

Frenni Fawr – A ‘Forgotten’ Upland Oak Woodland Patch



Report by: Frenni Fawr Research Group

Site Case Study

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Executive Summary

Frenni Fawr Research Group (FFRG) are working to ensure Frenni Fawr's (FF) small patch of upland oak woodland achieves the protection, management, and conservation it requires so that it may persist in the future. We believe this woodland deserves categorisation on the Ancient Woodland Inventory, Wales. The ancient woodland characteristics, combined with the unusual growth forms, as well as the differing age classes, make this woodland a unique and interesting habitat for study. Growing Better Connections (GBC) are working collaboratively with FFRG to study different aspects across the woodland site. A combination of citizen science events, to encourage public engagement, as well as independent sampling from FFRG members will be utilized to support work at this site. The results of small-scale sampling will help direct future areas of research study, as well as implement site-specific management regimes, to increase and encourage biodiversity to thrive at this unique site in North East Pembrokeshire.

1 Introduction

“Palynological evidence from sites in the Preseli region of north-west Pembrokeshire has indicated that substantial woodland clearance occurred during the Late Bronze Age with concurrent increases in grasses, bracken, and other herbaceous plant taxa. However, despite this woodland clearance activity, there is also evidence that woodland regeneration occurred after abandonment of cleared areas. There is also evidence to indicate that a period of woodland regeneration occurred at the end of the Bronze Age in mid Wales, although woodland clearance intensified during the Iron Age in the Preseli region, accompanied by expansion of open ground and ruderal plant taxa” (Parker Pearson et al., 2018, Seymour, 1985). Frenni Fawr (FF), sometimes spelled phonetically in English as ‘Vrenni Vawr’, ‘Vrenny Vaur’, ‘Wrenni Vaur’, ‘Fryn-y-fawr’, and ‘Frennifaur’, has also been known as, ‘Brenin Fawr’ as well as ‘Cadair Mascen’. The literature suggests, that historically, FF was of great cultural importance and that the small patch of oak woodland on this hill has been continuously wooded for some centuries. The wood is a forgotten one – it has no name and is not on the Ancient Woodland Inventory (AW). The present case study includes a HER (Historic Environment Record) enquiry to support the antiquity of this oak woodland patch, as well as the appraisal of desktop and field survey evidence.

Background

1.1 Location

FF is located within the Preseli mountain range (Lat: 51.982472 Long: -4.607278) which forms a roughly east-west range for about 25km in northern Pembrokeshire (Swain, 2010, Rees, 2010). The Preseli’s are a prominent landscape feature in this locality of Wales and FF (395m aOD) sits within the east of the range (Swain, 2010). The hills are characterised by poorly drained high, open moorland and occasional steep slopes, but have been known to be drained for more productive sheep grazing (Swain, 2010). It is suggested the hills have remained largely open and unfarmed, except as for rough sheep grazing (Swain, 2010). The FF patch of oak appears on the 2019 Land cover map as ‘acid grassland’ (**Appendix A**). The FF patch also appears on the West Wales Biodiversity Information Centre’s (WWBIC) Planning Tool as D1.1 Dry acid heath and D5 Dry heath/acid grassland mosaic (**Appendix A.1**).

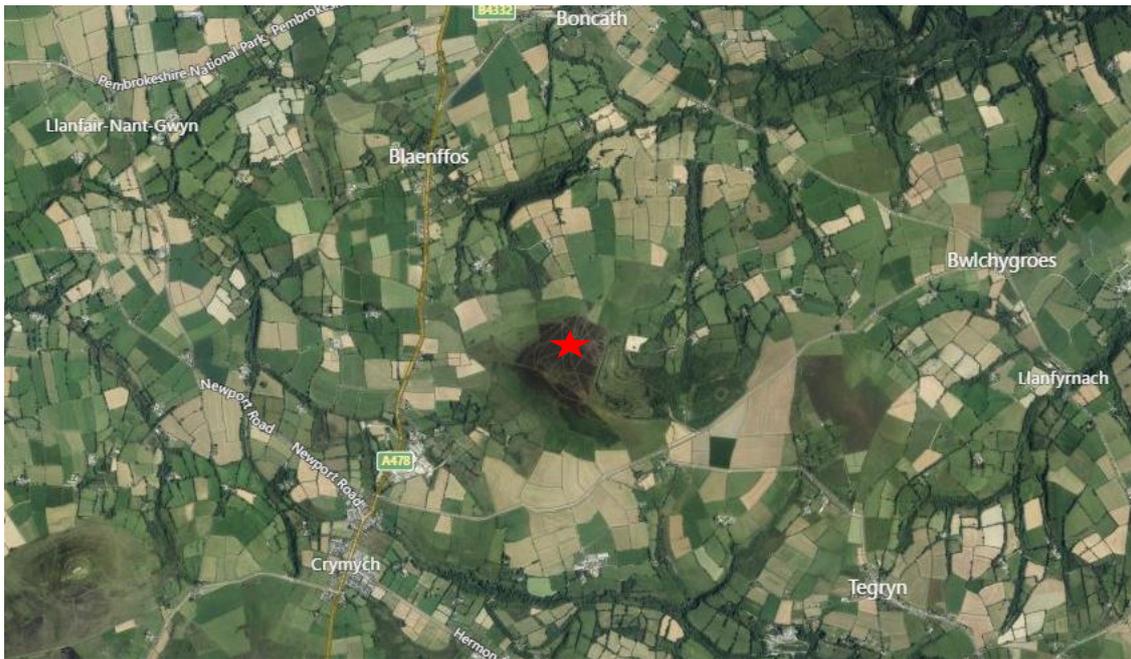


Figure 1. Aerial Imagery showing the location of Frenni Fawr between Boncath and Crymych (Bing., 2021).

Designated sites surrounding FF include, Mynydd Preseli located in the Pembrokeshire Coast National Park a designated SSSI and SAC, Pengelli Forest, Pan-Teg Wood, and Coed Ty-Canol (all respective SSSI's) (**Appendix A+G**). Ty-Canol is 8 miles west of FF, consists mainly of oak, ash and downy birch and is prized for its rare lichens (First Nature, n.d.). Small pockets of Restored Ancient Woodland Sites (RAWS) and Ancient Semi-Natural Woodland (ASNW) surround FF in the landscape (**Appendix E**).

It is extremely likely human settlement altered the vegetation here in the Bronze age. Soil deterioration results in podsolization and grass-heath communities are maintained by grazing (Seymour, 1985). Seymour (1985) states 'that even before anthropogenic pressure, the extent and nature of woodlands on maritime uplands would have been limited due to salt-laden winds.

1.2 Common Land

Part of the FF falls under common land, where ownership is unclaimed, and thus part of the site is protected by the local authority (Section 9 of the Commons Registration Act

1965/Section 45 of the Commons Act 2006). 'Rights of common' entitles commoners to graze livestock on the section of land where the small patch of oak woodland exists. Part of the site is registered as 'Open Access' land, under the Countryside and Rights of Way act CRoW (2005), open for people to walk, run, explore, climb, watch wildlife etc., without having to stay on designated RoW. The open access area in Figure 2.2, is in 'private ownership' and is recognised by the Common's officer for Pembrokeshire County Council as such. However, the land is not registered with the Land Registry and the owner is currently unknown.

