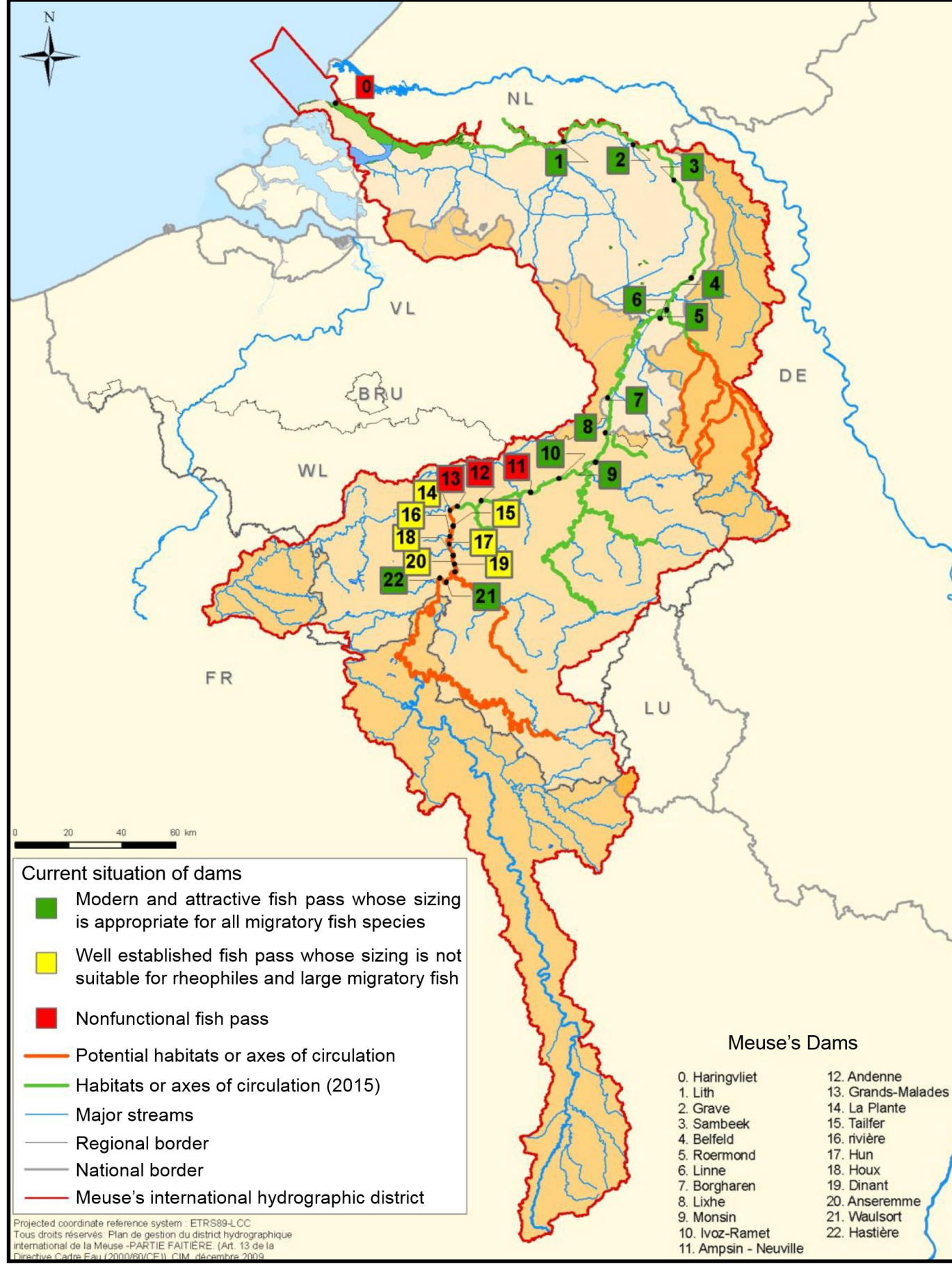
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DOWNSTREAM FISH MIGRATION ALONG THE LOW MEUSE RIVER

