Assessing the impact of pollution management

PhD research

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Tributary of the Beaulieu River, Penny Moor 2023 © Gemma Stride

Overview: research partnership

Southern Water
Clean Rivers and Seas Task Force

Freshwater Habitats Trust

Bournemouth University

Harper Adams University

Wild New Forest

Lymington River and floodplain, February 2025

Collaboration between academia, industry and eNGOs working together towards a common goal

Overview: study areas

Catchment 1	Catchment 2	Catchment 3	Catchment 4
TBC Avon Water	River Blackwater	Lymington River	Beaulieu River
No WTW	Redlynch WTW	Brockenhurst WTW	Lyndhurst WTW
No storm overflow	Storm overflow	Storm overflow	Storm overflow
Control	Storm overflow upgrades	No storm overflow upgrades	No storm overflow upgrades

Overview: monitoring plan

Macrophytes:

- Plants have shown to be good indicators of habitat quality
- A rapid way to collect lots of data
- Frequency: once/year for 3 yrs

Macroinvertebrates:

- Inverts provide an additional layer of data
- Time intensive
- Select indicator species sensitive to pollution.
- Frequency: x2 samples per year over 3 years

Water quality:

- In-situ monitoring sondes
- Frequency: continuous monitoring
- Lab standard spot sampling
- Frequency: pre and post storm events

Decomposition rates:

- Cotton strips left in situ to test the rate of decomposition
- Tensile strength tested and used as a proxy for decomposition
- Frequency: specified time frame each season

Physical characteristics:

- Distance from storm overflow
- Area
- Depth
- Grazing
- Shade (type)
- Frequency of inundation

Assessing the overall health of the riverine ecosystems including the biological and the environmental responses to different stressors on the water environment

Summary

Oceans cover 70% of the earth's surface, freshwaters cover only 0.01% (Dudgeon et al., 2006).

However, freshwater ecosystems host nearly 9.5% of all known species on earth (Balian et al., 2008).

Yet they are suffering a loss of species greater than any other ecosystem globally (Collen et al., 2009).

Tributary of the Beaulieu River, Ferny Crofts 2023

Critical need to understand the impact of water pollution at a multi habitat scale.

Research gaps in the impact of pollution and pollution management on floodplain ponds at a catchment scale.

The New Forest is part of one of the most important Freshwater Landscapes in England and Wales, bursting with rare species

Generating credible evidence is key in driving investment to maintain the high biodiversity and Natural Capital value of this and other protected landscapes.

This study hopes to achieve a suite of management recommendations including a toolkit of actions to be implementable at an industry and community scale.

Generating credible evidence is key in driving investment to maintain the high biodiversity and Natural Capital value of protected landscapes

Thank you


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Floodplain and headwater stream of the Beaulieu River, January 2025