Downstream fish migration along the low Meuse river

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

Publication date:
2018

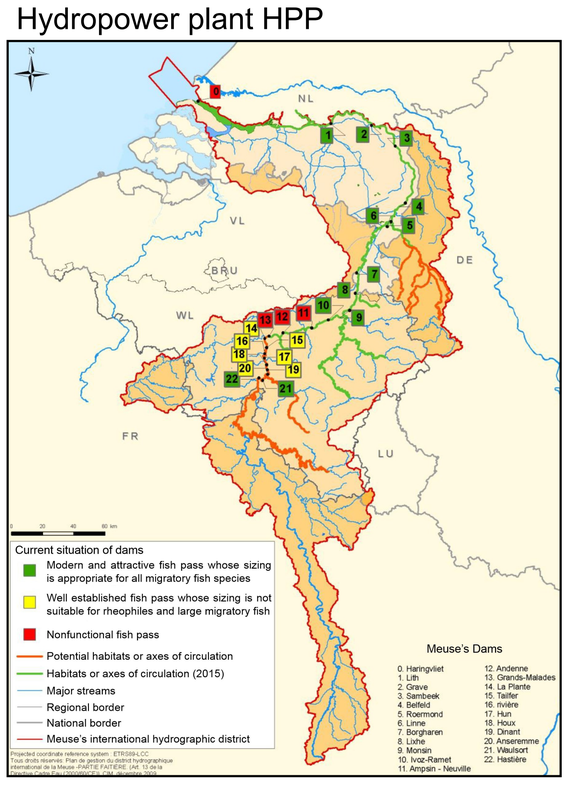
Document Version
Publisher's PDF, also known as Version of record

DOWNSTREAM FISH MIGRATION ALONG THE LOW MEUSE RIVER

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

THE MEUSE RIVER

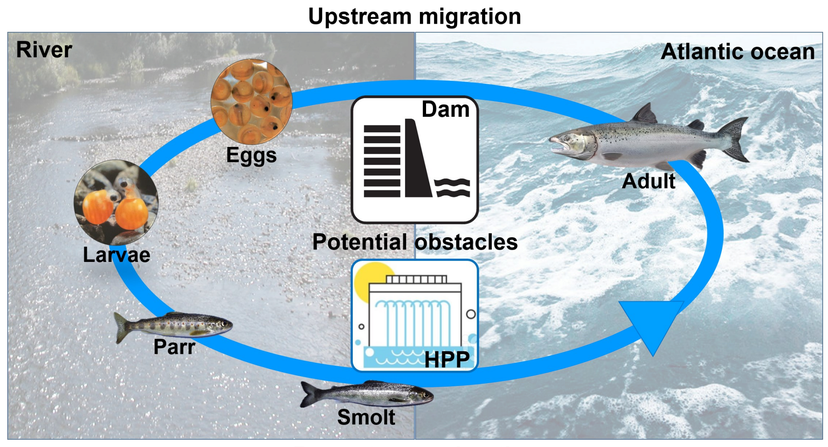
♦ Heavily modified water body: Dam, Hydropower plant HPP



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

TARGET SPECIES

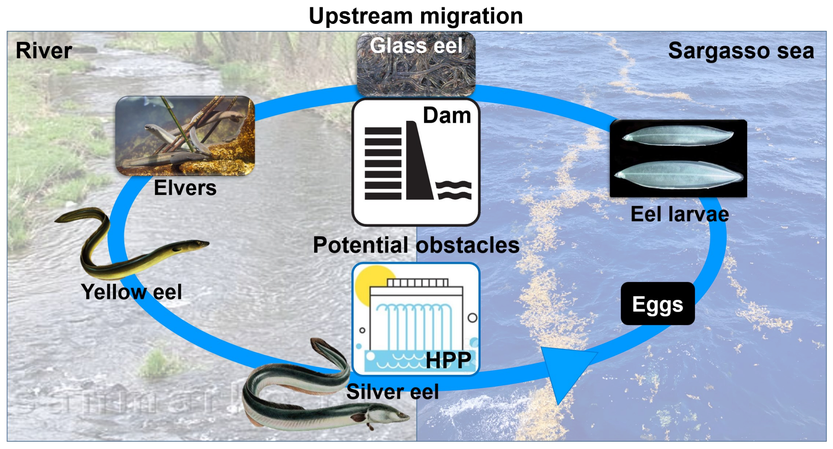
Atlantic salmon *Salmo salar*



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

Reintroduction programs in Europe and Belgium (Meuse Saumon 2000)

