

Dairy Wood, Ericstane: Historic Woodland Synthesis

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Figure 1 Extracting a tree-ring sample with an increment corer at Dairy Wood. Photo: Coralie Mills

Executive Summary

The survival of a historic wood pasture *Dairy Wood*, also known as *Braefoot Wood*, on land at Ericstane recently acquired by Borders Forest Trust, has merited several specialist investigations. This synthesis is the first opportunity to consider the combined implications of these studies which include ecological, historic map, dendrochronology and documentary research. Together these allow a deeper understanding of the character, age and formation processes which have created Dairy Wood as a biodiverse habitat and important cultural wooded landscape. They were commissioned to inform its sensitive management into the future.

The historic maps show no woodland present in the 18th century. It is not until the first edition OS map surveyed in 1856 that *Braefoot Wood* has been established in the study area in what was shown as a pre-improvement mixed farming system in the mid and later 18th century maps. Detailed farm plans in the later 18th century reveal the farm land in the study area was under two different ownerships, the fields of the two farm settlements being closely inter-locked. While the farm settlement to the south, then called Braefoot, now called Ericstane, has survived, the old farming township of *Erioc-stane* within Dairy Wood went out of use between the later 18th and mid-19th century because it is not shown at all on the first edition OS mapping.

Dendrochronology has revealed the oldest trees present to be oak and ash of the mid and late 18th century, small trees when the first detailed maps were made and probably planted into the old field boundaries of the pre-improvement mixed farming system. Further ash trees were planted into the old fields in the early 19th century with some possible evidence of oak coppicing in the 1830s. Since the mid-19th century, some of the planted trees must have been lost or removed as the woodland became less dense than when first mapped, but other tree species like alder and hawthorn have spread into the area.

A study of the complex land ownership history revealed key events and dates where major change could have occurred to transform the pre-improvement farming system into a larger single 'improved' farm unit. The two principal landowners in the mid to late 18th century were the Marquis of Annandale and the Earl of Hopetoun, each owning one of the pre-improvement farms shown at the study site on later 18th century estate plans. These two families became connected by marriage in the late 17th century. In the mid-18th century when the Marquis of Annandale was declared insane, his nephew the Earl of Hopetoun became his 'curator' and managed his affairs. However, not until the Marquis' death in 1792 was the Annandale Estate finally settled upon the Earl of Hopetoun, not at all a foregone conclusion. It appears likely that agricultural 'improvements' were made later here than was usual in southern Scotland because of that situation. A record of division of nearby common land in 1813 may signify the timing of that major land-use change and fits well with the tree-ring evidence. Thereafter, the study area was probably less intensively used, principally for stock-rearing and it appears that in the last two centuries the grazing regime has been relatively benign and has allowed the spread of native trees like alder and hawthorn into the study area, to form the biodiverse wood pasture character evident today. Thus, perhaps unexpectedly for something at first sight characterised as an 'ancient wood pasture', the trajectory of change has been from fields to woodland and not the other way around.

The historic woodland studies could only take things back as far as the ages of the oldest trees and of the more detailed maps, into the mid-18th century. Recommendations for future study include investigating vegetation and land-use history over a longer timescale though pollen analysis and archaeology, as well as undertaking further historical documentary research to augment the interpretation of both earlier and later periods. Locating the lost township of *Erioc-stane* is a priority to inform future conservation management and engagement work in the study area.

Introduction

Dairy Wood near Moffat is an open-grazed woodland of 4ha with the character of a historic wood pasture. It forms part of Borders Forest Trust's (BFT) recently acquired landholding at Ericstane North, adjacent to their pre-existing Corehead site and was previously part of the more extensive lands of Ericstane Farm, now divided into two holdings of which BFT has the northern part.

Surviving historic wood pastures are rare in Dumfries & Galloway, and those which remain exhibit diverse characters and may be the result of a range of different formation processes (Norman 2005), highlighting the importance of understanding the history of this site to inform future management.

