Wyre Forest Flushes Project

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Why survey the flushes?

It's not all about plants. The Woodland Wildlife Toolkit (to find this, Google for 'invertebrates in flushes UK') describes a great range of invertebrates, and implies there is a hydro-geological aspect to their distribution. If you are into plants though, consider the distribution of a rare habitat type, known under the EU Habitats Directive as H7220 - Petrifying springs with tufa formation (*Cratoneurion*); JNCC (2019). This has always been thought of as rare, but in part because it has been seriously under-recorded. Yes, we have tufa in the Wyre Forest, and the eponymous moss, formerly *Cratoneuron commutatum*, is localised but not uncommon. Following scrutiny by taxonomists, its name is now changed to *Palustriella commutata*. For the vegetation, the Wyre Forest is not even represented on JNCC's distribution map of H7220 (Figure 1). What more stimulus do we need, to get out there looking for H7220, and describe the flushes in ways that help us understand the habitat preferences of the invertebrates and add to the H7220 map?

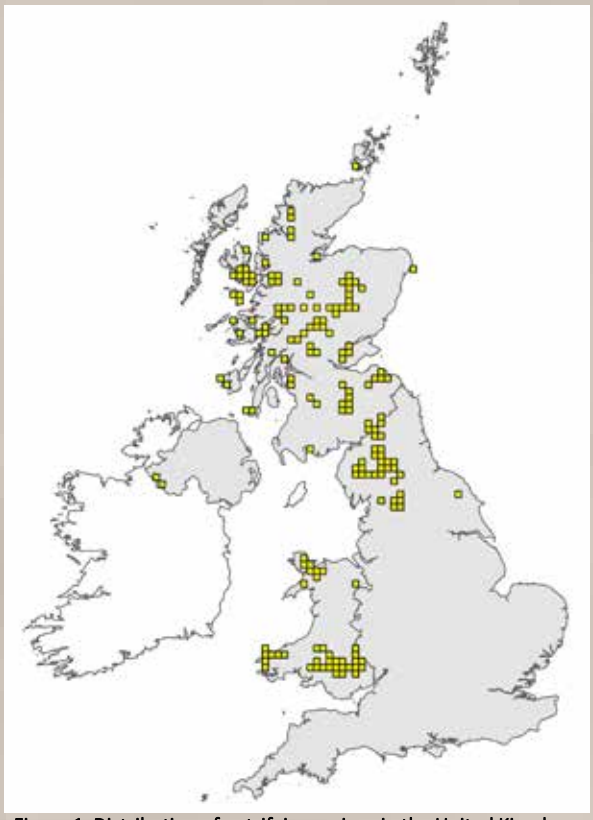

Figure 1. Distribution of petrifying springs in the United Kingdom. JNCC 2019

Reconnaissance

Work has already been done on a handful of flushes by the Wyre Forest Study Group (WFSG) (Blyth & Winnall, 2018; Hill, 2010; Limbrey, 2010). In addition, John Bingham, as the English Nature officer previously responsible for the Wyre Forest, noted the approximate positions of many over the years. Consequently, it was already known that flushes were spread widely throughout the Wyre Forest, but that a more systematic search was required to find out precisely where they were, and what they are like.

The project took shape in February 2023, after a field trip to work out how to approach the task. There emerged a great variety of size, shape and complexity, and many could be sub-divided into different vegetation types. The task was hampered by the inevitable tree cover, so not only was it difficult to acquire an accurate grid reference from a hand-held GPS, but the ground could not be picked out on the aerial photographs. All the recording had to be based on what could be seen on the field visit, without any assistance from aerial patterns.

Focusing on the need to map an outline and those of sub-division within each flush, the idea of using a 'drone' was explored, thinking that a flight beneath the tree canopy might be high enough to record a detailed picture of the ground. This faltered, in that the cheap drone purchased for the task proved inadequate, as it was relatively uncontrollable and had no GPS to overlay a grid on the pictures. More sophisticated drone owners were contacted, but none of these led to trials, so the idea was mothballed. So, how to get on with the task of finding the flush locations in well over 1000 hectares of the Wyre Forest?

Project outline

The project has four phases:

1. Record the position of all flushes over the whole of the Wyre Forest, photograph them and record summary details of the vegetation, such as the dominant and indicative plant species.

2. Looking at the records from (1), to break the dataset down into a number of sub-groups based on their key vegetation and physical attributes.

3. Choose a sub-set of sites to adequately cover the variation described in (2) and record quadrats to help decide which National Vegetation Classification (NVC) categories are present. At each site, the sum of the carefully-

placed quadrats will pick up the variation within the whole.

