

Ecological restoration of the Selune River (France) through the removal of two large dams

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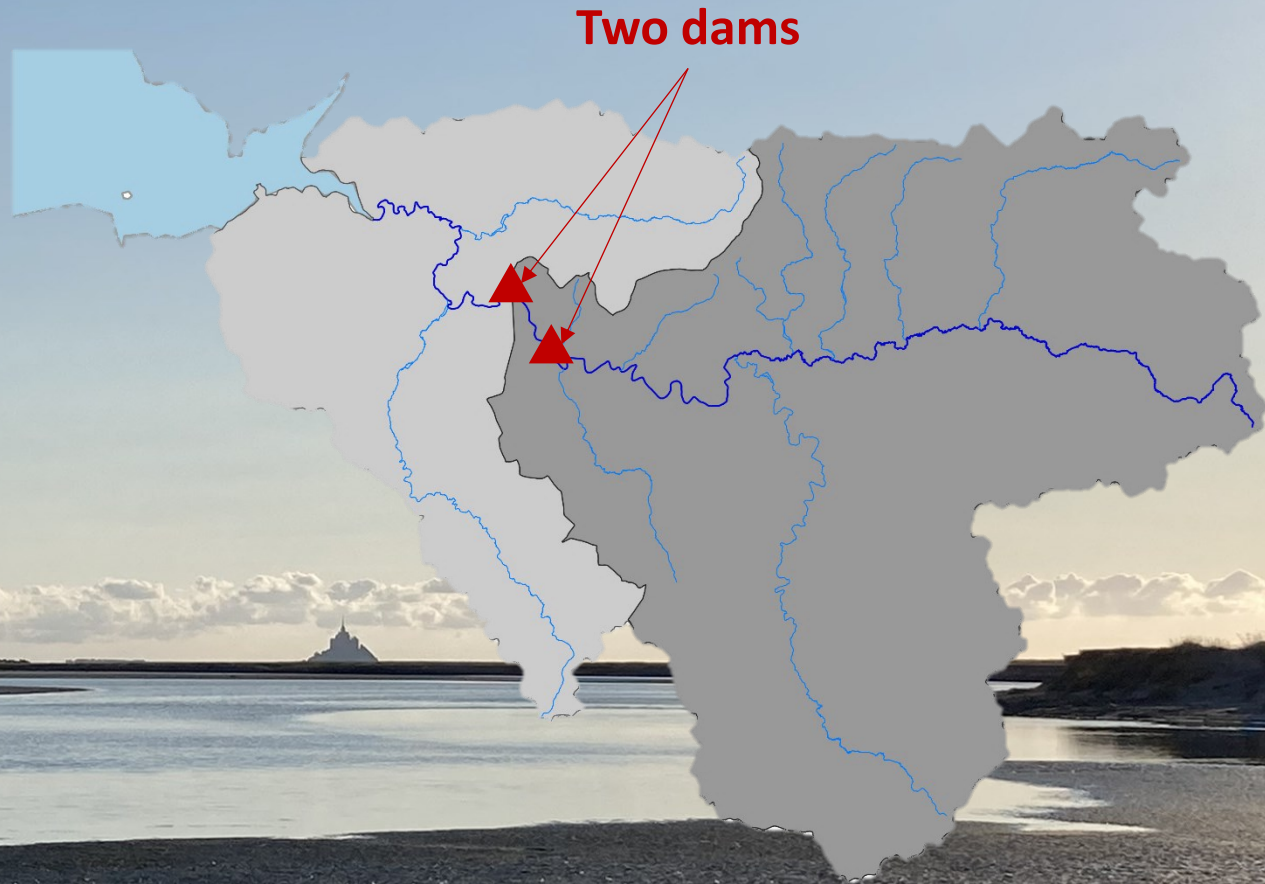


BEFORE



AFTER

The Selune River



- 85 km
- 1 083 km²
- ~57 000 inhabitants
- Agricultural catchment



La-Roche-qui-Boit dam (1919)

Height: 16 m

Width: 125 m

Distance to the ocean: 12 Km

Source: ARTELIA 2014

Vezins dam (1932)