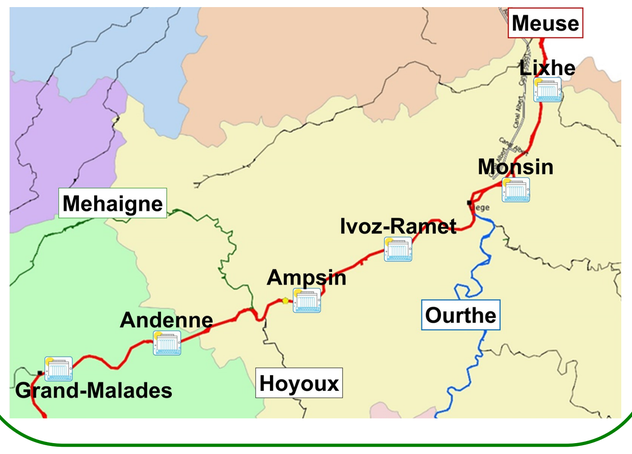
European eel *Anguilla anguilla*



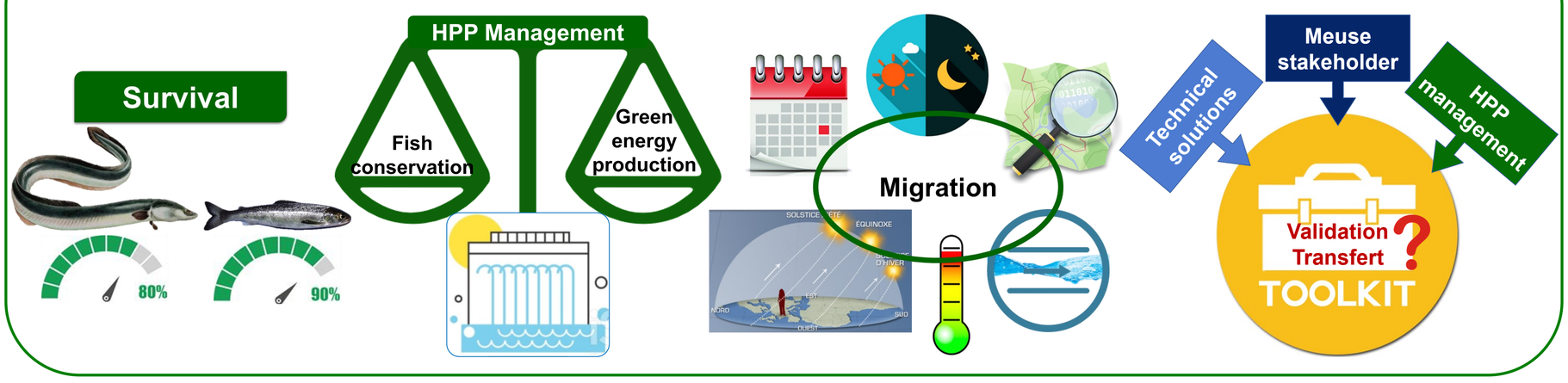
1980s: distribution area ↘, population ↘, natural recruitment of glass eels ↘

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

STUDY AREA: LOW MEUSE



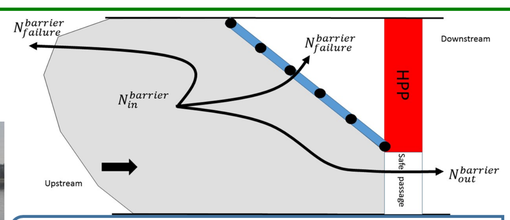
PROJECT OBJECTIVES



STUDY AXIS

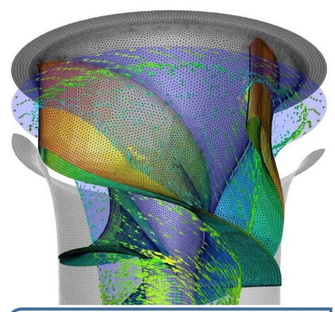
1. Downstream migration model
2. Hydrodynamic modelisation
3. Resident populations: characterization
4. Impact of hydropower plant on fish
5. Performance indicators: definition/evaluation

Downstream migration
Model: Radiotelemetry

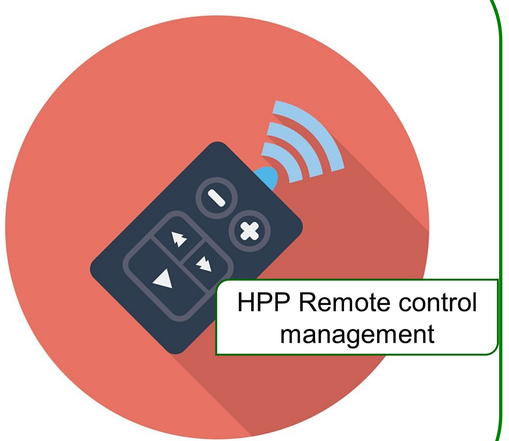


Behavioral barrier

Fish pass installation



Ecosustainable HPP

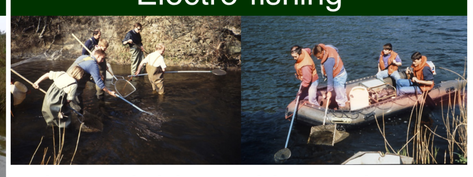


OUR CURRENT STUDIES

1. Stock assessment

Fyke net

Electro-fishing

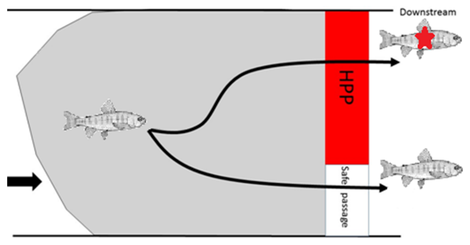


In wadable and large rivers

2. Stock estimation

- Capture
- Marquage
- Recapture

3. HPP impact on fish



4. Characterisation of fish population

Morphology & health status

✓External & internal examination (X-ray)

✓Parasitism/pathology

✓Herpes virus (RT-PCR) (eel)

Physiological/immune status

✓Cortisol

✓HSP70 and 90

✓Growth & thyroid hormones

✓Immunological activities

✓Immune gene expression

Swimming ability / Behavioral responses

Use of swimming tunnel

✓Ventilation rate

✓Escape speed

✓Locomotion