While 60ha of the open ground at this former hill farm at Ericstane will be planted under the Forestry Grant Scheme (FGS) to expand BFT's network of restored native upland habitats in the Southern Uplands, Dairy Wood requires a different management approach. To inform this, BFT commissioned a series of related specialist studies in ecology (Averis & Averis 2024), historic map analysis (Quelch 2024) and dendrochronology (Mills 2024) to address the following questions:

- How old is Dairy Wood, and is it of natural or planted origin, or both?
- What is its land-use history, and how is this related to its current ecological condition?
- How can future management preserve and enrich its ecological and cultural heritage?

The outcomes of these individual specialist studies need to be considered together, alongside other relevant contextual information, to answer these questions and to obtain the best understanding of which processes have led to the existence and character of Dairy Wood as it is today. This report is a synthesis of these strands of evidence, intended to inform the understanding and future conservation management of Dairy Wood. It expands upon a shorter published article in the Scottish Forestry journal which summarised some of this evidence (Mills et al 2025).

Ecology

Alongside Auldhousehill Wood to the south, which is just outside of BFT's landholding, Dairy Wood's collection of open grown veteran trees stands out in an otherwise open landscape at Ericstane, all of which is currently under grazing by cattle. The land has been farmed by Jane Jackson of Ericstane Farm since the 1980s, in recent years grazing with cattle only but until a few years ago with sheep too.

A Phase 1 ecological survey of Ericstane Farm by Tweed Ecology (Singleton 2023) identified the areas of highest nature conservation value as two areas of wood pasture, at Braefoot Wood (Dairy Wood) and Auldhousehill Wood, with many veteran trees present and complemented by adjoining areas of semi-natural broadleaved cleuch woodland (Singleton 2023). Native trees such as sessile oak *Quercus petraea*, pedunculate oak *Quercus robur*, downy birch *Betula pubescens*, alder *Alnus glutinosa*, ash *Fraxinus excelsior*, hawthorn *Crataegus monogyna*, hazel *Corylus avellana*, and rowan *Sorbus acuparia* were recorded amidst a mosaic of wooded cleuchs and open rush-pastures, mires, fens and grasslands, supporting epiphytes and a rich bryophyte assemblage (Singleton 2023). Home to barn owls, redstarts, nuthatches and jays, the habitat's deadwood also supports a range of saproxylic invertebrates (Singleton 2023; Mills et al 2025).

Following the Phase 1 ecological survey (Singleton 2023), extensive National Vegetation Classification (NVC) mapping by ecologists Ben and Alison Averis identified Dairy Wood as a mix of W7 *Alnus glutinosa*-*Fraxinus excelsior*-*Lysimachia nemorum* woodland and W11 *Quercus petraea*-*Betula pubescens*-*Oxalis acetosella* woodland. Other communities mapped include M23 *Juncus*

effusus/acutiflorus-*Galium palustre* rush-pasture, M27 *Filipendula ulmaria*-*Angelica sylvestris* tall herb fen, MG5 *Cynosurus cristatus*-*Centaurea nigra* meadow and pasture, U19 *Thelypteris limbosperma*-*Blechnum spicant* community and MX neutral small sedge mire (Averis & Averis 2024). The presence of quaking grass *Briza media*, large bittercress *Cardamine amara*, marsh hawksbeard *Crepis paludosa*, narrow buckler-fern *Dryopteris carthusiana*, bird cherry *Prunus padus* in the cleuchs, the moss *Pulviger a lyellii*, and the ancient woodland indicator species upland enchanter's nightshade *Circaea x intermedia* indicate good quality habitat of high biodiversity value. The occurrence of the non-native plant pink purslane *Claytonia sibirica* is not typical of good quality semi-natural woodland, hinting at human involvement in the woodland's development.