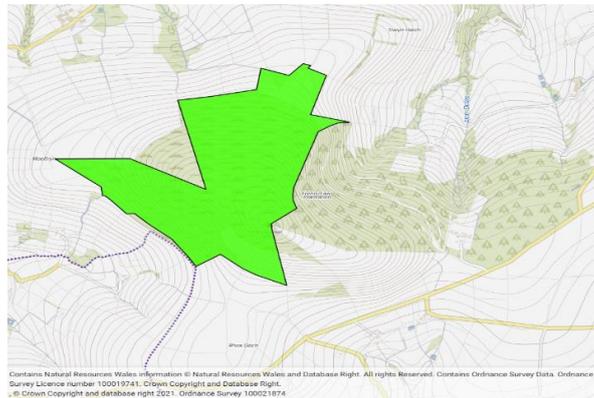


Figure 2. Frenni Fawr on the Registered Common Land Database (Section 4 CRoW) (Natural Resources Wales, 2021).

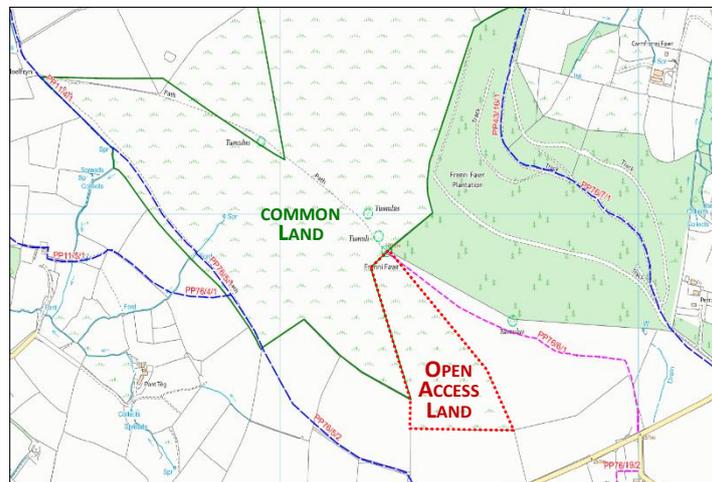
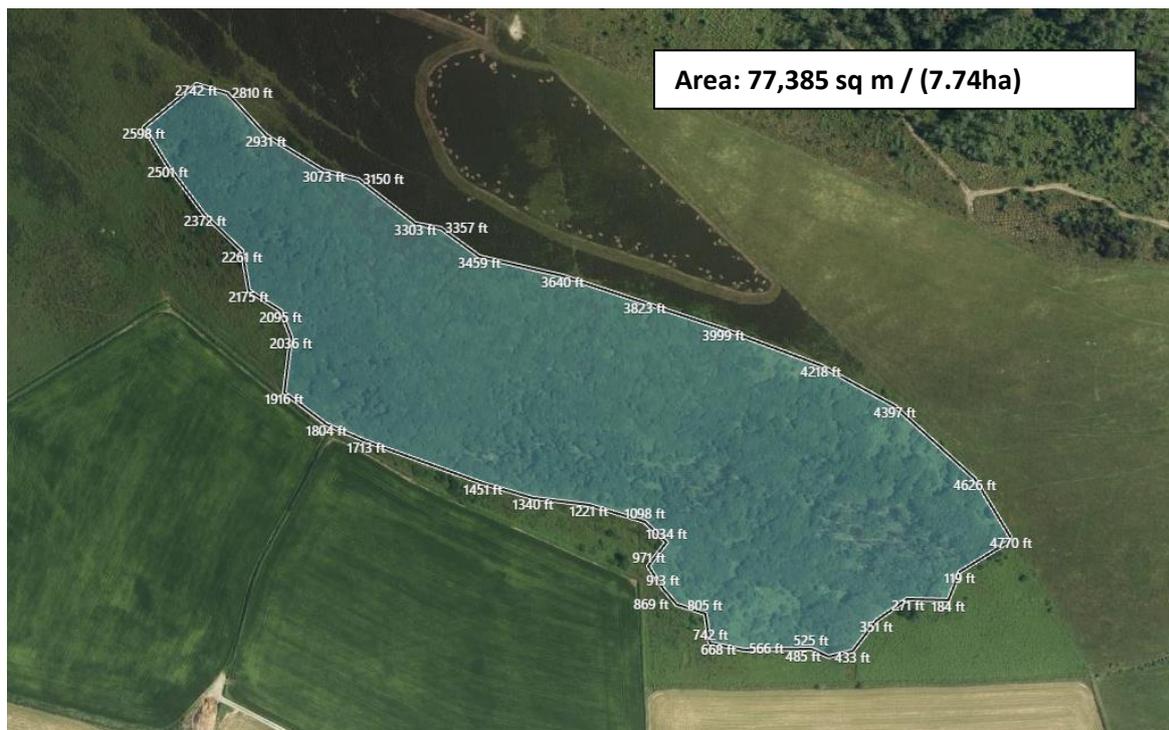


Figure 2.2. Frenni Fawr on the Pembrokeshire County Council (PCC) RoW Database (©PCC, 2021)

1.3 Area



1.4 Figure 3. Approximate area of Frenni Fawr oak woodland patch (Bing, 2021).

2 Habitat Description

The small fragment of oak woodland on the south side of FF is unique to South West Wales. Shallow podzolic soil above a clay and shale subsoil underlies (Appendix C) the wood which is comprised almost solely of oaks (*Quercus spp.*). The hill itself rises to 395m above sea level (aOD) and the extremely stunted trees reach an altitude of approximately 360-370m (aOD). Therefore, this is the highest semi natural woodland in Pembrokeshire. The long axis of the hill runs East-West, whilst the south facing flank curves a little to the North at either end making both ends somewhat sheltered. The central part of the slope receives no shelter, and the varying degree of exposure are reflected in the sizes of the trees at this site. The central slope is dominated by low (a few centimetres -2.5m high) oaks whilst at either end taller trees are present. No veteran trees are present which is likely due to natural disturbance and unfavourable local conditions. The various growth form categories have been described and defined by Jon Hudson as 'Ground Oak' (that which is heavily browsed and wind pruned), 'Low Canopy Scrub Oak' (densely packed oak 2-4m high), 'Tall Canopy Scrub Oak' (a small proportion of oak 4-8m high), and 'Exceptional Trees' (a rare few individual specimen perhaps 10m high and with 107cm girth).

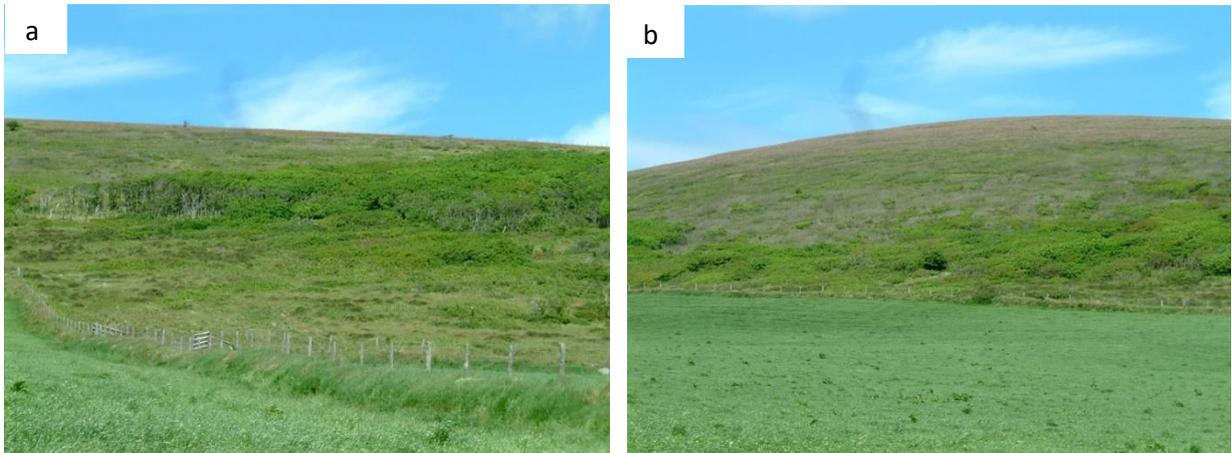


Figure 4. a-b Oak woodland on Frenni Fawr's south facing slope, June 2004 (© Huw Denman).



