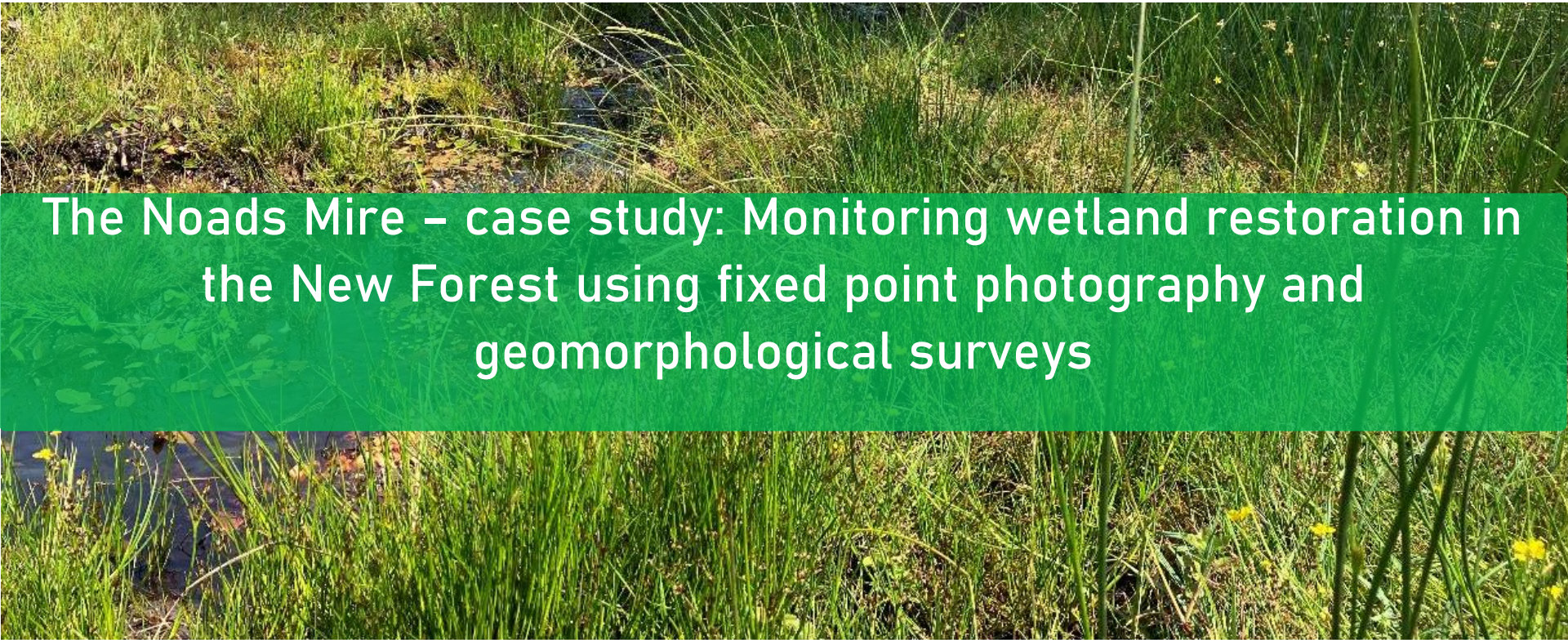


The Noads Mire – case study: Monitoring wetland restoration in the New Forest using fixed point photography and geomorphological surveys

Overview:

Since 2010, the Higher Level Stewardship (HLS) scheme has been funding wetland restoration projects across the New Forest. To monitor the progress of these efforts, geomorphological surveys and fixed-point photography have been employed. One example project is The Noads Mire, where artificial drainage had been causing excessive erosion.

The surveys demonstrated that the restoration work was successful in creating a watercourse with a more diffuse flow, reducing areas of active erosion and enabling water to spread out laterally. The hydrological and ecological benefits of this are numerous. Some, such as the formation of peat from newly established Sphagnum moss, will only become evident in the long term. However, other benefits, like the increased growth of vegetation within the channels, are already visible.

Background:

Restoration work initially took place between 2017 and 2020. This involved infilling the artificial drain line running through the mire and raising the bed level, so that it grades into a shallow stream through the wooded area. This was done using heather bales and hoggin (locally dug gravels), and covering this using material from the spoil banks, which were levelled out to restore floodplain connectivity. Further restoration work took place downstream of the ford crossing, in which the watercourse was relocated back to its original route (where a remnant meanders were visible).

Thinness of the soil and scarcity of natural vegetation, coupled with heavy rainfall events shortly after restoration, meant initial recovery post restoration was slower than hoped, and areas of active erosion were clearly visible. Therefore, in 2022, repair work was done to fix areas where heather bales had decomposed and slumped, and small sections were eroding. This involved removing heather bale stakes and infilling scoured pools with hoggin and gravels.

Today, the area has visibly benefitted from the restoration work, as demonstrated by the fixed point photography and geomorphological data, collected before and after restoration.

