Revitalisation of the Borova stream, Czech Republic

Year of issue

2025

Summary

Restoration of the length of the Borova stream, increased by 6.3 km a shallow meandering stream bed, where sections of speedily running water alternated with sections of a slow stream were created, financed by the Ministry of Environment of Czech Republic.

Today this project is still relevant and effective, although it would need reconstruction in places.

Photo Gallery



Location

48.87638, 14.218

Project

NWRM

National ID

Czech_06

Sector

Hydromorphology

Installation Date

2001-01

Implementation status

Completed

Contact

Jovanka Ignjatovic

Overview

Location of the project

Borova river in Czechia

Country

Czechia

NUTS2 Code

Jihozápad

Sponge measures implemented in the case study

Re-meandering

Stream bed re-naturalisation

Forest riparian buffers

Wetland restoration and management

Objectives

the complex revitalization of Borová Stream basin including:
- renewal of the natural character of the stream as well as renewal of its original function
- increasing the accumulative possibilities of the land and retarding the surface water, flood protection run-off
- increasing the variety of species
- dividing the area into smaller sections by planting alleys and groups of greenery

Involved partners

Authority type	Authority name	Authority role	Authority responsibility
Local water authority	Blanský les Protected Landscape Area Authority	Implementation	Responsible
National water authority	Ministry of Environment	Financing	Supporting

Site Information

Climate Zone

Cool temperate moist

Precipitation

2062.00 mm

Temperature (°C)

8.60 °C

Runoff coefficient

0.17

Elevation range

640 m

Slope range

1-2%

Vegetation class

grass turf

WFD Ecological status

Good

WFD Chemical status

Good

Design and Implementation

Project area

450

Area subject to Land use change or Management/Practice change (ha)

450.00 ha

Size

3307.00

Size unit

m

Principles

cancellation of the old regulated stream bed and creation of a natural meandering stream

Factor constraints

The project benefited as much as possible from the specificities of the basin.

Constraints

The drainage tubing at the surrounding pastures had to remain undisturbed except for the spring area where a small wetland was established.

Favourable preconditions

It was a former meanders channel which was straightened in the 70s

Financing

Total cost

275600.00 €

Total cost information

6 890 000 CZK including project documentation, engineering work, construction of revitalization in total length of 3.307 km (year 2000)

Financing authorities

Authority name	Type of funding	Financing share
Ministry of Environment	National funds	100 %

Compensations

Non

Policy and Governance

Policy description

Large scale regulation of water regime in the landscape was carried out by the consequences of industrial, agricultural, and urban development during the last century.

Land ownership

stream corridor : state ; other lands : private farmers

Policy targets

Increase Water Storage

Improved Biodiversity

Part of a wider plan

Oui

Wider plan

Name
Program for revitalization of river systems

Public consultation

Oui

Consultation activities

Activity stage	Activity type	Key issues

Design phase	communication with owners before construction	distrust in the project, concern about the deterioration of surrounding land

Has contractual arrangements

Oui

Contractual arrangements

Arrangement type	Name
Contractual agreement	contracts with owners before construction

Impacts and Monitoring

Monitoring System

Monitoring parameters

Comparison of composition of macro-invertebrate samples focusing on species richness, species composition, and representation of rare Ephemeroptera and Plecoptera species
In 2008, an exhaustive study of the geological, hydrogeological, hydrobiological, entomological, zoological, botanical and landscaping aspects of the revitalized Borová stream was conducted and a comparison was made with the state in 1995 (before the revitalization)

Maintenance

Maintenance requirements

Management and maintenance are carried out by the stream administrator - the state organization Forests of the Czech Republic.

Impact Assessment Methodology

Performance impact assessment method

Catchment outlet

Performance impact estimation information

Benthic macroinvertebrates were sampled using the semiquantitative kick and sweep technique and by hand-picking of specimens from stones and macrophytes.

Socio-economic Impacts

Direct benefits information

Stream increased by 6.3 km alternated with sections of slow stream

Biophysical impacts: Hydrology

Information on retained water

The stream provide enogh flood storage during the flooding time

Information on increased water storage

Creation of lentic sites, increasing the ammount of water retained per timestep

Information on runoff reduction

N/A info

Biophysical impacts: Biodiversity

Improved biodiversity

Oui

Information on improved biodiversity

Results show that the macroinvertebrate assemblage of the restored section of a small stream contained higher species richness in comparison to channelized conditions that preceded the restoration, especially prominent shortly after the restoration intervention. However, the restoration did not increase abundances of rare Ephemeroptera and Plecoptera species.

Biophysical impacts: Water & Soil Quality

Water quality overall improvements

Not relevant for this application

Information on water quality overall

Not relevant for this application

Soil quality overall improvements

Not relevant for this application

Information on soil quality overall improvements

Not relevant for this application

Biophysical impacts: Others

Ecosystem impact climate regulation

Not relevant for the specific application

Information on ecosystem impact climate regulation

Not relevant for this application

Lessons Learned

Key lessons

Morphologically degraded stream sections are typically characterized by low habitat heterogeneity and consequently lower biodiversity compared to more natural sections. These measures certainly increase morphological heterogeneity and mimic the pre-disturbance state. On the other hand, the intervention included substantial disturbance and the use of heavy technique which have seriously affected the biota.

Barriers

Barrier type	Barrier role	Comments
Missing regulatory support	Main barrier	A short section(100 m) was restored in a traditional way, i.e., by the establishing of transverse sills, because the necessary agreement of the land owner was not secured.
Other	Main barrier	There were a lot of obstacles because it was a pilot project and there wasn't much experience with it.

Drivers

Driver type	Driver role	Comments
Organisation committed to it	Main driver	As part of the Blanský Les Protected Landscape Area, willingness to create as much of a natural watercourse bed as possible
Past flooding events	Main driver	—
Availability of subsidies	Secondary driver	—

Success factors

Success factor type	Success factor role	Comments

Financing possibilities	Main factor	Thanks to the ministry of environment
Attitude of relevant stakeholders	Main factor	willingness to successfully complete the project

Cost effectiveness

the project was effective at the time of implementation (assessed according to costs per unit of flow length)

Sources

Sources

Case study:Borova Stream and its Revitalisation

Effect of meander restoration on macroinvertebratebiodiversity: the case of the Borová stream(Blanskí½ Les, Czech Republic)