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

THE MEUSE RIVER

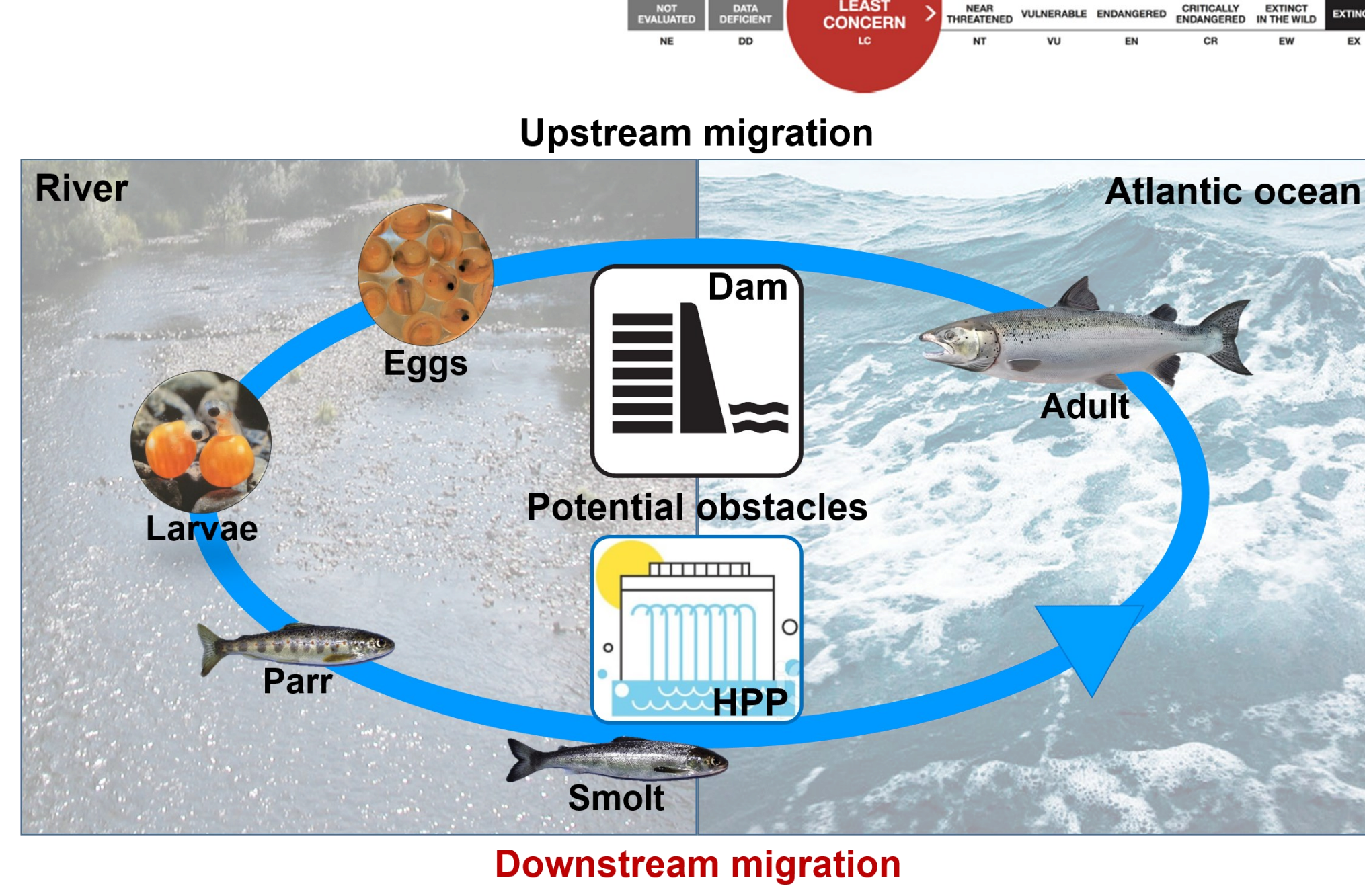
Heavily modified water body: Dam, Hydropower plant HPP