Figure 5. a-c Ariel view of south facing slope with oak woodland (*Google Maps*) a) July 2009 b) May 2011 c) August 2016.

2.1 Species Composition

Oaks become increasingly difficult to identify in western regions of Britain and thus they are most likely to be hybrids between *Q. robur* and *Q. petraea*. The only other trees present are a very few, scattered hawthorns (*Crataegus monogyna*), and one or two grey willows (*Salix cinerea*). The field layer is dominated by grasses (*Agrostis spp.*) with some wavy hair-grass (*Deschampsia flexuosa*), Yorkshire fog (*Holcus spp.*) and bryophytes. Bracken (*Pteridium aquilinum*), heather (*Calluna vulgaris*), bell heather (*Erica tetralix*), green ribbed sedge (*Carex binervis*), and tormentil (*Potentilla erecta*) are also frequent/abundant. A lower plant survey of lichens (bioindicators) and mosses needs to be conducted to establish if any rare species are present at this site. A WWBIC screening report detailing the Biodiversity Value suggests that the SE corner of the woodland has high biodiversity value (**Appendix A.2**).



Figure 6. ‘Tall Canopy Scrub Oak’ with ‘Ground Oak’ understory as defined by Jon Hudson. (© Hudson, n.d.).



Figure 7. SE corner in September 2020. Few standing/fallen dead wood specimens (@ David Harries/@ Huw Denman)

Currently, research of lichens on oak in Europe suggests that they are shifting from highly nitrogen sensitive compositional species (which prefer acidic bark) to communities dominated by species which benefit or tolerate higher levels of N (Van Herk, 1999; Lewis, 2011). This is particularly the case in agricultural areas (APIS, 2016), which furthers the need for a lower plant survey. A pilot survey (on 14.04.21) indicated that AWI (Ancient Woodland Indicator) species appear to be present at this site including Bilberry (*Vaccinium Myrtillus*), bluebell (*Hyacinthoides non-scripta*), pendulous sedge (*Carex pendula*) and common dog-violet (*Viola riviniana*) (**Appendix B.**). However, frequent visitations over the spring and summer periods would be required to determine the exact AWI species present and their overall abundance. If few AWI species are present, a possible explanation may be one coined by De Keersmaeker et al. (2004), who found that the soil on land previously used for farmland is often too immature/unestablished to accommodate ancient woodland indicators even when it becomes wooded (which could be in the case of this woodland patch) (Webb and Goodenough, 2018).

In terms of regeneration at the site, in both 2010 & 2012 there were a near total absence of acorns. Therefore, assessing the situation of regeneration of oak at this site is now of high priority to the FFRG and thus routine acorn sampling will be integrated. Molecular analysis is currently being conducted on specimens at the site to determine if the patch is regenerating

vegetatively, and DNA barcoding of *Armillaria spp.* (honey fungus) is being conducted to address if this is a disease factor in controlling the development of even aged strands.

3 Historical Overview

3.1 Theory & Tale

As previously mentioned FF was historically known as Cadair Maccsen ('Maccsen's Fort) as it was associated with Manus Maximus/ Maccsen (335-388AD) from 'The Mabinogion' (Literature Wales, n.d.). Folklorist, William Howells, in his book titled '*Cambrian Superstitions, Comprising Ghosts, Omens, Witchcraft, Traditions, &C'*', describes an account of the famed tale, Tylwyth Teg (The Fairies of Frennifaur) (Howells, 1831). The tale refers to the hill as a small mountain named Frennifach (Howells, 1831). Despite, the lack of descriptive language of the 'small mountain', the account does describe a small boy driving sheep to pasture on the Frennifaur (Howells, 1831). Although the fabrication of folklore does hinder inference, it is still quite possible to infer from this script, that FF has indeed been subjected to agricultural practices like grazing herbivores. Potentially, this is a plausible explanation as to why this woodland has remained 'forgotten'. It is also imagined in another tale, that one of the early Bronze Age barrows at the site may hold the mythical FF treasure guarded by a nasty ghost (Literature Wales, n.d.).

3.2 Observation & Mapping

Historic mapping has been consulted and maps include 19th and 20th century 1:2500 scale OS maps and several tithe maps. In 1580, Christopher Saxton created a unique proof map of Wales. Saxton references Frenni Fawr as it was formally known 'Wrennyvaur' (**Figure 8a.**). In 1610, John Speed an English Historian and cartographer produced a more detailed map of Wales along with individual maps of the 13 welsh counties (**Fig 8b.**) (NLW, n.d.).

‘Pembrokshyre’ is one of the 13 counties included and ‘Wrenny vair hill’ can be clearly seen on this map (Figure 8c.).



Figure 8. a) Pembroke by Cartographer, Christopher Saxton, 1578. (The British Library), **b)** ‘Pembrokshyre’ described by John Speed in 1611, **c)** Wrenny vair hill on map **b)**. (NLW, n.d.)

FF appears mapped at much of its current size on the first edition O.S. map (1889). George Owen of Henllys (1552-1613) did not mention a wood here in the 17th century in his ‘*The Description of Pembroke*’ (Figure 9.). but did note that FF “*is round and black in sight by reason it is overgrown with heath*”¹ (Owen, 1892). It is interesting to compare this to his description of the main block of Preseli Hills which he notes “*yields plenty of good grass*”² (Owen, 1892). It appears likely that grazing pressure on this hill has long been less than that of the Preseli’s and this has allowed heather and stunted trees to survive here long after they were grazed out from virtually all the other Pembroke hills. Owen was generally a close observer but, if the trees were bitten down hard by grazing livestock in the 16th century, he

¹ p.103, *The Description of Pembroke*. ‘*The laft and third mountaine of name of this fheere is that wch is placed at the Eaft end of parcelley hills called Vrenny Vawr but more aptile the Vryn vawr. Wch is Englifhe is, the great hill, this hill is round and blacke in fight, by reafon yt ys overgrown eth heath, yt hath no rocke of ftone on yt, but for the moft parte is errable land and heathie*’ (Owen, 1892).

¹ p. 103 , *The Description of Pembroke*. ‘*The commoditie of this Mounteine is greate, for yt yeeldeth plenty of good graffe*’ (Owen, 1892).

may have easily missed them. Even today the wood barely shows as such, being so wind pruned and low.

The general presumption is that woodlands on 1800s maps are ancient if there is no conflicting evidence that arose between AD 1600 at that time (Goldberg et al., 2007). Ancient status is supported by a woodlands name, its situation in the landscape, and the nature of both the surrounding pattern of enclosure and the pattern of boundaries within the wood (Goldberg et al., 2007). The hill's name certainly reflects its antiquity, and as previously mentioned its elevation would deem it the highest ancient-semi natural oak woodland in Pembrokeshire. The tree line appears to be an unnatural one, one which is controlled by grazing/ or previous burning.

