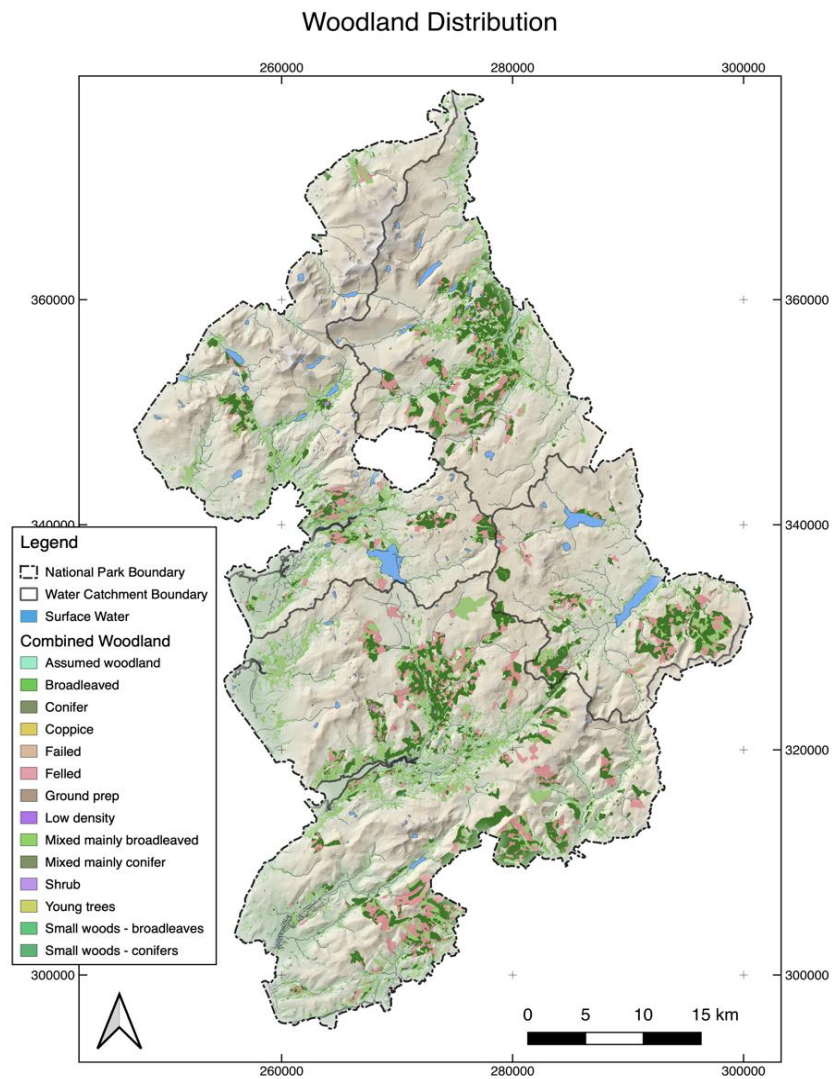


Provision of data collection for a Eryri National Park Tree Strategy

Report to The Woodland Trust and Eryri National Park Authority

Terra Sulis Research CIC

Executive Summary



Terra Sulis Research CIC
2023



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Acronyms

Acronym	Description
ALC	Agricultural Land Classification
ATI	Woodland Trust's Ancient Tree Inventory
CEH	Centre for Ecology and Hydrology
Copernicus	EU/ESA Earth Observation Programme
DLT	Copernicus Dominant Leaf Type
DN	Digital Number - used in some tables to track data source
ENP / ENPA	Eryri National Park Authority
EU	European Union
FTY	Copernicus Forest Type
FUW	Farmers Union Wales
INNS	Invasive Non-Native Species
LiDAR	Light Detection And Ranging
MMU	Minimum Mapping Unit
NFU	National Farmers Union Cymru
NFI	National Forest Inventory
NP	National Park
NRW	Natural Resources Wales
NWWT	North Wales Wildlife Trust
OS-GB	Ordnance Survey Great Britain coordinate system
OxC	Options by Context Paradigm
RSPB	Royal Society for the Protection of Birds
Sentinel-2	European Space Agency optical satellite
SFS	Sustainable Farming Scheme
UN FAO	United Nations Food and Agriculture Organization
VOM	Vegetation Object Model
WFD	Water Framework Directive
WMU	Water Management Unit
WOM21 / WOM	Welsh Government Woodland Opportunity Map 2021
WT	Woodland Trust