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

TARGET SPECIES

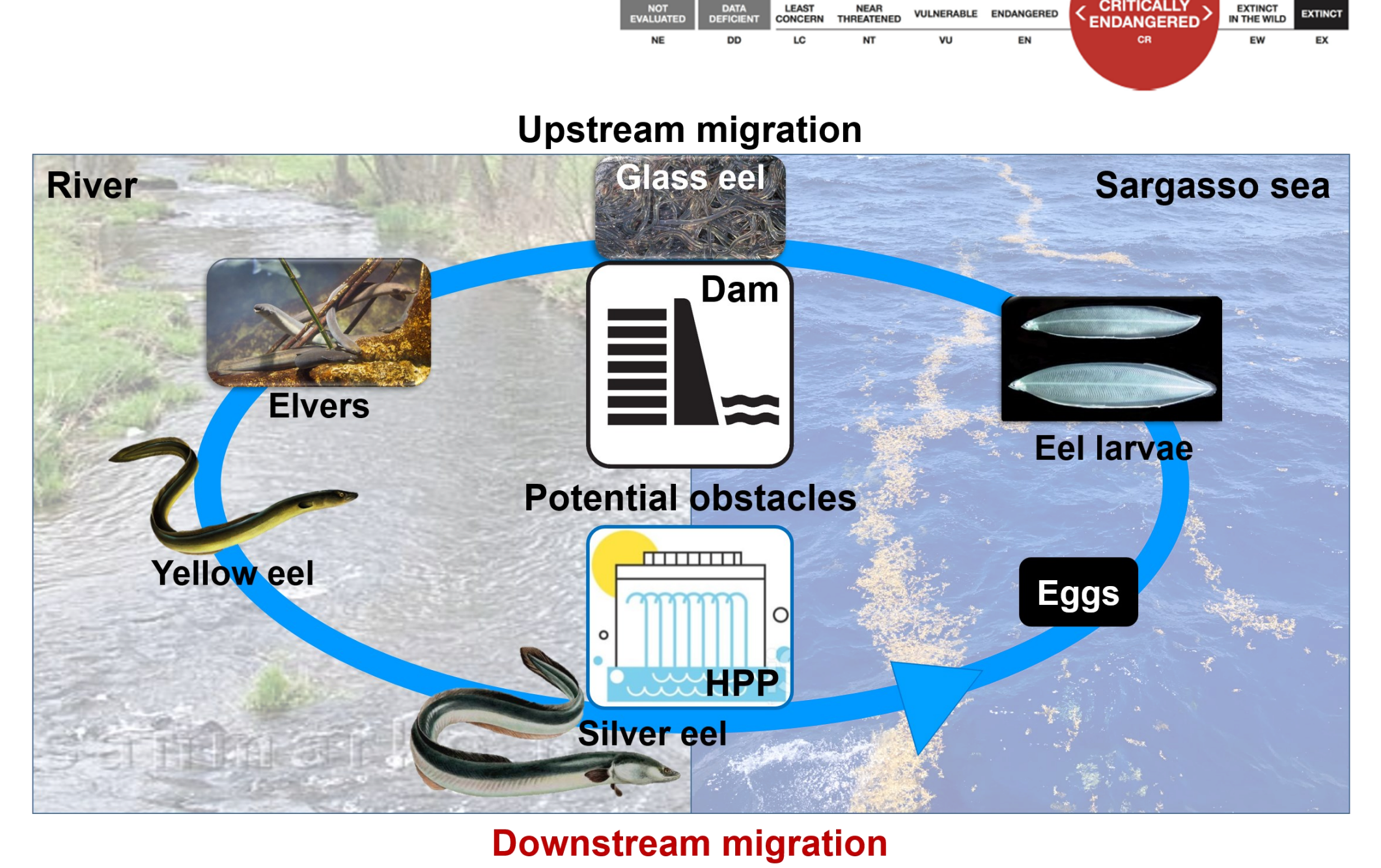
Atlantic salmon *Salmo salar*



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

Reintroduction programs in Europe and Belgium (Meuse Saumon 2000)