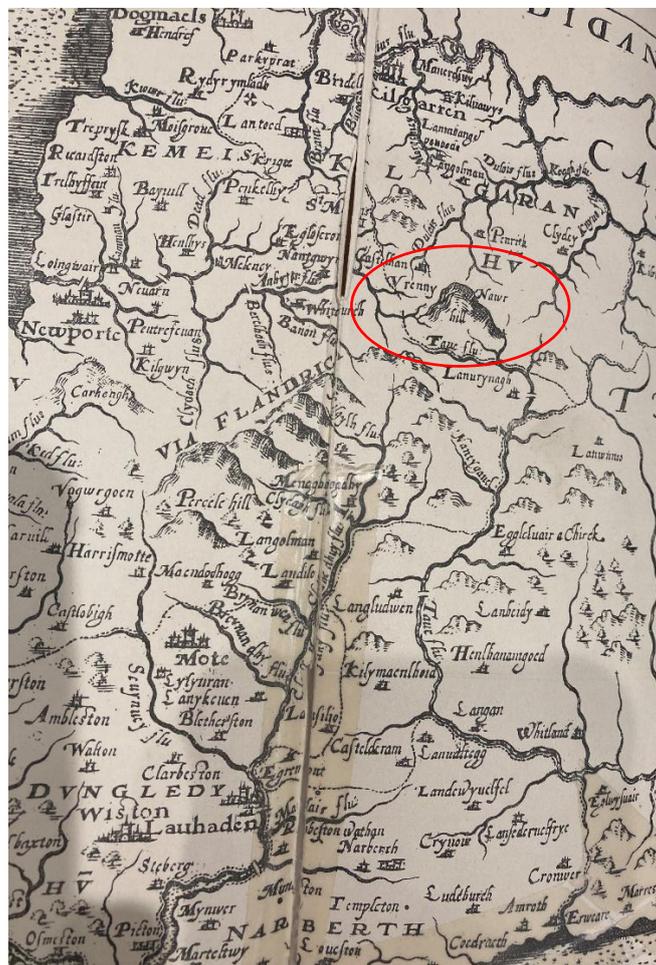


Figure 9. Photographed copy of a section of the map of Pembrokeshire ('Vrenny vawr') appended to Owen's book *'A Description of Pembrokeshire'*. First published in the sixth edition of the *Britannia* (in 1607).

'It is difficult to prove that any woodland is primary, and it is more useful to discuss ancient woods, in existence before such date as 1700AD' (Goldberg et al., 2007). Richard Fenton then mentions the FF in 1790 and in his 1811 'A historical tour through Pembrokeshire', stating that, "The whole mountain of Vrenny vawr is private property, was once covered with oak, and would, if enclosed and preserved, be soon a forest again. Notwithstanding it is open, and the vegetation from the old stools continually browsed, yet vigorous shoots appear in that aspect" (Fenton, 1811). Clearly the wood has been severely grazed for well over 200 years, yet it still survives.

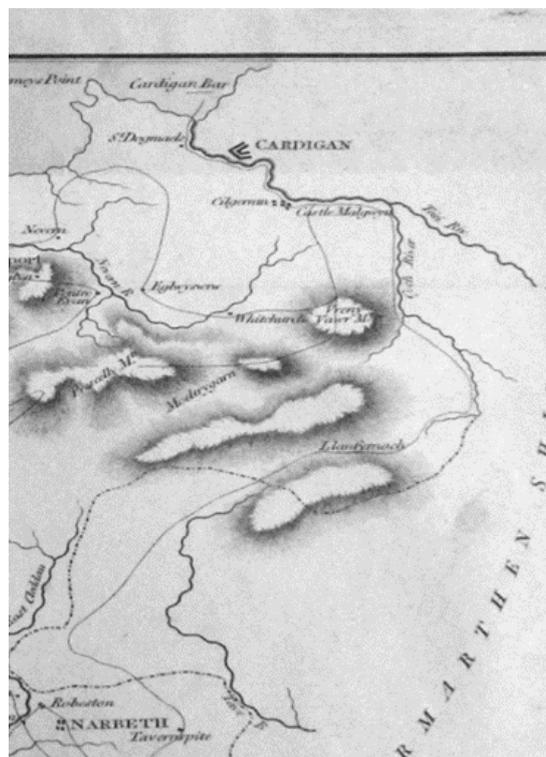
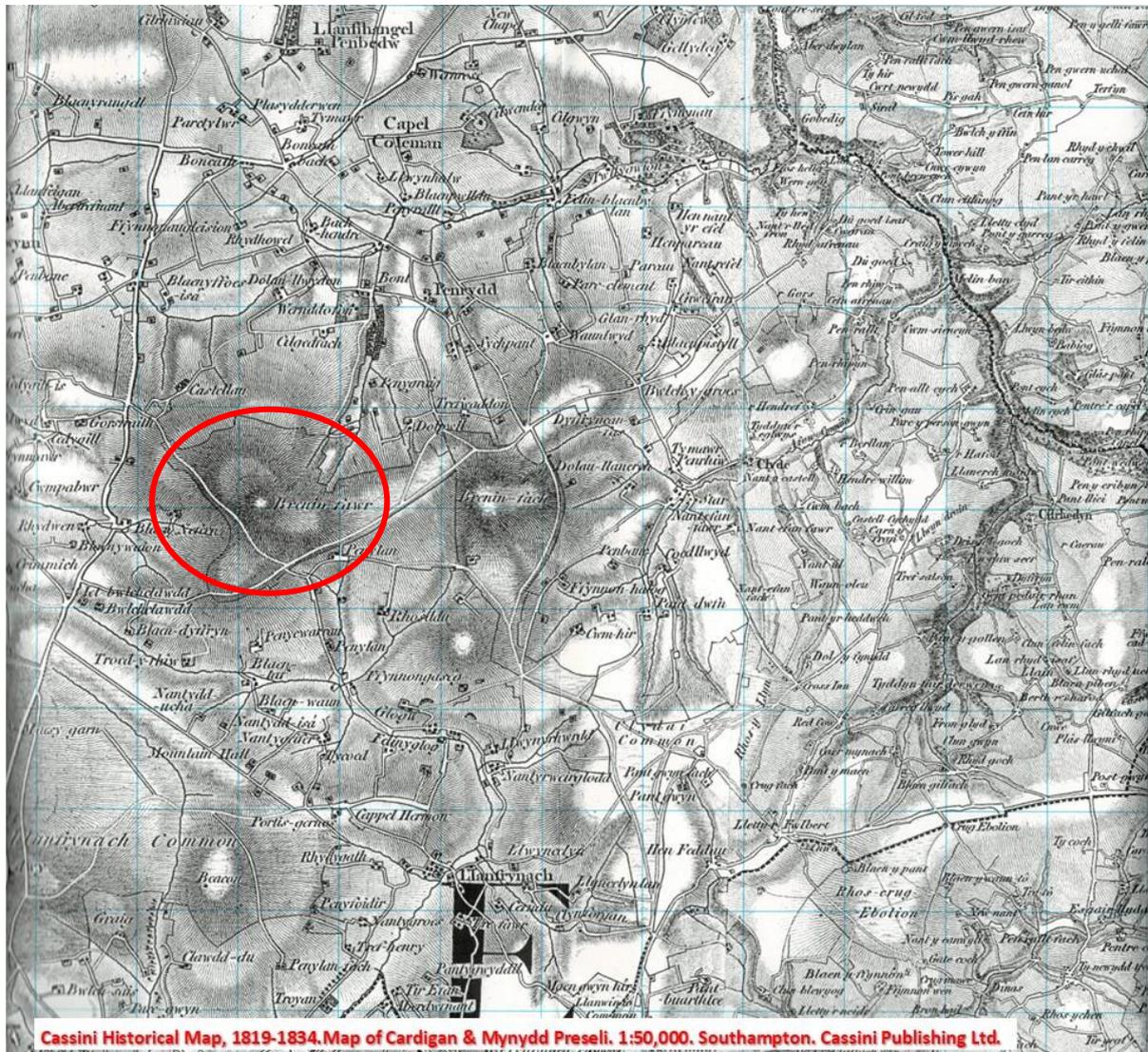


Figure 10. Map of 'Vrenny vawr' hill as illustrated by (Fenton, 1811) 'A historical tour through Pembrokeshire'.