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Disclaimer

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Data Sources

The information sources contained in this report are generally data from the Woodland Trust, the Eryri National Park Authority, and open data from Welsh and UK Government Agencies. In general they are covered by the Open Government Licence (OGL), unless otherwise specified.

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- Eryri National Park Authority
- Wales GeoPortal <https://lle.gov.wales/home>
- Natural Resources Wales
- Ordnance Survey
- HM Land Registry

12 March 2023

Executive Summary

This report describes a data collection exercise to inform a tree strategy for the Eryri National Park (ENP). The report aims to support formulation of the strategy but is not the strategy *per se*. The woodland and tree resource of the ENP is evidenced in the National Forest Inventory for Wales and satellite-based classifications from the EU Copernicus Programme and the Centre for Ecology and Hydrology Land Cover Map. Each data set has its own strengths and weaknesses and takes a slightly different view onto the land-cover and land-use of the National Park (NP). We have taken the best attributes of each data set to compile a combined woodland and small-woods-and-trees map at 10 metre spatial resolution. The distribution of these resources is nested within a complex patchwork of other land cover types and legal designations overlain onto the hydrological water management areas.

The space available for the creation of new woodlands is unevenly distributed and has already been characterised by the Welsh Government's Woodland Opportunity Map 2021 (WOM21). Bringing the different resource, designation, catchment and opportunity maps together provides indicators to where woodland interventions may be focused and some broad scenarios are sketched out. The Sustainable Farming Scheme instead seeks to spatialise new woodland and trees across the landscape by imposing an on-farm tree canopy threshold.

Climate plays an important role in determining woodland characteristics in the NP, particularly the Celtic Rainforest. The relationship between altitude and climate is noted and the horizontal and vertical distribution of woodland and trees is described in terms of lowland, highland and montane zones. Broadleaved woods are generally found in the lowlands below 300m, whilst conifer plantations extend up to 600m above sea level. There are examples of wood-pasture above 400m and there is evidence of some trees occurring at even higher altitudes in the Carneddau ranges. The "treeline" is an ill-defined term but is worth of careful consideration as it limits the potential space available for trees. The climate is changing and this change will impact on both existing woods and trees and the potential for future woods. Rainfall is abundant but changes in its distribution throughout the year may add significant stress.

There is opportunity to expand and consolidate existing woodland and areas where woodland creation opportunity exists but are woodland resource poor, these areas may have been rather overlooked to date. Whilst there is the opportunity for woodland creation there is also scope for the integration of small-woods and trees into the extensive farmland landscape in the lowlands, both in the eastern grasslands and in the coastal areas to the west.

Large areas of the NP are designated and increasing woodland and trees may not be desirable or may need to be carefully integrated. The size and location of these designated areas are described.

The Woodland Opportunity Map, 2021 (WOM21), provides an overall opportunity score which can be used to highlight areas of high opportunity. Designated areas generally have very low WOM21 scores although there may be areas of low values where opportunity exists for trees, for example as wood-pasture.

Evidence of natural regeneration is limited and anecdotal. The rugged nature of much of the park means that there are a great many marginal niches where tree cover might be established, given the chance, with minimal impact of existing farming and land cover. Steep, inaccessible slopes may provide such niches but do not factor prominently in the Woodland Opportunity Map 2021 (WOM21). How the WOM21 may be used to best effect needs further exploration.