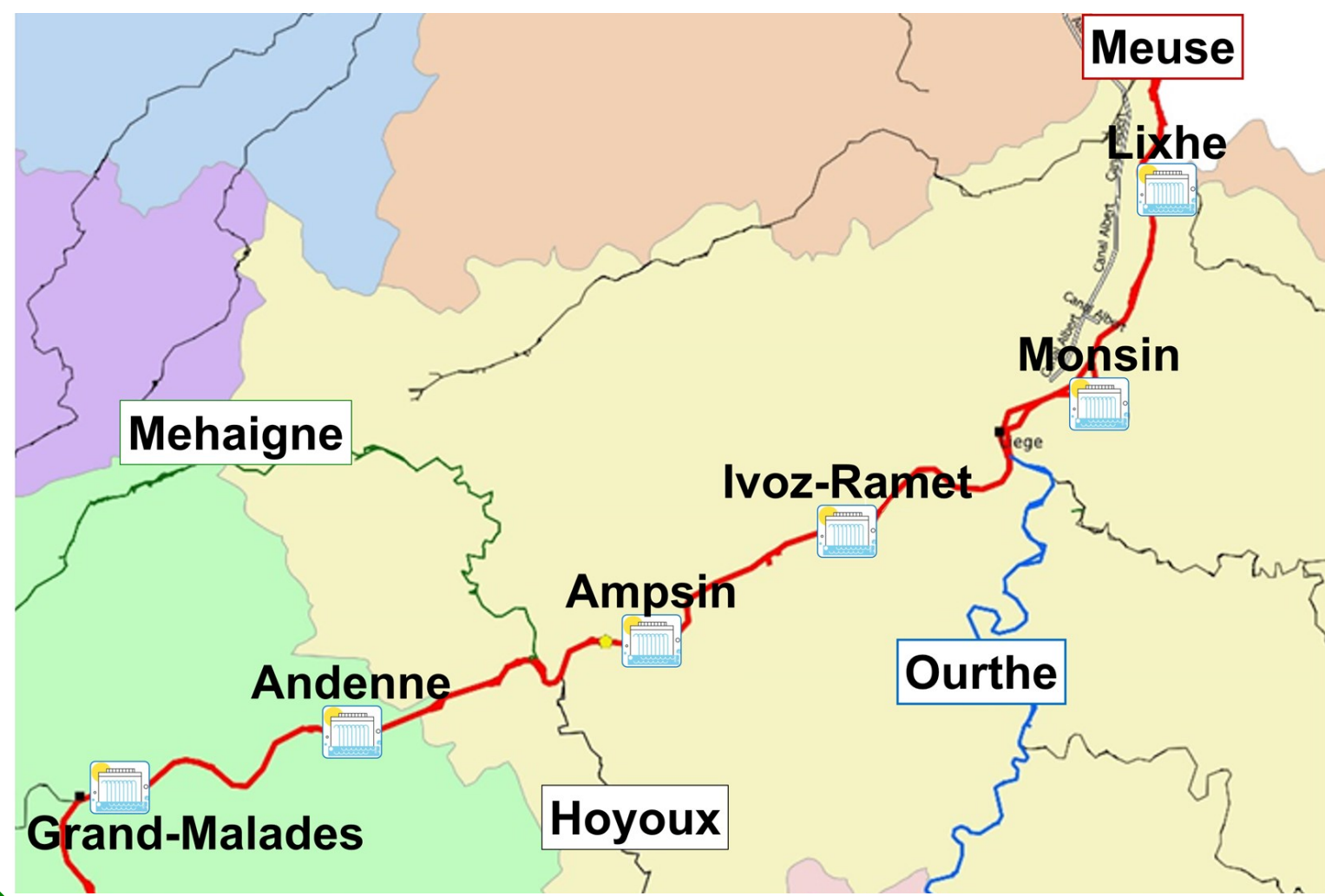
European eel *Anguilla anguilla*



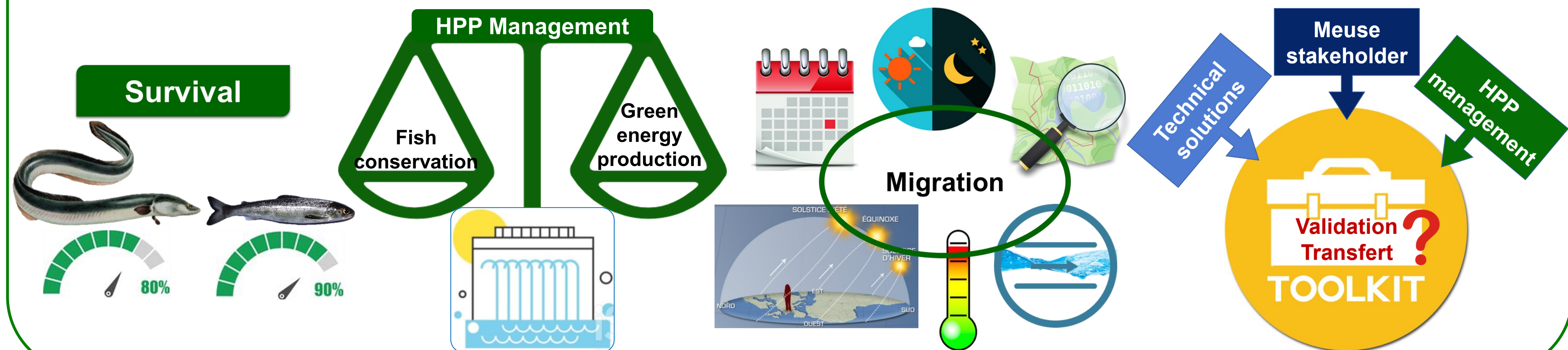
1980s: distribution area ↓, population ↓, natural recruitment of glass eels ↓