O.S maps from 1888-1982, appear to indicate varying degrees of tree cover, but mountainous areas such as Wales are difficult to interpret on first edition OS maps due to the heavy hatching used to indicate steep slopes which obscured tree symbols (Goldberg et al., 2007). The 1888 map (**Appendix F, A**) has the area marked with 'brushwood' symbols implying scrubby woodland. The 1907 and 1953 (**Appendix F, B** and **C** respectively) maps show scattered trees, and the 1981/2 map shows scattered trees and scrub (**Appendix F, D**). The

latest OS Explore map layer integrated in Bing Maps now has the area marked with predominantly 'deciduous tree' symbols.



4 Biological Overview

4.1 Palynology

Despite that many sites show a lack of woodedness, pollen work often provides an alternative picture in history. Palynology is the use of fossilised biological remains (pollen grains and spores) to identify environmental change and human influence (Webb and Goodenough, 2018). In Wales, pollen data from pre-Neolithic levels suggests a predominantly closed wooded structure existed round 6000 cal. yr. BC (Fyfe, 2007). As previously mentioned woodland clearance intensified during the Iron Age in the Preseli region, accompanied by expansion of open ground and ruderal plant taxa (Seymour, 1985).

Pollen samples collected from a peat bog to the SW of FF indicate that during the Bronze and Iron Ages, a mixed, *Betula-Quercus* woodland with *Corylus*, *Ulmus*, *Pinus*, and *Tilia* was present. The oak woodland patch could potentially be a relic of this once larger oak woodland which covered nearby drier hillslopes in Pembrokeshire. Moreover, the pollen evidence suggests that the oak woodlands in this area may have been subjected only to limited disturbance, perhaps due to their position away from the main epicenter of upland settlement. It is also doubtful that the harsh conditions, grazing pressures, and lack of nearby seed sources would provide favorable conditions for a woodland to have re-established and survived here. However, as previously noted it is likely the trees in this maritime region have remained constrained in height and expanse due to salt-laden winds (Seymour, 1985).

4.2 Archaeology

A HER (Historic Environment Record) enquiry for the site was completed. The site is clearly of historic social-cultural importance. Three Scheduled Ancient Monuments, thought to date to the Bronze Age (c. 2300-800 BC), are designated at this site. However, the monuments comprise five separate archaeological sites. (**Fig 11a**). The barrow on the eastern slope (**Fig 11b**.) measures 60ft in diameter by 4ft high and has a hole in its centre. The small patch of oak woodland is clearly visible in the background of this image. A barrow on the western side of the hill (measures 17m in diameter and 1.3m high) had an in-urned cremation discovered inside in the 19th century. The presence of such monuments suggests FF was no exception to the human disturbance also experienced elsewhere across the Preseli area.

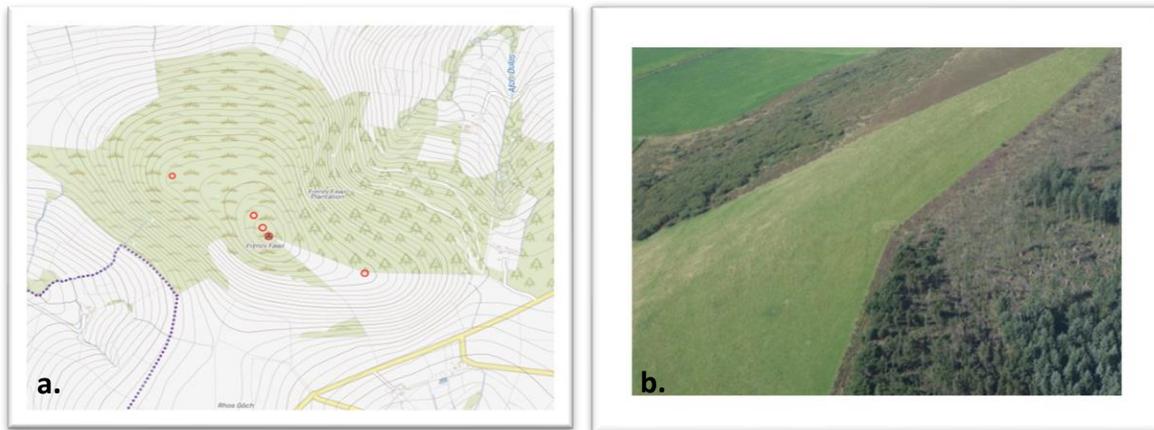
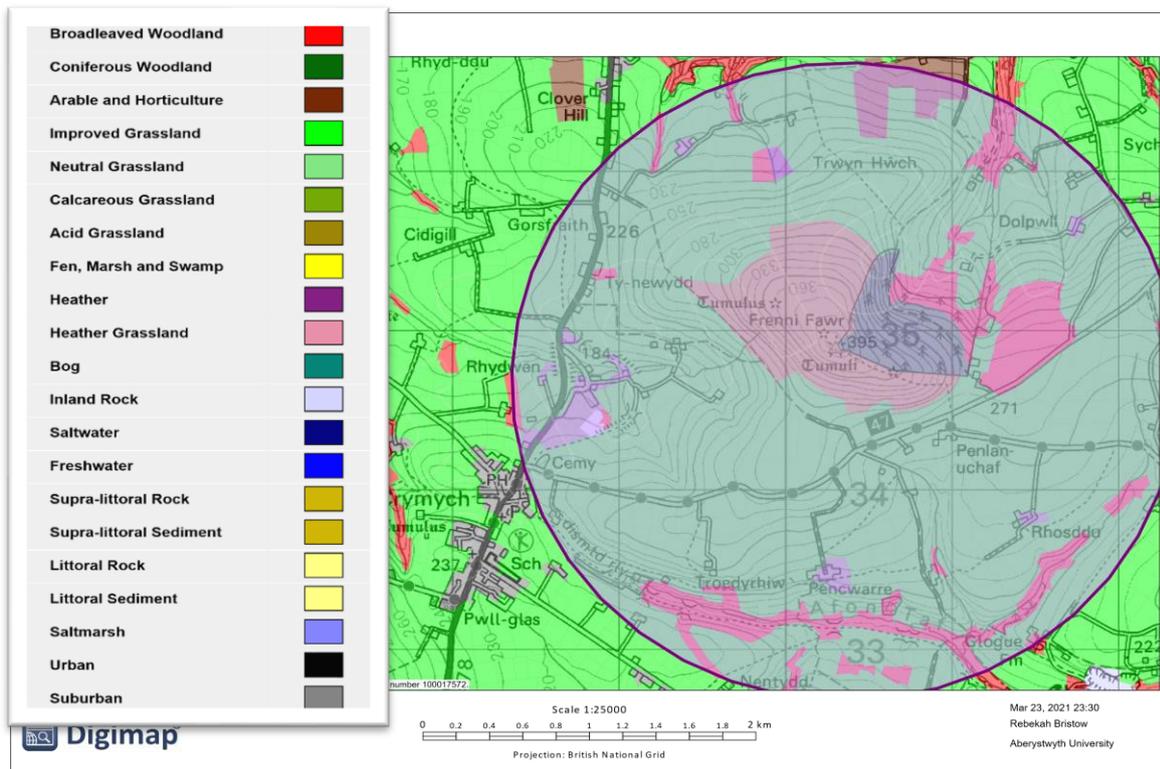


Figure 11 a-b. a) Bronze age round barrows at Frenni Fawr **b)** E slope barrow with oak woodland patch visible in adjacent background (Driver, 2007).