Height: 36 m

Width: 278 m

Distance to the ocean: 17 Km

Source: ARTELIA 2014



The Sélune and its dams



1919

Construction of La-Roche-qui-Boit dam

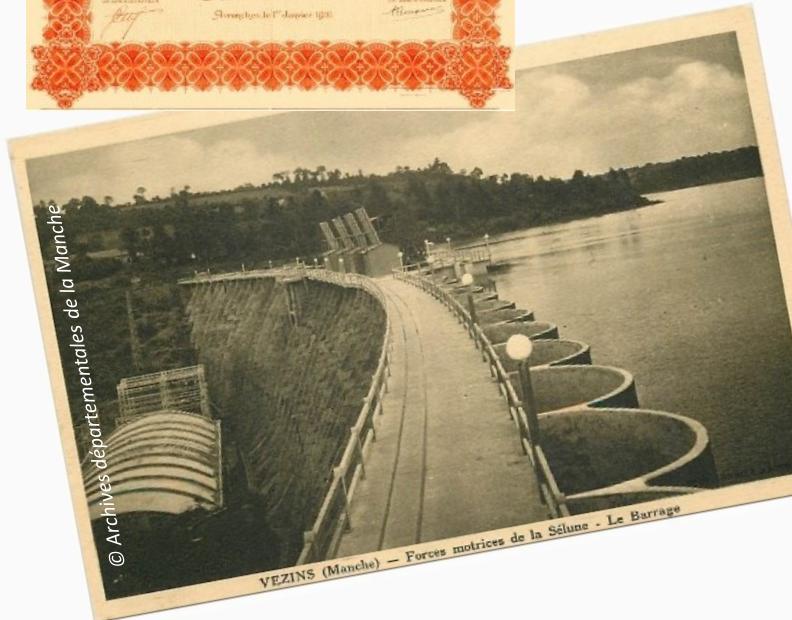


1932

Construction of Vezins dam



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The Sélune and its dams



1919

Construction of La-Roche-qui-Boit dam



1932

Construction of Vezins dam



2014

Government decision:
NO dam removal



2009

Government decision:
YES dam removal



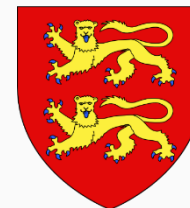
2007

EDF's concession is
not renewed



2005

Local vote:
YES dam removal



Local water
commission

The Sélune and its dams



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Construction of La-Roche-qui-Boit dam



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An interplay of stakeholders around dam removal



The Sélune and its dams



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Local vote:
YES dam removal



↳ A new expertise is
required

➔ No alternative to dam removal

Why remove the Selune river dams ?

**Obsolescence, safety
and production issues**



Water quality issues



Conservation issues



The Sélune and its dams



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Construction of La-Roche-
Qui-Boit dam



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Construction of
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Government decision:
NO dam removal



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EDF's concession is
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2005

Local vote:
YES dam removal



2017

Government decision:
YES dam removal
(final)

Emptying and sediment management work



Emptying and sediment management work



Management of polluted sediments



2022 – removal of the La-Roche-Qui-Boit dam



Reportage « Effacements des barrages sur la Sélune » 2023 FR-HD-12min

European Rivers Network

The Sélune without dams



1919

Construction of La-Roche-qui-Boit dam



1932

Construction of Vezins dam



2014

Government decision:
NO dam removal



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Government decision:
YES dam removal



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Local vote:
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(final)



2020

Vezins dam removed



2022

La-Roche-qui-Boit
dam removed



2014

How is the Selune River recovering a few years after – complete - dam removal ?



