Kylmäojankorpi forested wetland, Vantaa, Finland

Year of issue

2025

Summary

The Kylmäojankorpi case study represents research work where water quality (dissolved oxygen, electrical conductivity, turbidity, and temperature) and stream-stage measured continuously. The existing forest wetland (c.a. 11ha), Kylmäojankorpi, is located in Vantaa city which is neighboring the capital city Helsinki. The study results show that forested wetland improves and regulates stream water quality and flow regime. The obtained knowledge can be used to estimate environmental effects from the similar type of forested wetlands in urban areas.

Photo Gallery



Location

60.33989, 25.036

Project

NWRM

National ID

Finland_01

Sector

Urban

Contact

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Overview

Country

Finland

NUTS2 Code

Helsinki-Uusimaa

Sponge measures implemented in the case study

Urban forest parks

Ponds and scrapes

Wetland restoration and management

Involved partners

Authority type	Authority name	Authority role	Comments
Other	Vantaa City	Implementation	In charge of spatial planning in the area
Forest owners	Vantaa and Helsinki Parish Church Council	Other	—
Regional / sub-national water authority	Water Protection Association of the River Vantaa and Helsinki Region	Monitoring	—
Regional / sub-national water authority	—	Other	Regulatory framework for wetland protection

Authority type	Authority name	Authority role	Comments
—	University of Helsinki	—	Conducted the study to assess effectiveness of wetland for NWRM and pollutant attenuation

Documents

cs-fi-01-final_version.pdf (810.32 KB)

Site Information

Climate Zone

Cool temperate moist

Precipitation

650.00 mm

Temperature (°C)

4.90 °C

Runoff coefficient

0.20

Slope range

nearly level (0-1%)

Vegetation class

Site surrounded by discontinuous urban fabric (112) and industrial or commercial units (121); actual site is 100% covered by vegetation (tree canopy and ground vegetation)

Design and Implementation

Project area

11,3000001907349

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

37.30 ha

Size

37.30

Size unit

ha

Constraints

This is a protected area to maintain a semi-natural forest and wetland in an urbanizing landscape. The main factors influencing site selection are thus pre-existing flow paths and historical land use.

Financing

Total cost information

this is not relevant

Costs investment information

this is not relevant

Costs operation maintenance information

this is not relevant

Policy and Governance

Policy description

The study monitored a forest wetland, Kylmäojankorpi, in Vantaa city. Because of the large amount of land sealing surrounding the wetland, there are potential problems with flashy runoff and water quality.

Policy targets

Peak-flow reduction

Runoff control

Pollutants Removal

Part of a wider plan

No

Public consultation

No

Has contractual arrangements

No

Contractual arrangements

Comments
Site protected in 2000 (given conservation area status). The study of the water quality and flow regime was conducted within the MSc programme of the HELSINKI University

Impacts and Monitoring

Impact Assessment Methodology

Performance impact assessment method

Catchment outlet

Performance impact estimation information

The case study represents a research project where water quality (dissolved oxygen, electrical conductivity, turbidity, and temperature) and stream-stage measured continuously. Intermittent water samples for chemical and biochemical analysis were also taken during base flow and rainfall events for more detailed study of wetland impacts on water quality and export loads of solutes.

Socio-economic Impacts

Direct benefits information

The economic benefits from maintaining forest wetland in urban areas have not been estimated.

Biophysical impacts: Hydrology

Runoff reduction

38.00

Runoff reduction unit

% Percent

Information on runoff reduction

Stream discharge (Jun †“Aug 2010) decreased, i.e. reduced runoff and risk of flooding downstream, which is housing areas

Peak flow reduction

47.00

Peak flow reduction unit

% Percent

Information on peak flow reduction

Mean peak flows (6 rainfall events, Jul-Aug 2010) reduced

Ecosystem water supply

0

Information on ecosystem flood control volume

Risk of flooding downstream reduced

Biophysical impacts: Biodiversity

Improved biodiversity

Yes

Information on improved biodiversity

The protected area and wetland complex will provide more natural habitat and may contribute to meeting Habitats Directive requirements.

Biophysical impacts: Water & Soil Quality

Water quality overall improvements

Positive impact-WQ improvement

Water quality improvements - Phosphorus (P)

54.00

Water quality improvements - Phosphorus (P) - Unit

ppm

Water quality improvements - Nitrogen (N)

1.70

Water quality improvements - Nitrogen (N) - Unit

mg/L

Water quality improvements - Total Suspended Solid (TSS)

5.00

Water quality improvements - Total Suspended Solid (TSS) - Unit

mg/L

Water quality improvements - Copper (Cu)

2.30

Water quality improvements - Copper (Cu) - Unit

ppm

Water quality improvements - Zinc (Zn)

10.30

Water quality improvements - Zinc (Zn) - Unit

ppm

Water quality improvements - Escherichia Coli (E.coli)

296.00

Water quality improvements - Escherichia Coli (E.coli) - Unit

cfu

Soil quality overall improvements

Neutral impact-no change in SQ status

Biophysical impacts: Others

Ecosystem impact climate regulation

No information available

Lessons Learned

Key lessons

The Kylmäojankorpi case study represents a research work which aimed to assess whether and how existing forested wetland improves and regulates stream water quality and flow.

Barriers

Comments
Not relevant

Drivers

Comments
Not relevant

Success factors

Comments
Not relevant

Sources

Sources

The regulation of stream water quality and flow by a forested wetland, Kylmäojankorpi, Vantaa.