4. Write an account of the Wyre Forest Flushes, drawing on vegetation, individual plant species, topographic and geological features.

The flush classification will provide a habitat template for the recording of other groups such as molluscs – a task that has already commenced.

What is included as a flush?

Strictly speaking, a flush should be a definable wet area sustained by a discharge of groundwater. In practice it is very difficult to be sure where any water seen at the surface may have come from, though clues suggesting seepage include ochraceous iron deposits, or encrustations of tufa. More usually, such places are found by searching out plants such as rushes or certain sedges, but these are also found in surface water runnels, stream sides, and in more or less permanent pools.

Whether fed by groundwater or not, some of these are of interest in their own right, sometimes hosting a range of plant species including Sphagnum mosses and sedges. Occasionally open sites are found, such as along the water pipeline route, which are particularly rich in orchids. The 'primary screen' is designed to be inclusive of all these small wetlands. Provided they are recorded, they can be divided into groups based partly on hydrology at the first sift, and a decision made about the need to look at them further.

Stage 2: Detailed survey of a chosen sub-set

Detailed *modus operandi* is likely to evolve once this phase starts in earnest, but the aim is to characterise the initial groupings using the types of vegetation found, pH and conductivity of the water, topography, soil, geology, and any other factor that is likely to help describe them. As a prototype, some work has already been done on what is known as 'The Great Bog', or Flush 39 in this survey. It is particularly useful to explore as it has a recorded history (Westwood *et al.* (eds.), 2015) and has a wide range of habitats (Figure 2).