Despite the depth of this ecological survey work in 2023 to 2024, it remained unclear whether Dairy Wood represented a fragment of a previously extensive wooded landscape which had been reduced in size and density by grazing, whether it had emerged through natural means following a reduction in grazing pressure, or if it had been entirely or partially planted. This led to the commissioning by BFT of specialist historic woodland studies by Dendrochronicle, to investigate the history of Dairy Wood through historical map evidence and through tree-form studies and dendrochronological analysis (Quelch 2024; Mills 2024).

Historic map evidence

Historic map analysis of the Ericstane area, focussing on Dairy Wood (named *Braefoot Wood* on OS maps), was conducted by Peter Quelch of Dendrochronicle, who examined and presented a full chronological sequence of maps including Blaeu's 1654 Atlas, Roy's Military Survey, 1747-55 and the historic Ordnance Survey (OS) mapping of the 1850s onwards (Quelch 2024). The reader is referred to that report to see the full set of maps and their more detailed interpretation. Only a few selected map extracts are repeated here to illustrate the main points.



Figure 2 The study area in William Roy's Military Survey of Scotland 1747-1755. *Erickstane* and *Braefoot* are presumed to be farm settlements. No woodland is shown. NLS maps & British Library.

The earliest maps show very little landscape detail. The first useful coverage is Roy's mid-18th century mapping (Figure 2) which shows small clusters of buildings, representing pre-improvement farming townships, surrounded by rig and furrow strip fields, along the west side of the river Annan. In the study area, buildings seem to be shown at both *Erickstane* and *Braefoot*, either side of a road or track which crosses the River Annan and then runs north-westwards eventually to meet (beyond the excerpt in Figure 2) the Edinburgh road with a branch of that running further north west to meet the old Roman Road which runs roughly north-south on the higher ground to the west. The settlement of Braefoot on Roy's map appears to be approximately where Dairy Wood now stands with no woodland shown at all in the study area. Indeed, no 18th century or earlier map evidence shows any woodland in the area of Dairy Wood (Quelch 2024). This does not necessarily mean there were no trees in the landscape here, but rather that the primary value and use of the land was seen (and mapped) as agricultural. Elsewhere in Scotland, early cartographers such as Blaeu (17th century, based on earlier mapping including late 16th century Pont) often would show significant areas of unenclosed woodlands as well as more formal enclosed wooded parks, but any small patches of scrubby woodland are unlikely to be represented.

