



New Forest Freshwater and Wetland Restoration

Monitoring and Evidence plan

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Context

Some of the world's rarest habitats and species are found in the wetlands and freshwaters of the New Forest



Historic modifications & recent restoration

- Loss of physical and biological diversity
- >20 years of restoration work to restore natural functionality
- Guided by previous plans (inc. New Forest Wetland Management Plan 2006-2016)
- Lessons learnt along the way – techniques & shared understanding



2019: New Forest Freshwater and Wetlands Restoration Strategy

- Wide range of stakeholders (2017-18)
- Strategic approach to improving the condition of modified river reaches and wetlands within the New Forest SSSI and wider
- Catchment approach, evidenced based, co-designed, adaptive
- New Forest Freshwater and Wetlands Restoration Forum established





Forum



Evidence & monitoring



Comms and engagement

Additional expertise & info

New Forest Freshwater and Wetlands restoration framework

Vision



The New Forest Wetland Restoration strategy seeks to ensure that **these habitats achieve their fullest expression in terms of their extent and the overall diversity and abundance of species** they support



This will be achieved by working in **closer partnership with stakeholders who will have a shared understanding of the need for and benefits** of restoration.



The strategy will promote the integrity of natural systems and will seek to allow **natural processes to shape functioning wetland and freshwater ecosystems.**



The main aim of New Forest freshwater and wetland restorations:

- Remove modifications
- Restore natural processes
- Allow the characteristic abiotic features and habitats to support the full range of natural species assemblages

Outcome 1: The extent and quality of the wetland habitats and species for which the New Forest is the last remaining stronghold in England is maintained and where possible increased

Mire habitats restored

Deterioration of mires and water courses prevented

Natural functioning of streams restored

Cover of submerged and emergent aquatic plants expanded

Transitional habitats are restored

River/floodplain interaction is reactivated

Some cover of native broad-leaved trees along streams and emerging water features where appropriate





*Outcome 2:
Recognise the role
of New Forest
streams in Natural
Flood Management*

Increased water
storage

Slowed
water flow



*Objective 3: Ensure
that the New Forest
landscape is
resilient*

Maintain/
increase water
quality

Help mitigate
climate change

Maximise
carbon storage

Evidence and monitoring requirements



EVIDENCE to inform:

- Where/whether restoration is needed
 - How it should be carried out
 - What success will look like



MONITORING to assess:

- Whether the desired outcomes of restoration have been achieved

Restoration of **functionality** to freshwaters and wetlands as seen in changes to both the **abiotic features** and the **habitats** that assemblages of characteristic **species** depend upon.

Early monitoring should therefore focus on the environmental conditions (geomorphology, hydrology) and habitat changes.

A. Evidence

1

Information gathering

- Obtain evidence for the need for restoration and to help identify suitable restoration sites.

2

3

1. Information gathering

1. Habitat descriptions

- Create descriptions of quintessential New Forest streams and wetland habitats to inform restoration outcomes

2. Reference sites

3. Criteria for site selection

New Forest habitat descriptions



Temporary headwater streams (including seasonal streams)



- Valley mires (valley bogs, poor fens, marl flushes, seepage mires, soakways & bog pools)



High quality floodplain features (pools, runnels)



2nd or 3rd⁸ order streams and their floodplains



Bog woodland riverine Alder woodland

1. Information gathering

1. Habitat descriptions

- Create descriptions of New Forest streams and wetland habitats to target restoration

2. Reference sites

- Use expert judgement to identify and describe high quality sites (case studies) and “measures of success”

3. Criteria for site selection

- Use expert judgement to identify & describe sites with modified features (case studies); develop criteria for site inclusion within wetland restoration programme

A. Evidence

1

Information gathering

- Obtain evidence for the need for restoration and to help identify suitable restoration sites.