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

STUDY AREA: LOW MEUSE

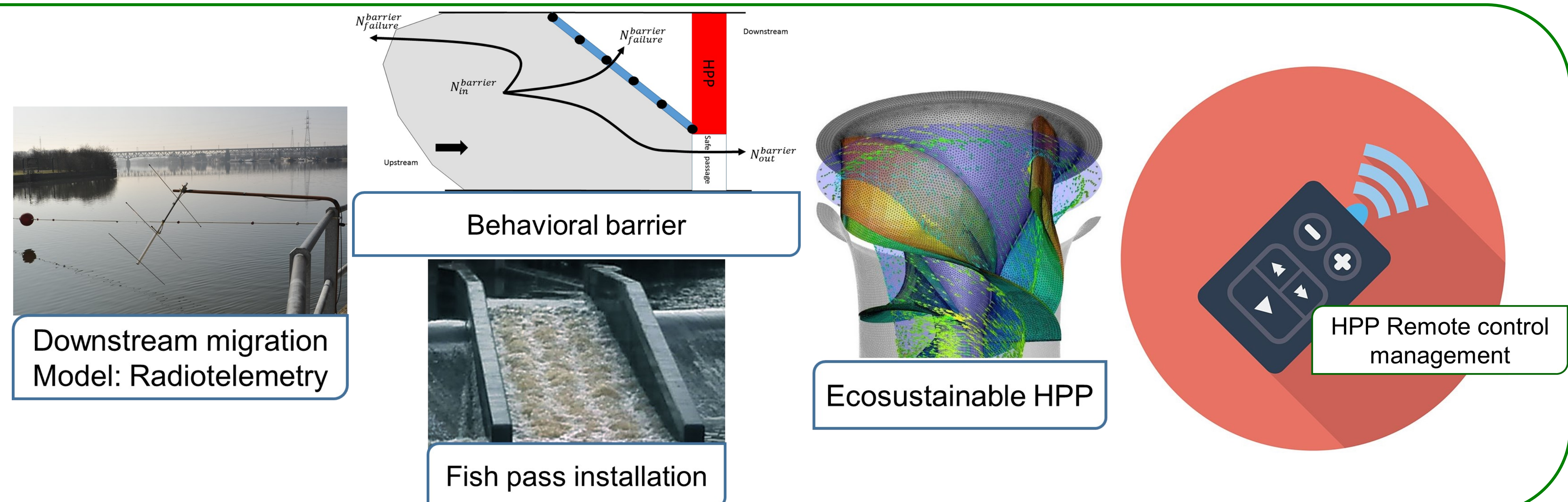


PROJECT OBJECTIVES



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

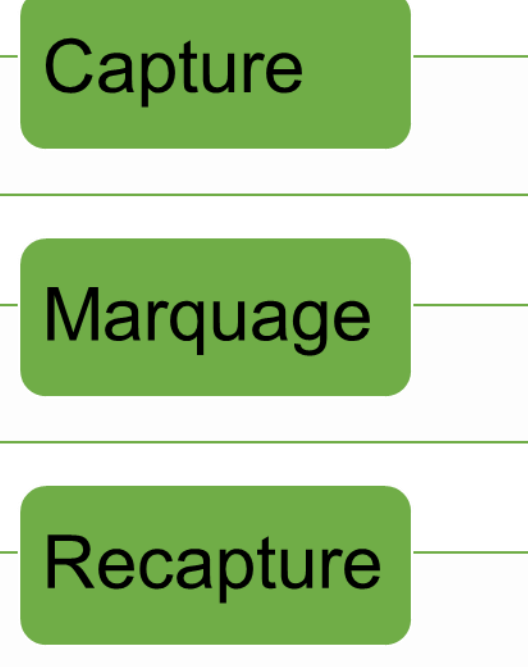
1. Stock assessment