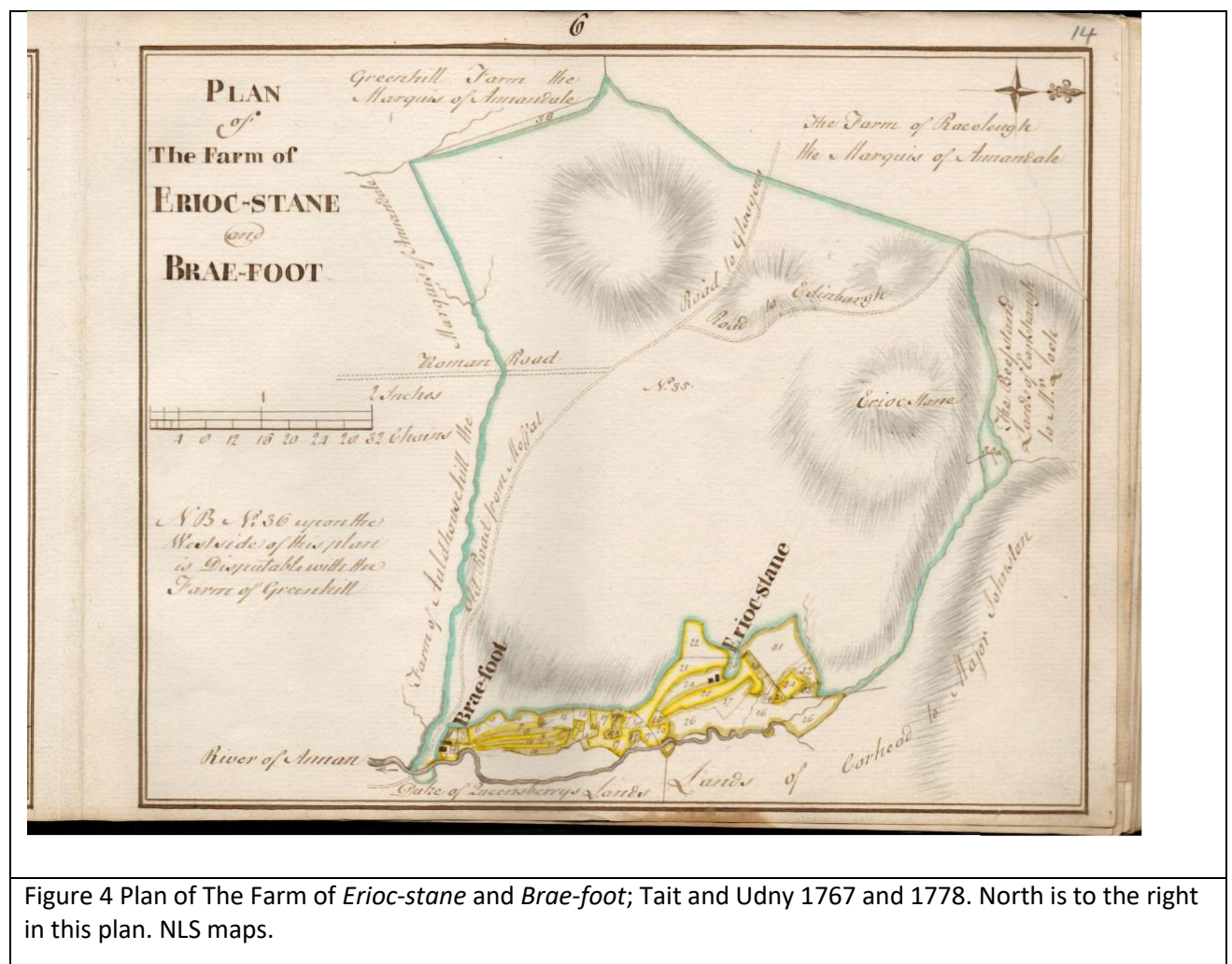


Figure 3 The study area on the First Edition Ordnance Survey at six-inch scale. Surveyed 1856, published 1860. The first map to show a woodland (*Braefoot Wood*) at the study site. NLS maps.

A woodland at Dairy Wood first appears in the historic map record on the 1st Edition OS mapping in the 1850s (Figure 3) on which it is named *Braefoot Wood* (Quelch 2024). The local vernacular name still in use for this woodland, 'Dairy Wood', does not appear on any historic maps. The wood appears well-established by the 1850s and later OS maps show that its extent remains stable through the 19th and 20th centuries (Quelch 2024) although its density may reduce over time.

What is less clear from the map evidence is when and how it originated, not helped by the gap of a century between Roy's mid-18th century mapping and the first OS mapping of the mid-19th century. However, thanks to the Dumfries Archival Mapping Project (DAMP) several 18th century estate plans for this area are now available through the National Library of Scotland's maps website (Quelch 2024). These slightly post-date Roy and show rather more information about the organisation of the farming landscape in upper Annandale, although they are still sketch-like and selective in comparison to the remarkable detail of the first edition six-inch OS mapping.

Of course, objectives vary between the cartographers which in turn affects what and how they choose to represent the landscape. Roy's objectives were military, mapping key locations, infrastructure and resources across the entire mainland of Scotland, while Tait and Udny were creating estate plans to serve the purposes of individual landowners during the second half of the 18th century as agricultural improvement ideas were gaining momentum. Estate plans of that era are especially valuable in showing pre-improvement land management arrangements and settlements just before the organisation of farming was radically changed.