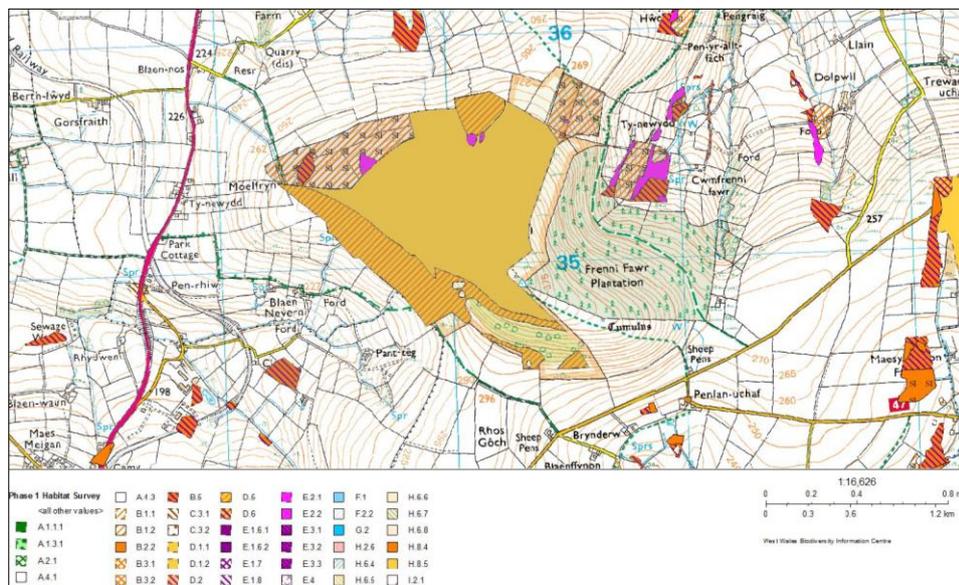
5 Conclusions

A combination of biotic and abiotic ecological factors is largely responsible for why little or no value has been attached to this wood. Intensive human disturbance which has occurred since the Bronze Age, combined with agricultural grazing pressures, and harsh abiotic environmental conditions, are largely responsible for why this patch has remained constrained and shown no visible significant expansion. During periods of high grazing pressure is it very probable that the woodland here has been reduced in both extent and cover as older trees die and new growth is bitten down. In turn, grazing pressure would lead to soil deterioration, and allow heath communities to thrive, keeping this wood virtually 'invisible' at times.

Appendix



Appendix A. Land cover map (2019) with 2km buffer surrounding Frenni Fawr. The small oak woodland patch falls within the patch categorized as ‘Acid grassland’. Frenni Fawr plantation is ‘coniferous woodland’ (Bristow, 2021).



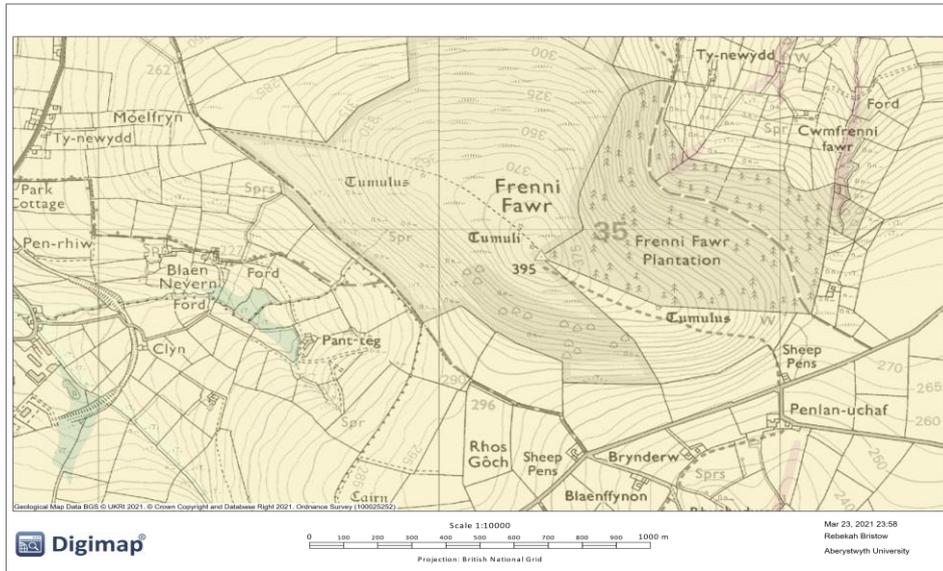
Appendix A.1 WWBIC Phase 1 Habitat Screening Report (Conducted 08.04.21) The small oak woodland patch falls within the patch categorized as D1.1 Dry acid heath and D5 Dry heath/acid grassland mosaic.



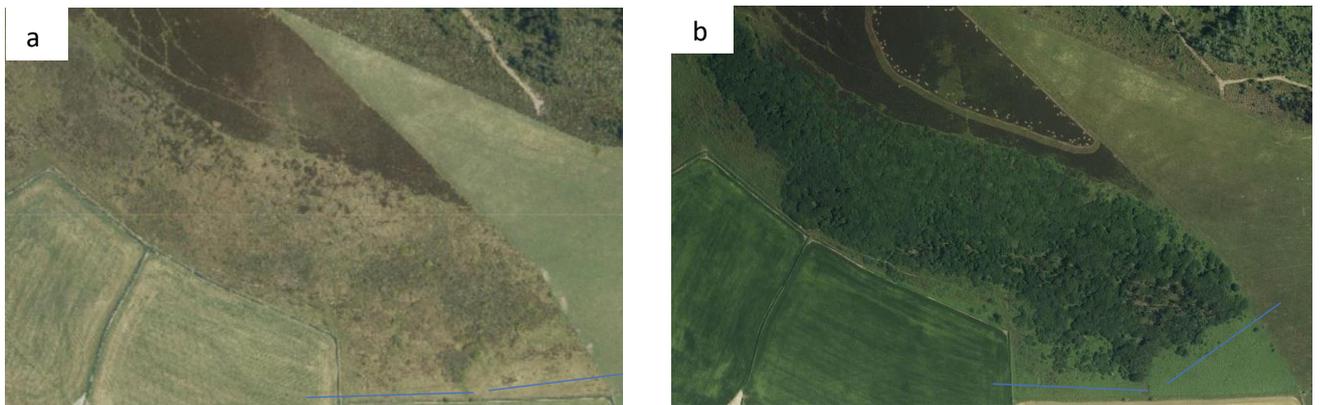
Appendix A.2. WWBIC Biodiversity value 2m resolution Screening Report (Conducted 08.04.21). The South East corner of the oak woodland patch falls within a high biodiversity value.