Morphology & health status

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

2. Stock estimation

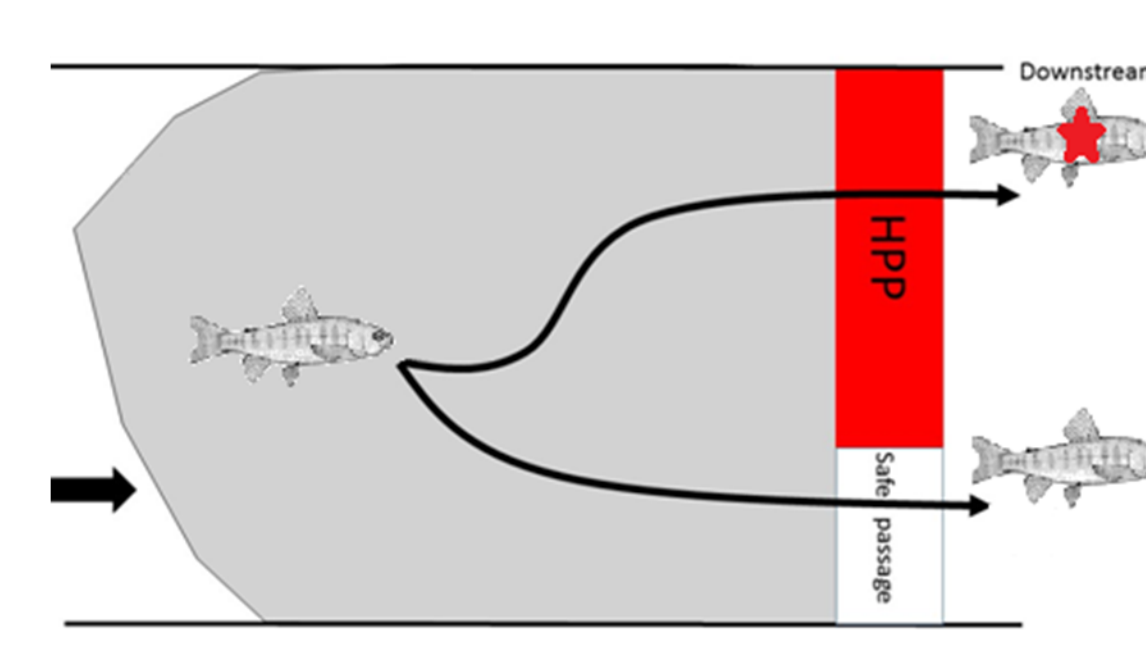


4. Characterisation of fish population

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