2

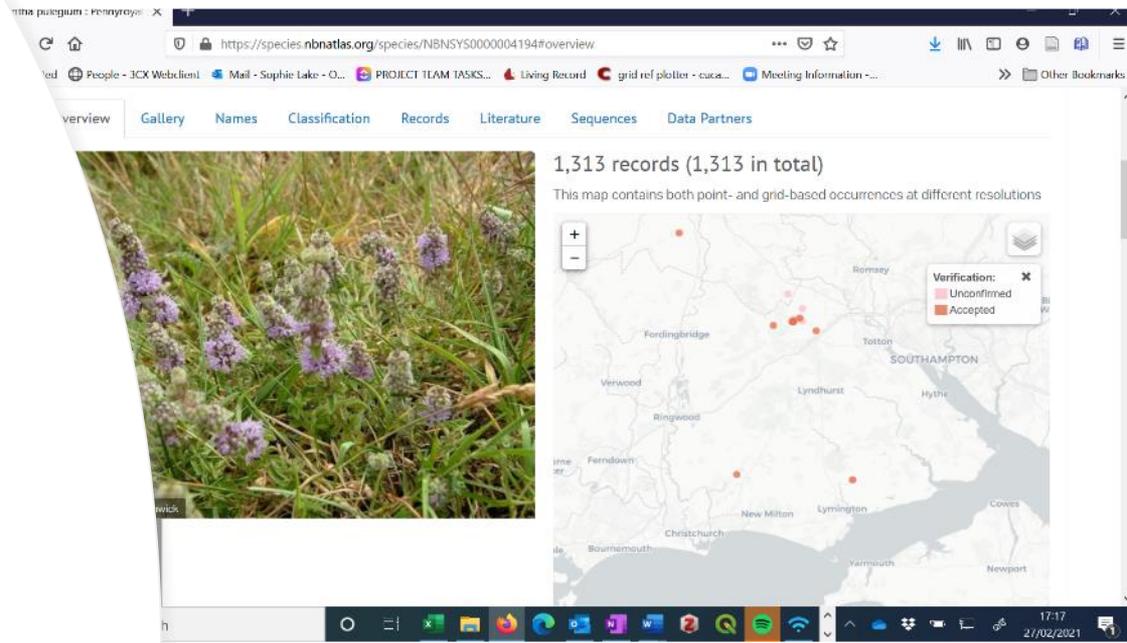
Pre-restoration surveys

- Assess potential impact of restoration activities on existing features of interest (biological, geological, historical/ archaeological) - both immediate impacts and longer-term consequences of the restoration.

3

2. Impact surveys: Pre-surveys

Desk study and field survey to identify key features that could potentially be impacted in short/long term





2. Impact surveys: Impact assessment

Ensure that restoration work does not result in unacceptable damage to key features.



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Establishment of restoration info hub

- Create a "Restoration Hub" to provide information on best practice, innovative techniques, snags encountered and solutions in one place.



3. Restoration hub

B. Monitoring

New Forest wetlands are unique

- High quality
- Issues are largely around physical features rather than water quality
- Include special habitats such as transitional zone between channel and banks, temporary head streams and ephemeral pools



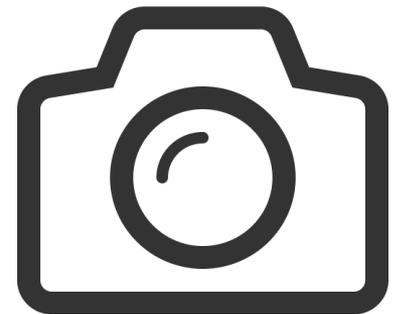
Monitoring

Some key principles:

- Measure **success against desired outcomes** (Evidence phase - case studies, measures of success)
- Consider overall diversity of wetland landscape (not no. of species within channel)
- Information needs to be able to provide a **narrative of change**
- Full monitoring not needed at every site – tiered system
- Focus on stretch of watercourse/patch of habitat not points across site
- Provide evidence of positive trophic cascade (improved conditions for plants, inverts and their predators)
- Will inform adaptive restoration – i.e. whether further work is needed as restoration sites

What will monitoring look like?

- Fixed-point photography
- Physical (geomorphological) surveys for defined streams
- Meso-scale habitat mapping (inc. in-channel veg, transitional zone)
- Vegetation surveys across wetland system, included “wetted” vegetation and channel



A range of other elements

- Multiple species eDNA – e.g. riverflies
- Citizen science for higher taxa (engagement, info exchange)
- Temperature loggers in streams (shading)
- Satellite imagery (changes in extent of vegetation)
- Water levels (dipwells)
- Erosion rates

Current work towards Restoration Framework

Habitat descriptions

- Create descriptions of quintessential New Forest habitats

Measures of success

- Identify high quality sites (input from Forum)
- Use to inform measures of success (to progress monitor against)

Criteria for inclusion

- Identify sites with potential for restoration (input from Forum)
- Use to identify criteria for inclusion

Confirm objectives and monitoring targets

- Work with Forum to confirm measures of success/monitoring targets

Collate appropriate monitoring protocols

- Advice from specialists to identify suitable approaches