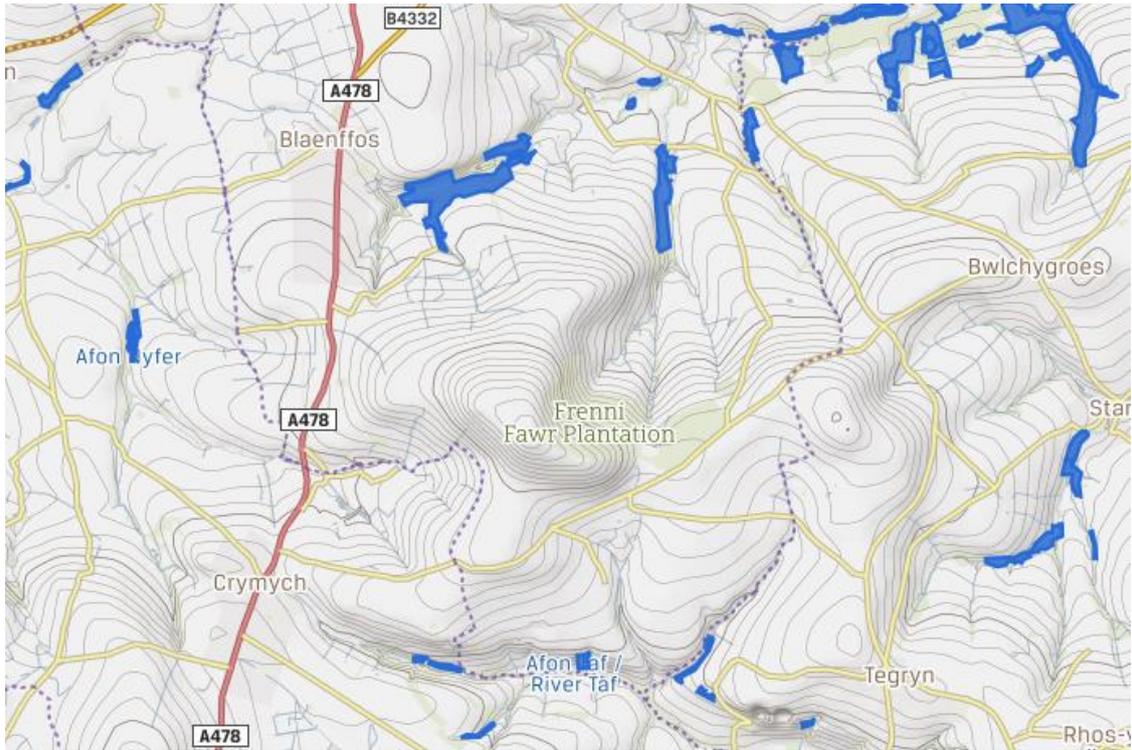
Appendix B. Ancient Woodland Indicator species observed (on 14.04.21). **a.** bilberry (*Vaccinium Myrtillus*) **b.** bluebell (*Hyacinthoides non-scripta*) **c.** Pendulous sedge (*Carex pendula*) **d.** Common Dog-Violet (*Viola riviniana*).



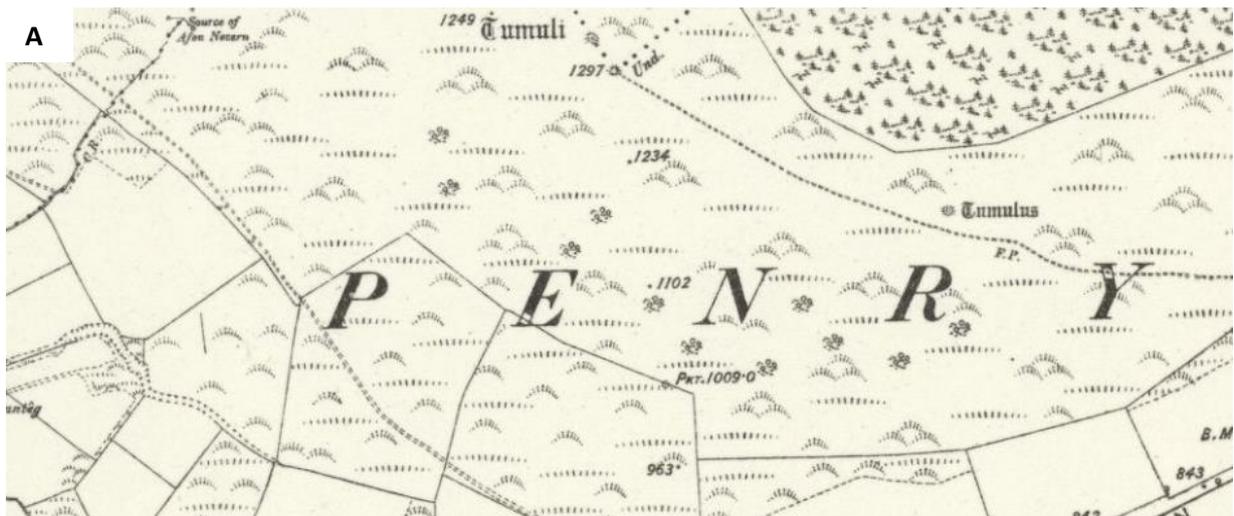
Appendix C. Soil parent material model: soil texture – classified as loam (Digimap, 2021).