One set of plans covers farms at Ericstane and Corehead, surveyed by James Tait in 1767 and updated by Joseph Udny in 1778. In a plan of 'The Farm of Erioc-stane and Brae-foot' which includes the study area (Figure 4), the alternate brown and yellow shaded outlines of inter-digitating small strips appear to represent the lands of two pre-improvement farming units, the numbers relating to individual tenants' fields or strips within them. The key to this plan (Quelch

2024 Figure EP (2b)) shows that the brown and yellow shaded areas belong to two major landowners, the Marquis of Annandale and the Earl of Hopetoun respectively, with other landowners of adjacent lands identified on the plans including the Marquis of Queensberry to the east, and Major Johnston of Corehead to the north east.

Comparison of these estate plans (Figures 4 and 5) with Roy's mapping (Figure 2) and the first edition OS mapping (Figure 3) reveals changes in the number and naming of farm settlements in the study area over the period from the mid-18th to the mid-19th century. In an apparent reversal of what is depicted on Roy's map (Figure 2), the slightly later 18th century plan (Figure 4) identifies the farm settlement to the immediate south of our study woodland as *Brae-foot*, but by the time of the first OS map in 1856 (Figure 3) its name is *Erick-stane*. The farm complex at this latter location survives and is still named Ericstane today. The most revealing detail on the later 18th century plans, however, is that the other farming settlement used to exist within the study area, named as *Erioc-stane* by Tait and Udny, possibly the settlement which was shown as *Braefoot* by Roy. While only two buildings are shown at this *Erioc-stane* farm settlement in the version of the Tait and Udny farm plan in Figure 4, another more detailed plan in the same set shows a cluster of five small buildings in this farm township, with a variation of the spelling as *Errioc-stane* (Figure 5). This settlement had disappeared by the time of the first OS map surveyed in 1856 and it is likely that its location lies within the Dairy Wood study area.



Figure 5 Plan of the Farms between Annan River and the Evan Water. Tait and Udny 1767/1778. Focus on Errioc-stane Farm (which includes Braefoot in this version). NLS maps.

We interpret this *Erioc-stane* settlement as a pre-improvement farm township, one of many lost across Scotland during the agricultural improvement era of the 18th and early 19th centuries. This era saw the old collective farm townships, each with their adjacent rig fields and grazing areas,

being amalgamated into larger single-tenanted farm units, often with an accompanying shift away from mixed subsistence farming to a focus on livestock, sheep especially, although cattle farming may have continued at Ericstane. Here we are seeing yet another example of the intense 18th to 19th century land-use changes which influenced other historic wooded landscapes across Scotland. Repeatedly in the Scottish uplands we see that when old farm townships were replaced by larger (usually sheep-dominated) farms, there was an accompanying phase of planting new economically valuable woodlands into parts of the old field systems (see Quelch 2010; Mills et al 2012; Mills & Quelch 2024; Mills & Wilson 2024). These changes were generally made in the pursuit of increased cash revenues for landowners (Stewart 2003; Smout et al 2005).

When the map analysis was undertaken, we did not have the benefit of any documentary research into the 18th century landowners of the Ericstane and Braefoot farm lands. It seemed possible that the Tait (1767) and Udny (update 1778) farm plans were drawn up either because of a dispute over title or ownership or were created to inform impending land-use changes. More widely in Scotland, the latter was frequently the impetus for commissioning estate plans in the mid to late 18th century, on the cusp of the agricultural ‘improvement’ era. More recently, some historic documentary research has been undertaken, as a voluntary contribution (Harkness 2025), into the two key landowning families at the study site at the time when the Tait and Udny farm plans were made, namely the Johnstone (Marquis of Annandale) family and the Hope (Earl of Hopetoun) family. Complex inter-relationships between these two families, their titles and lands has been revealed (Harkness 2025). This stemmed from the marriage in 1699 of Henrietta, eldest daughter of William Johnstone (3rd Earl of Annandale and Hartfell and 1st Marquis of Annandale) to Charles Hope (1681-1742) who became the 1st Earl of Hopetoun in 1703. A complex set of circumstances led ultimately to the Annandale Estates being managed by the Earls of Hopetoun and then inherited through Henrietta’s line in the second half of the 18th century. Quoting Harkness (2025, 9):