The Noads

Module 1

	US	DS	LB to RB	RB to LB
2018				
2024				

The Noads

Module 2

Forestry England

	US	DS	LB to RB	RB to LB
2018				
2024				

The Noads

Module 3

Forestry England

	US	DS	LB to RB	RB to LB
2018				
2024				

The Noads

Module 4

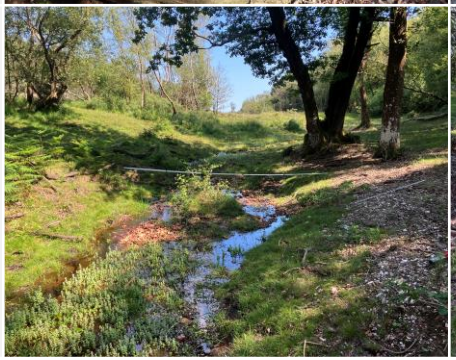
Forestry England

	DS	DS 2	LB to RB	RB to LB
2018				
2024				

The Noads

Module 5

Forestry England

	US	DS	LB to RB	RB to LB
2018				
2024				

The Noads

Module 6

Forestry England

	US	DS	LB to RB	RB to LB
2018				
2024				

The Noads

Forestry England

Module 7

	US	DS	LB to RB	RB to LB
2018				
2024				

The Noads

Module 8

Forestry England

	US	DS	LB to RB	RB to LB
2018				
2024				

The Noads

Module 9

Forestry England

	US	DS	LB to RB	RB to LB
2018				
2024				

The Noads

Module 10

Forestry England

	US	DS	LB to RB	RB to LB
2018				
2024				

Table 1: Channel dimensions

Survey number	Date	Channel width (cm)	Left Bank Height (cm)	Right Bank Height (cm)	Water width (cm)	Water depth (cm)
1	08/2017	0.50	0.67	0.81	0.4	0.05
	06/2024	1.50	0.1	0.1	0.8	0.06
2	08/2017	0.90	0.44	0.54	0.8	0.07
	06/2024	1.08	0.25	0.38	0.08	0.08
3	08/2017	0.30	0.75	0.76	0.3	0.06
	06/2024	2.10	0.18	0.29	0.8	0.09
4	08/2017	1.00	1.39	1.23	0.45	0.02
	06/2024	2.95	0.36	0.29	2.4	0.09
5	08/2017	1.50	1.3	1.13	1	0.02
	06/2024	3.00	1.3	1.13	2.74	0.04
6	08/2017	1.20	1.43	1.43	0.8	0.03
	06/2024	3.07	1.43	1.43	1.4	0.04
7	08/2017	1.60	0.86	0.72	0.7	0.02
	06/2024	1.2	0.86	0.72	1.2	0.08
8	08/2017	0.7	0.06	0.05	0.5	0.03
	06/2024	>5 (multiple channels)	0.05	0.05	>5 (multiple channels)	0.04
9	08/2017	2.1	0.38	0.43	0.2	0.09
	06/2024	2.5	0.10	0.10	1.4	0.05
10	08/2017	1.2	1.10	1.10	0.6	0.16
	06/2024	2.7	0.10	0.10	1.15	0.08

Table 2: Geomorphology survey results. Presence of flow types, bank profiles, sediment types.

	Flow types present	Dominant flow type	Bank profiles present	Dominant bank profile type	Sediment types present	Dominant sediment type
08/2017	No perceptible flow, smooth, rippled, chute, free flow	Smooth	Composite, Gentle (<45°), Vertical, vertical with undercut	Gentle	Earth, clay, silt sand, gravel-pebble	Peat and gravel-pebble
06/2024	No perceptible flow, smooth, rippled	Smooth	Composite, Gentle (<45°), Steep (>45°)	Gentle	Peat, silt, sand, gravel-pebble, cobble,	Peat and gravel-pebble

Table 3: Geomorphology survey results. In channel vegetation.

Channel vegetation abundance was recorded according to the DAFOR scale. D – Dominant (> covers 75% channel), A – abundant (50-75%), F – frequent (25-50%), O – occasional (5-25%), R (< 5%). NP – not present

Survey number	Date	In-channel vegetation abundance
1	08/2017	R
	06/2024	D
2	08/2017	R
	06/2024	F
3	08/2017	NP
	06/2024	D
4	08/2017	NP
	06/2024	A
5	08/2017	NP
	06/2024	F
6	08/2017	R
	06/2024	A
7	08/2017	NP
	06/2024	A
8	08/2017	D
	06/2024	D
9	08/2017	D
	06/2024	D
10	08/2017	D
	06/2024	D

Key and glossary:

Name	Description
Bedrock	Bare bedrock exposed at surface
Boulder	Mineral particles, diameter > 256 mm (head sized)
Cobble	Mineral particles, diameter 64-256 mm (fist sized)
Gravel-pebble	Mineral particles, diameter 2-64 mm
Sand	Mineral particles, diameter 0.0625-2 mm
Silt	Mineral particles, diameter 0.00195-0.0625 mm
Clay	Mineral particles, diameter < 0.00195 mm
Organic	Dead plant material that is intact or only lightly decomposed
Peat	Plant material that is largely decomposed and has accumulated in a water-saturated environment in the absence of oxygen
Earth	Mixture of mineral and organic particle sizes (mainly sand and finer with occasional gravel)

Flow Types

- Free fall
- Chute
- Broken standing waves
- Unbroken standing waves
- Upwelling
- Rippled
- Smooth
- No perceptible flow
- Dry