The Sélune scientific program (2012-2027)

- Understand the **mechanisms involved** in restoring the Sélune valley
- Identify the **social and ecological strengths and weaknesses** associated with the return of a river ecosystem



The Sélune scientific program (2012-2027)





The Sélune
with dams

Toxic
cyanobacteri
a blooming
in summer



The Sélune
with dams

Toxic
cyanobacteri
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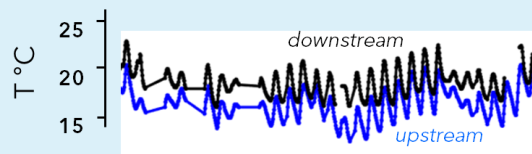
The Sélune
with dams

System dominated by
invasive species and top
predators
=
Less resilient

Toxic cyanobacteria blooming in summer

Thermal anomaly downstream

Before removal (2016)



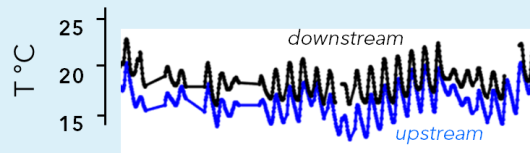
The Sélune with dams

System dominated by invasive species and top predators = Less resilient

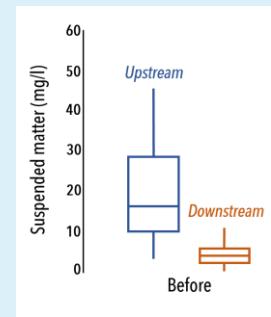
Toxic cyanobacteria blooming in summer

Thermal anomaly downstream

Before removal (2016)



Unbalanced sediment fluxes



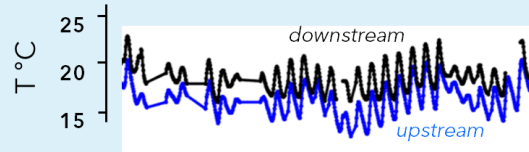
The Sélune with dams

System dominated by invasive species and top predators = Less resilient

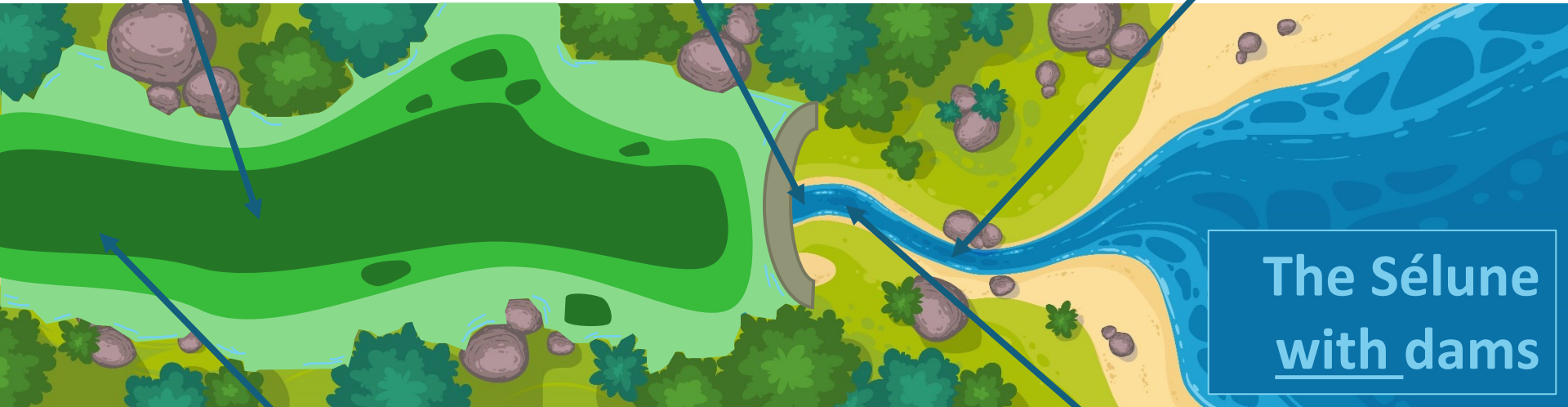
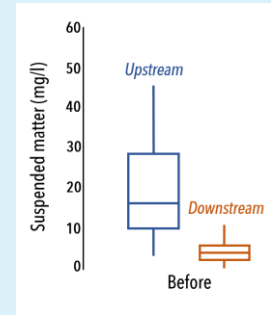
Toxic cyanobacteria blooming in summer

Thermal anomaly downstream

Before removal (2016)



Unbalanced sediment fluxes



The Sélune with dams

System dominated by invasive species and top predators = Less resilient

Migratory fish accumulate downstream





The Sélune
without

dams

No more
toxic
cyanobacteri
a blooms



The Sélune
without
dams

A new
connection to
the ocean
= restored
energy fluxes?