‘During the period of 1767/78 the whole of the Braefoot and Ericstane lands were under the management of the 2nd Earl of Hopetoun who had been appointed curator to his insane half uncle, George Vanden Bampde-Johnstone, 5th Earl of Annandale and Hartfell. The curatorship of George passed to the 3rd Earl of Hopetoun, James Hope-Johnstone who, following the death of George in 1792 inherited the Annandale estate through the 1657 entail.’

George Johnstone (1720-1792), 5th earl of Annandale and Hartfell (succeeded 1730) mentioned above, was also titled 3rd Marquis of Annandale and is therefore ‘The Marquis’ mentioned as the owner of the brown-shaded lands in the farm plan of 1767/1778 (Figure 4) contrary to an earlier interpretation of this representing the Marquis of Queensberry. George Johnstone was declared insane from 1744 and his nephew John Hope (1704-1781), 2nd Earl of Hopetoun (succeeded 1742), was appointed his ‘curator’ in 1758 to manage his affairs. It is this John Hope, 2nd Earl of Hopetoun, who owns the yellow shaded areas in the 1767/1778 farm plans (Figure 4) but as George’s ‘curator’ he also oversees the brown-shaded Annandale Estate lands at that time.

It is not clear from our research thus far how this complex pattern of inter-digitating land ownership evolved at *Erioc-stane and Brae-foot* before 1767, but by the time Tait (1767) and then Udny (1778) made the farm plan (Figure 4) these lands are all effectively under the control of the same superior landlord, The Earl of Hopetoun. However, these lands did not formally come into the same ownership until after George Johnstone’s death in 1792 when, after complex litigation dividing the inheritance of his English and Scottish properties, John Hope’s son James, the 3rd Earl of Hopetoun (James Hope-Johnstone) inherited the Annandale Estate. George Johnstone had died intestate, and that inheritance was by no means a foregone conclusion, so it seems most likely

that any major investment in and 'improvement' of the combined Ericstane and Braefoot farm lands would post-date 1792.

During the historic research (Harkness 2025), information was also found about nearby common land being divided in 1813 between the Earl of Hopetoun and Colonel Johnstone of Corehead. This event could be a signifier of a wider stage of agricultural re-organisation at Braefoot/Ericstane.