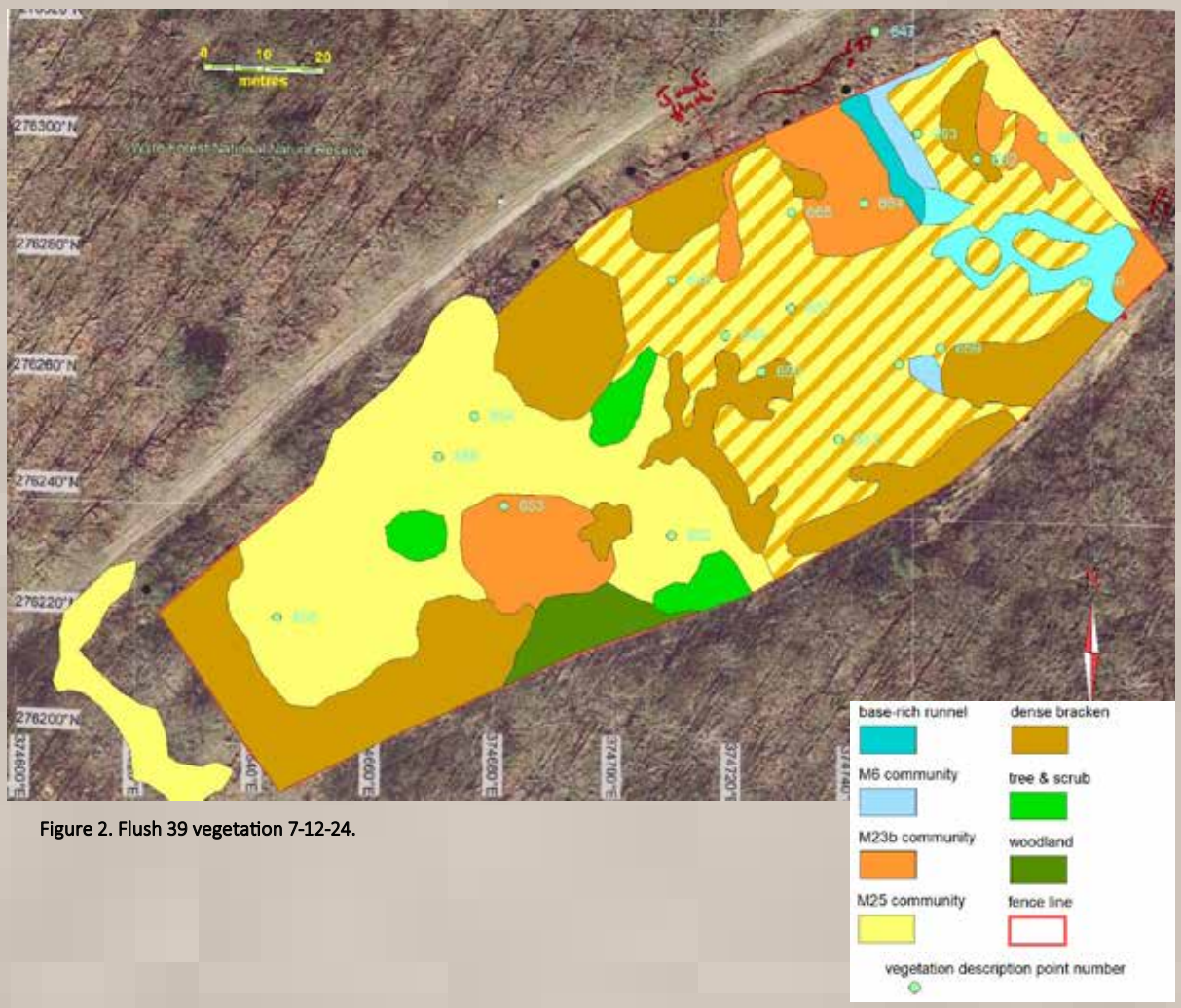

Figure 2. Flush 39 vegetation 7-12-24.

Flush 39 is beyond the tree canopy, so Google Earth showed patterning that followed the edges of the vegetation types, and this made it possible to extrapolate from point observations to polygons. This will not be available for most flushes, so sub-site mapping will have to depend on inaccurate GPS readings, or the development of drone applications.

Project progress

Although the flush positions provided by previous Steering Group work and by John Bingham are a useful guide, there is no substitute for systematic walking of the whole of the Wyre Forest to seek them out. Tree cover limits visibility, and aerial photography of the tree canopy cannot show what lies beneath. It means that progress is slow, dependent on varying degrees of visibility. This is good under an open woodland, but scrub or tall vegetation such as bracken is very limiting, as are convex slopes along stream valleys, where the wetter bottom cannot be seen from above.

Rate of cover has been accelerated by a Natural Networks grant. It provides 70% of the cost, the remaining 30% being provided by Natural England. It is enough for 21 days of fieldwork by an experienced field surveyor. The land covered before the project commenced is shown in Figure 3, and includes much of the National Nature Reserve (NNR), mostly owned by Forestry England.