The Sélune
without
dams

Good ecological status

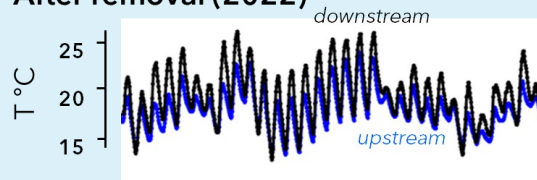
Fast return of sensitive lotic species

Year	Ecological Status	I ₂ M ₂ Value
2015	high	0.7
2016	high	0.7
2017	high	0.7
2018	medium	0.2
2019	medium	0.5
2020	medium	0.5
2021	bad	0.7

A new connection to the ocean = restored energy fluxes?

Thermal balance

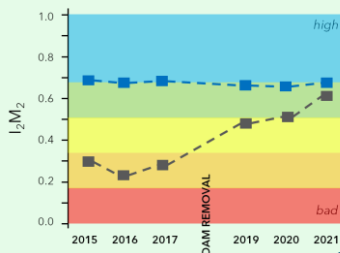
After removal (2022)



The Sélune
without
dams

Good ecological status

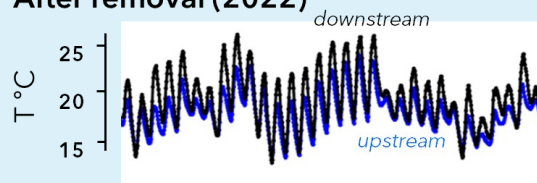
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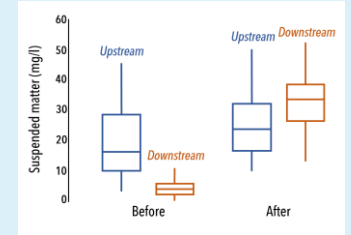
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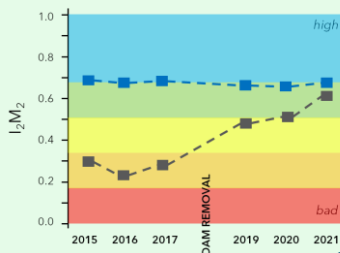
Gradual return to sediment balance



The Sélune without dams

Good ecological status

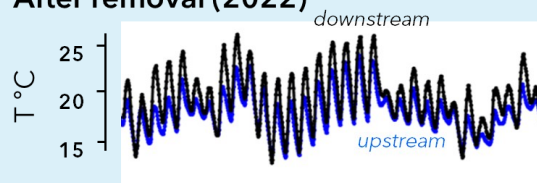
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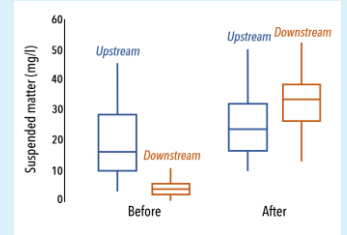
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Thermal balance

After removal (2022)



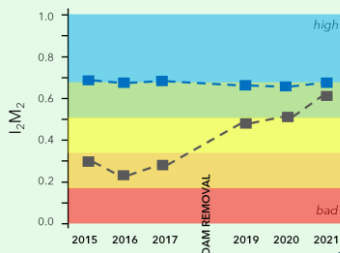
Gradual return to sediment balance



The Sélune without dams

Good ecological status

Fast return of sensitive lotic species



Recolonisation of the new riverbanks by vegetation

- High species richness and trees
- Mosaic of natural habitats
- Influenced by removal works

A new connection to the ocean = restored energy fluxes?

Migratory fish can reproduce upstream

Thermal balance

After removal (2022)

Gradual return to sediment balance



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dams

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A new connection to the ocean = restored energy fluxes?

To be continued...





Programme scientifique Sélune

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Thanks

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