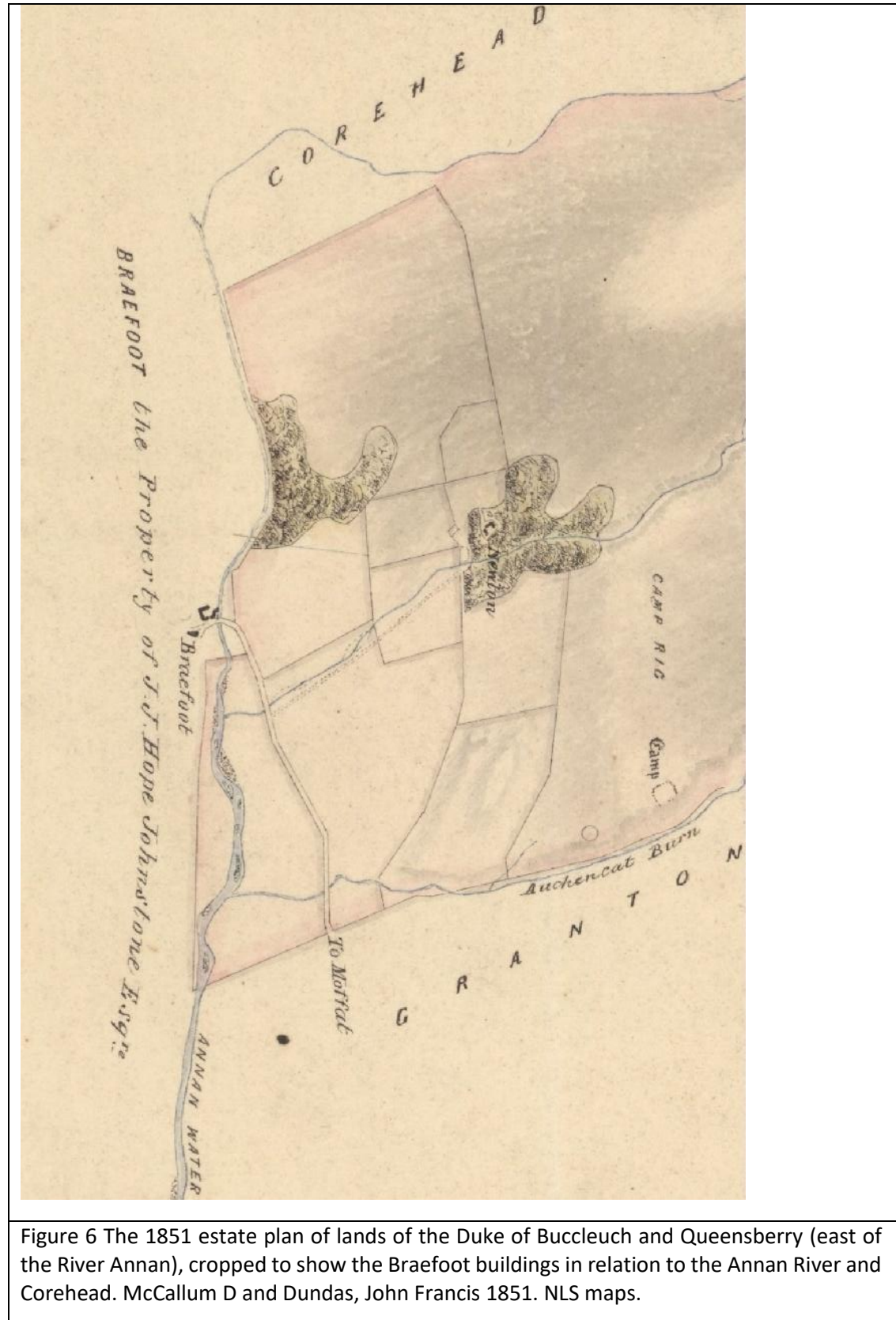


Figure 6 The 1851 estate plan of lands of the Duke of Buccleuch and Queensberry (east of the River Annan), cropped to show the Braefoot buildings in relation to the Annan River and Corehead. McCallum D and Dundas, John Francis 1851. NLS maps.

A mid-19th century estate plan for the neighbouring Marquis of Queensberry (Figure 6) helps to illustrate the location of the Braefoot house which is mentioned in those 1813 division plans. It shows the same cluster of farm buildings at Braefoot as those soon after named Erickstane on the First Edition six-inch OS map surveyed in 1856 (Figure 3). To quote Harkness (2025, 9-10):

'In 1813 there was a planned exchange of land between the 3rd Earl of Hopetoun and General William Johnstone of Corehead involving `Braefoot, Erickstane, and pieces of the lands of Corehead and a small piece of the farm of Chapel'. The land is listed as 'Common or Mean Ground' and was common to both parties. Most of the land lay between Braefoot Farm and Corehead Farm, with a smaller piece of land above Corehead Farm at the 'bottom of the Beefstand'. The division line was the path of the River Annan, excluding where the Annan runs at the back of Corehead Farm, giving the southernmost land to the Earl of Hopetoun and the northernmost land to Colonel Johnstone. Braefoot House, as listed in the division plans of 1813, can be identified in the 1851 estate map in the Hopetoun lands.'

