

Phosphorus Export and Peatland Restoration

Anna McWilliam^{1*}, Paul Gaffney¹, Nadeem Shah², Mark A. Taggart¹.

¹ Environmental Research Institute, University of the Highlands and Islands, Castle Street, Thurso, KW14 7JD.

² Forest Research, Northern Research Station, Roslin, Midlothian, EH25 9SY.

*Contact: anna.mcwilliam@uhi.ac.uk

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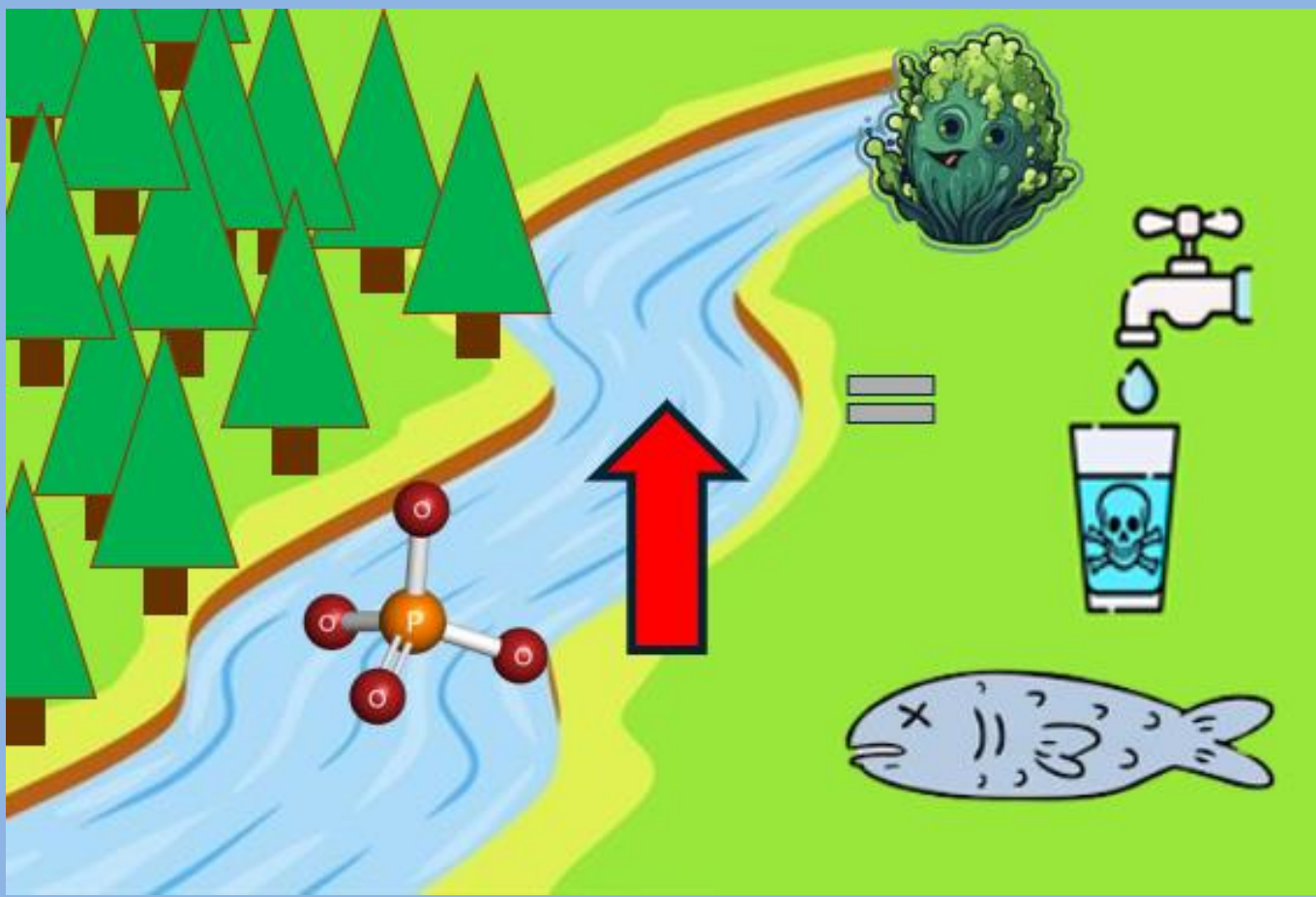
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Introduction

Phosphorous (PO_4) is just one indicator of water quality. It can be released in high amounts into rivers following disturbance, e.g., following drainage works, forestry, or from a degraded peatland. I am comparing various innovative and standard forestry felling and peatland restoration techniques to see their impact on PO_4 levels in surrounding rivers. I am also looking at a range of other water quality indicators following:

- Multiple drifts of trees felled into one and then ground smoothing.
- Mulching trees.
- Conventional tree harvesting.

Disturbance can release PO_4 into rivers and result in damage to the aquatic environment and poor-quality drinking water.