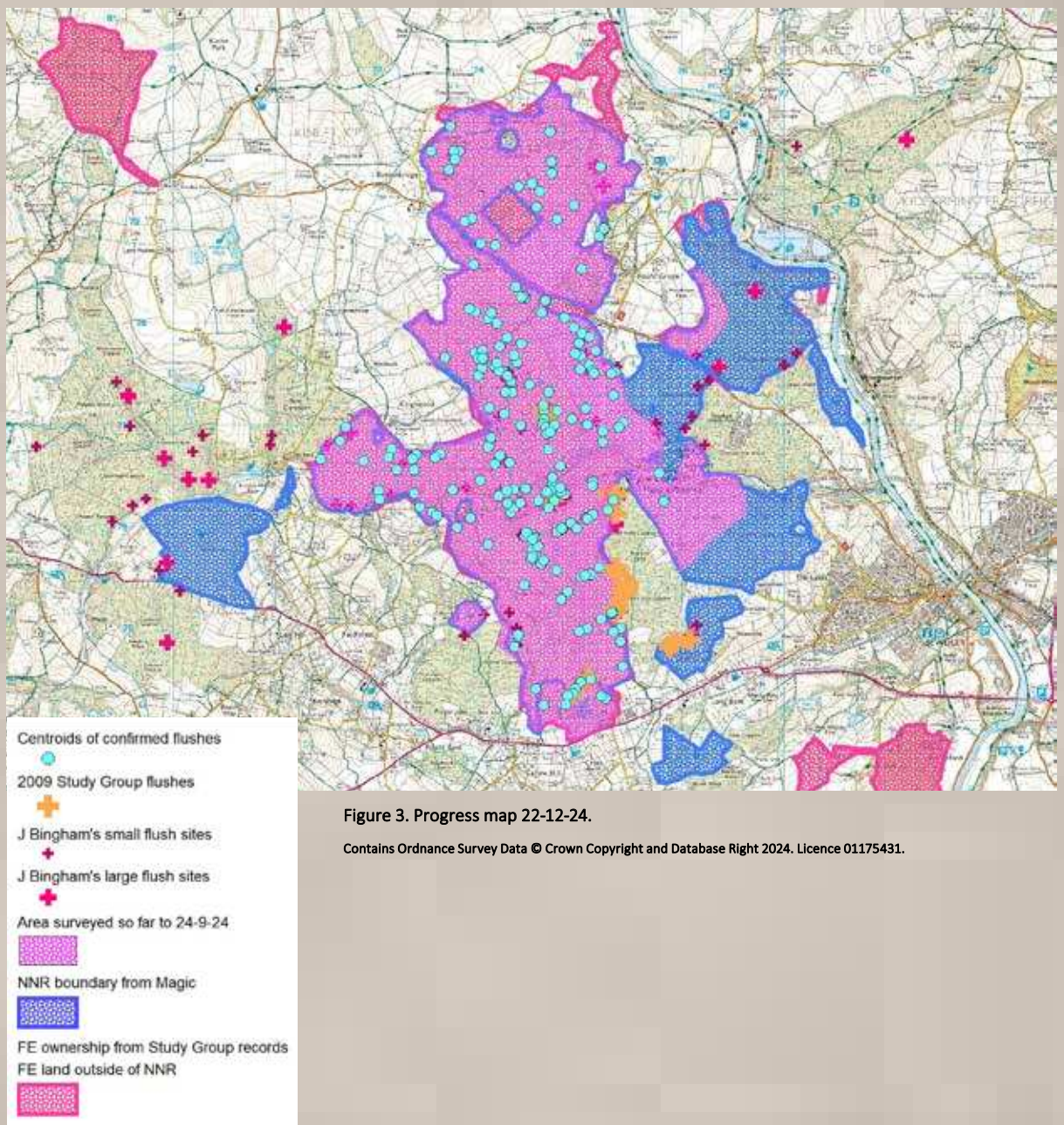

Figure 3. Progress map 22-12-24.

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The search for H7220

Calcareous flushes producing tufa deposits are a small part of the full range of types found in the Wyre Forest, but are arguably amongst the more interesting. Figure 4 shows the base-rich flushes at Flush 39, which includes the moss *Palustriella commutata*.

Though there are light-coloured deposits in the seepages at Flush 39 that may well be calcareous, rock-like tufa has only been found as part of the survey at a streamside location (Figure 5).

The future

While there is still a lot of ground to cover, there may be sufficient information by summer 2025 to do a cursory categorisation of the results so far. It means that re-visiting a representative sub-set of sites could be possible, to sub-divide into habitats, map them if feasible, and record quadrats to help place each within an NVC category. It will include a more detailed description of soil, topography and geology, if evident, and the pH and conductivity of the water.

Given the size of the task there is scope for as many individuals as possible to participate, so the whole can be reduced to a manageable timescale. We will also need to be opportunist, as with the Natural Networks grant, to speed up the process. By the time the REVIEW is printed, many more hectares will have been covered and additional flushes found.

References

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Figure 4. Flush 39 photo 22-12-24. Roger Meade

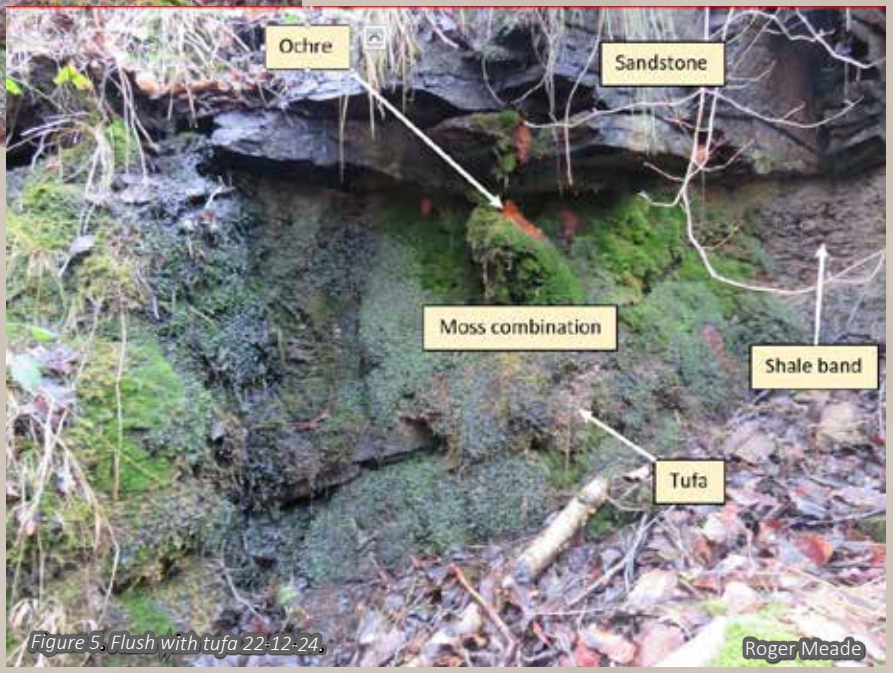

Figure 5. Flush with tufa 22-12-24. Roger Meade