For 'Corporate and Commercial' landowners (as recorded by His Majesty's Land Registry), areas of both existing woodland cover and Woodland Opportunity are highly concentrated in just a few landowners. Those with the most land are not necessarily those with the most woodland and, in turn, those with high woodland cover are not necessarily those with the largest areas of Woodland Opportunity, although there is substantial overlap. After the first 10 landowners by size, marginal additional potential area for woodland regeneration falls off rapidly suggesting an Eryri woodland strategy that targets large landowners. Analysis of these data is hampered by poor data quality, which leads to some uncertainty in parcel size and ownership.

The overall picture with regards to Invasive Non-Native Species (INNS) is one of geographically patchy and time-limited data. For the data that are available, there is insufficient information on the quality, extent, timeliness and, perhaps most importantly, on the representativeness of these data to the Eryri National Park as a whole. Furthermore - the situation with respect to INNS being highly dynamic - the available data represent only a snapshot in time. Therefore, there is little basis in the data to make reliable inference to any future extent of INNS in the ENP. Attempts to measure and control INNS will likely have limited success without sufficient long-term funding. There may be significant advantages to coordinating with the numerous other organisations with an interest to gather biodiversity data in the ENP, after all, they all have a shared interest in limiting INNS. There may also be opportunities to prioritise INNS control efforts to areas earmarked for woodland regeneration.

Regarding attitudes to new woodlands and trees, farmers were more against than for increasing tree cover on their farmland, although the ratio was not so large as one might have thought (39% - No, 23% - Yes). Furthermore 38% were neither for or against increasing tree cover. This indicates that within this large landowning group there is considerable potential for exploring options that increase tree and woodland cover. Private households are in favour of increasing tree cover on their land, though the results are from a very small sample size. Of the other major landowners who responded to this report, the National Trust are the only ones with any significant tree planting ambition and are aiming to achieve this by intimately integrating trees into farming and other land-use systems, tailored to the needs of the tenants and the subtleties of the landscape. Partnering with the NT may be a good way of co-learning and innovating within the context of functional, place-based, expanded tree and woodland cover.

A wealth of data exists to map existing woodland and tree resources, to indicate opportunities for woodland creation and to develop a woodland and tree strategy for the park. There are also data gaps, in particular with reference to invasive species, small-woods and individual trees, and natural regeneration. New data sources, such as high-resolution LiDAR, are becoming available at the time of writing.

Concluding Remarks

It is a tall order to balance various production, conservation and restoration goals at a landscape scale. The needs of multiple stakeholders often diverge, even within the same sector. A change process that uses transdisciplinary, multi-stakeholder engagement to elicit and utilise local knowledge to co-design menus of tree-based options that fit various landscape scales and ecological niches may be a successful way of increasing tree cover and delivering the goals of the Dyfi to Dwyryd treescape project.

From our survey results, farmers are not against increasing tree cover to the scale that one might have thought. With some changes in language and discourse used in this debate and further information on how agroforestry can benefit farm resilience, improve productivity of current systems, and diversify farm income streams, we may see greater willingness from farmers to integrate trees and further accelerate adoption of agroforestry within ENP.

There is a tension between identifying areas for woodland opportunity (> 0.5 ha) using WOM21, on the one hand, and increasing tree canopy cover through extensive, low density trees as part of agroforestry systems on the other. In terms of a land cover legend mixed / mosaic classes need to be included in which trees are a component of land cover rather than the dominant feature.

There is increasing public awareness in the need for more trees to combat the dual climate and ecological emergencies and their associated wellbeing benefits. There is also increased awareness of temperate rainforest and the special nature of woods in the park.

Some online tools that may be useful in generating the tree strategy as well as engaging landowners at a landscape and also finer scales are:

- Polyscape: A GIS mapping framework providing efficient and spatially explicit landscape-scale valuation of multiple ecosystem services.
- Implications of Temperate Agroforestry on Sheep and Cattle Productivity, Environmental Impacts and Enterprise Economics. A Systematic Evidence Map. https://oxlel.github.io/evidencemaps/agroforestry_productivity/

Lastly, it is worth saying that when engaging landowners, the why of increasing tree cover within ENP needs to be clear, concise, persuasive and embedded in rigorous scientific evidence that is preferably from local research.