Methods

I take water samples from rivers and filter them. In the lab, I analyse the samples for PO_4 – as well as a range of other water quality parameters.

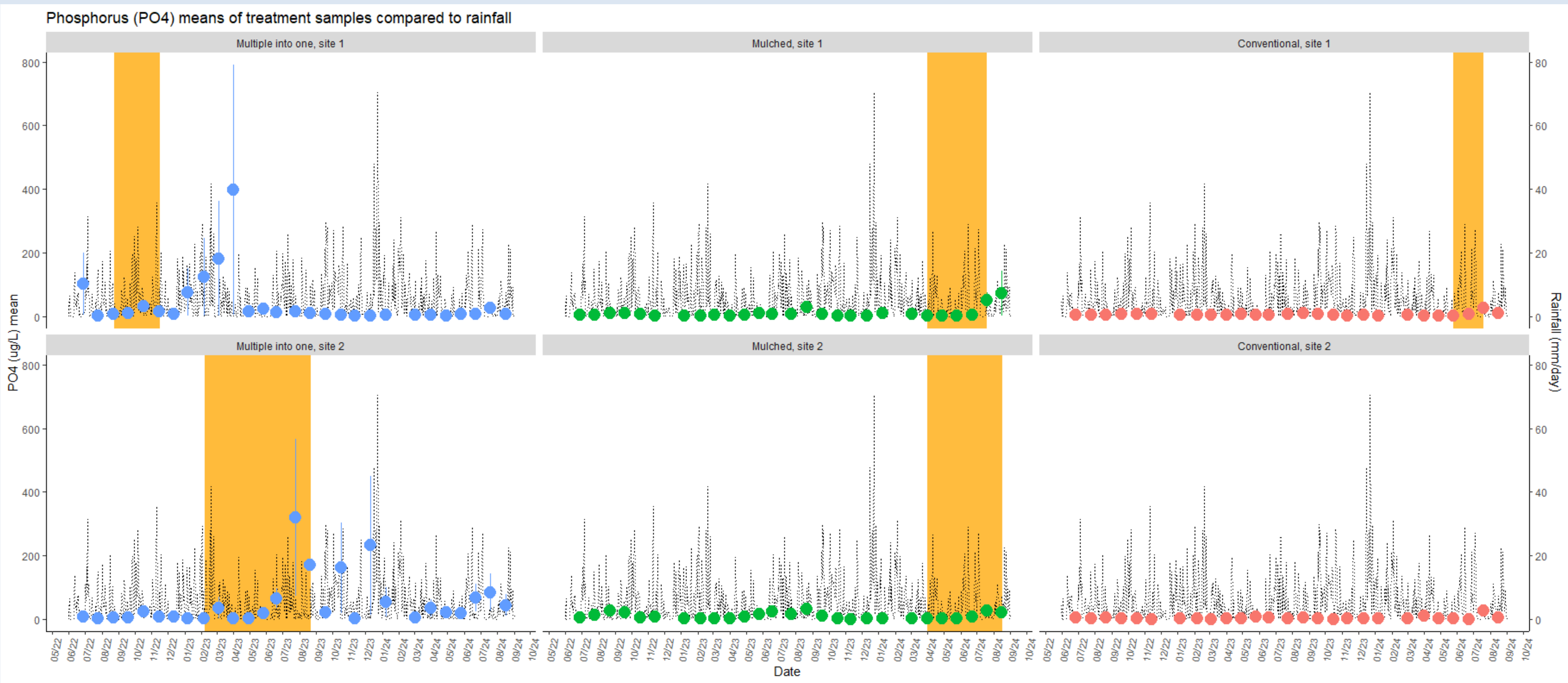


(a) Grab sample taken from river; (b) water sample about to be filtered; (c) AQ2 discrete analyser.

Results

This graph shows the seasonality in PO_4 content at my study sites. After restoration works at the 'multiple drifts into one' and 'mulched' sites, PO_4 temporarily increased in line with rainfall.

After this, on the 'multiple drifts into one' sites there was no spike in PO_4 , suggesting the technique was effective in reducing diffuse pollution.



Dates when felling and restoration works were ongoing. Restoration on the multiple drift sites has been completed.

Restoration Techniques



Multiple into one: felling multiple drifts of trees into one. Making brash (branches, foliage) easier to remove and keep away from sensitive areas.



Ground smoothing: flipping stumps upside down and closing drains. The peat and vegetation are smoothed out. The water table rises.



Mulching: mulching whole trees and leaving a scattered layer of woodchips across the felled area.



Conventional harvesting: standard method of felling. More brash left on site which degrades and can have negative effects on watercourses.

Other research

Brash based biochar that removes pollutants, such as PO_4 .



Anna McWilliam MSc
PhD Researcher
Hydro Nation Scholars Programme
anna.mcwilliam@uhi.ac.uk



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