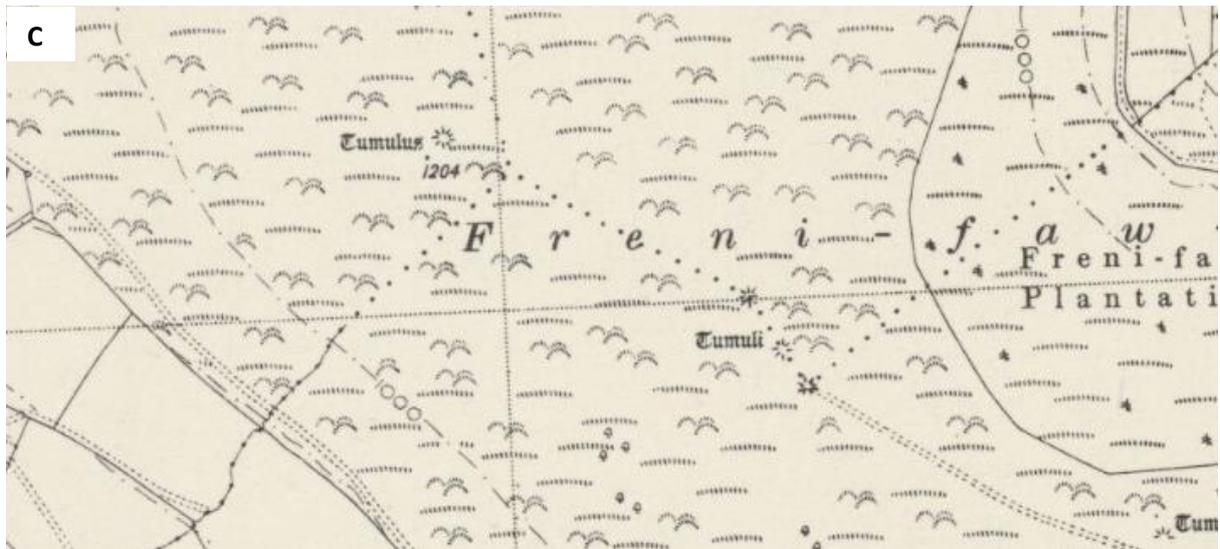
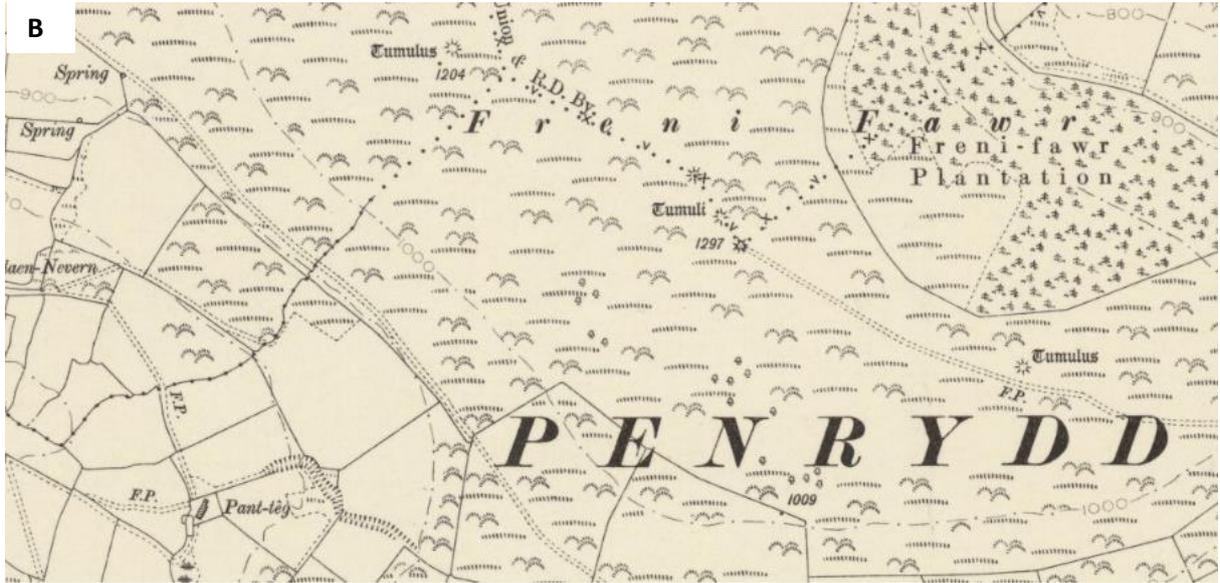


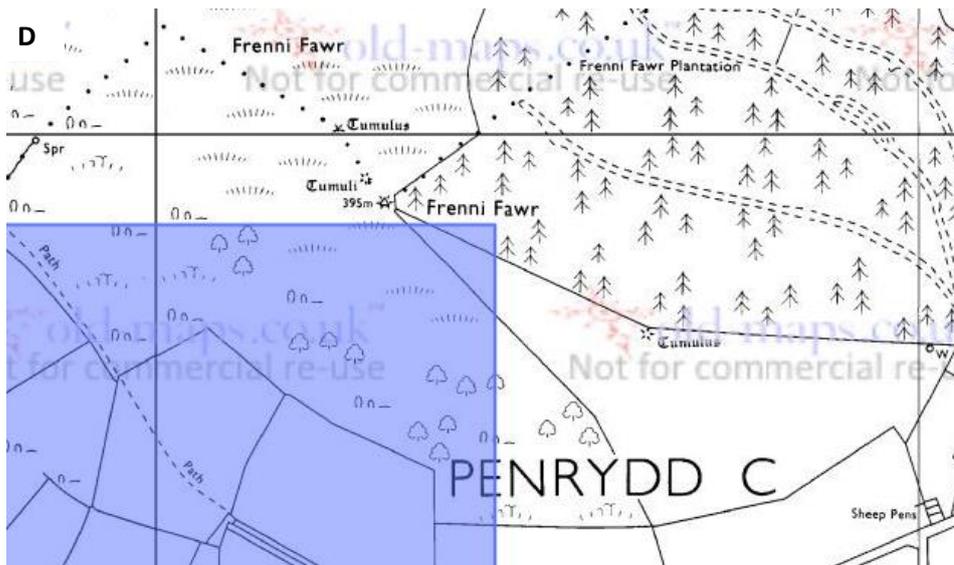
Appendix D. a) 2013 b) 2019 ariel satellite imagery of Frenni Fawr's oak woodland (Bing, 2021). Note: Despite seasonality difference at time of imagery, the extent of the woodland has remained restricted since 2013, with no obvious evidence of expansion. In the 2019 ariel image, a south east corner of outlying scrub has been lost. *Source: a) <http://lle.gov.wales/services/tiles/apu/#2013/leaflet>*



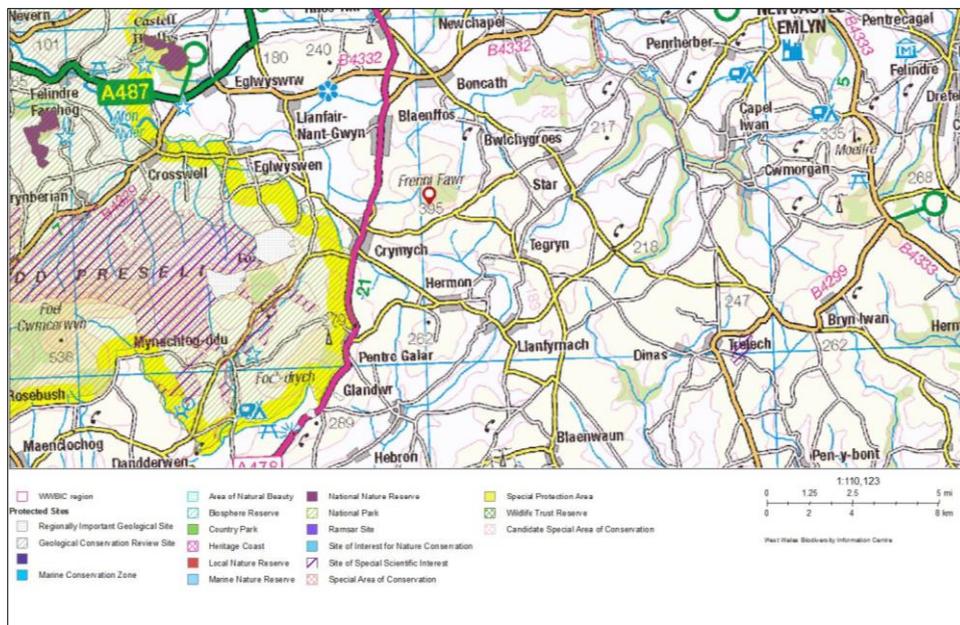
Appendix E. Ancient Woodland Inventory Wales 2021 (NRW, 2021). Frenni Fawr plantation and nearest surrounding pockets of ASNW (ancient semi natural woodland) and RAWS (Restored ancient woodland sites). 1.5-2km away.







Appendix F. A-C O.S maps from 1889-1982 (National Library of Scotland, n.d.). **A) 1889** map has the area marked with 'brushwood' symbols implying scrubby woodland. **B + C)** The **1907** and **1953** maps show scattered trees. **D)** 1981/2 map shows scattered trees and scrub. *Note:* symbols denoting rocky heathy pasture and furze/whins are reflected in all maps.



Appendix G. WWBIC Protected Sites Screening Report (Conducted 08.04.21) The red pointer demarcates the oak wood with any protected sites highlighted within a mile radius of the site.

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