It does appear from the various 18th and 19th century maps shown above that the names Braefoot and Ericstane (and its various spellings) were used quite interchangeably, and that the farm name of Ericstane only really settled on the extant Ericstane Farm buildings around the time of the OS first edition survey in 1856. This dual naming must stem from the way in which the lands of two pre-improvement farms here evolved under different superior land ownerships in and possibly before the 18th century (Figure 4). The history of the inter-related land-owning aristocratic families here is so complex that it is dangerous to make assumptions about how that inter-mixed land ownership pattern came about, but it seems likely to stem from the marriage in 1699 of Henrietta, eldest daughter of William Johnstone (1st Marquis of Annandale) to Charles Hope who became the 1st Earl of Hopetoun in 1703 (see above) and the various disputes and litigations about the Annadale inheritance thereafter (Harkness 2025).

Interestingly, a little later Braefoot farm is mentioned as the birthplace of the Rev. David Welsh (1793-1845) who became an important Scottish ecclesiastical leader in the 19th century. To quote Harkness (2025, 9).

'Welsh was a Minister and Moderator in the Church of Scotland and Professor of Ecclesiastical History at University of Edinburgh between (1793-1845). Retiring in 1843 he led the General Assembly in Edinburgh to Tanfield Hall in Canonmills where the group constituted themselves as the Free Church of Scotland. Family letters from David to his brother James show that the family were still residing there in 1825. There is some uncertainty whether the family were residing at Braefoot farm/house or Ericstane as the naming of the area seems to have been interchangeable.'

As a founder of the Free Church of Scotland, David Welsh of Braefoot is an important national figure, and his birth here adds to the cultural significance of this place.

Drawing out the most important points to emerge from the historic map study, the various mid to later 18th century maps show an unimproved farming landscape of small fields with no woodland in the study area. Not one but two farm settlements are shown in the study area in the mid to late 18th century, with the most detailed farm plans (Figures 4 and 5) by Tait and Udney (1767/1778) showing a cluster of buildings at the now lost pre-improvement farm township of *Erioc-stane* as well as the farm buildings of *Brae-foot* (now known as Ericstane Farm) some of which survive.

The first map to show any woodland at the study site is the first edition OS mapping surveyed in 1856 (Figure 3), by which time *Braefoot Wood* (aka Dairy Wood) appears well-established and the old farm township settlement of *Erioc-stane* is not shown. The OS survey would have mapped any unroofed buildings present at the time, so it appears there were scant visible traces of the old *Erioc-stane* by 1856. It had disappeared sometime between 1778 and 1856. While those farm

township buildings may have been built mostly with organic materials such as turf and thatch which would decompose to leave little obvious trace, vestiges of them are still likely to survive as archaeological remains below and perhaps just above ground level within the Dairy Wood area.

There is national Phase 3 Lidar coverage available for Dairy Wood which indicates some potential archaeological features within the study area (Figure 7), but the resolution is not refined enough to be able to be sure of what those are. Further processing of the existing Lidar data or newer higher resolution Lidar cover would assist any future ground-truthing archaeological investigations to locate any remains of the old *Erioc-stane* farm township. The 2023 archaeological walkover survey (James 2023) did consider the Lidar evidence available at that time but did not locate the township site. The remains could be slight and hidden under thick vegetation. There is one visible recorded archaeological site which could relate to the pre-improvement township, that is the trapezoidal banked enclosure towards the northern end of Dairy Wood at Rogers Gills, located between two steep sided gullies, with a single old hawthorn tree growing from it. This was recorded as Site 75 by Calluna Archaeology (James 2023). That narrow area bounded by two gullies seem too small to have been the main *Erioc-stane* settlement site, more probably that is a little further south, either in the open meadow area just to the north of the main wooded area on the first edition OS mapping or perhaps within the main wooded part of *Braefoot Wood* (Figure 7).

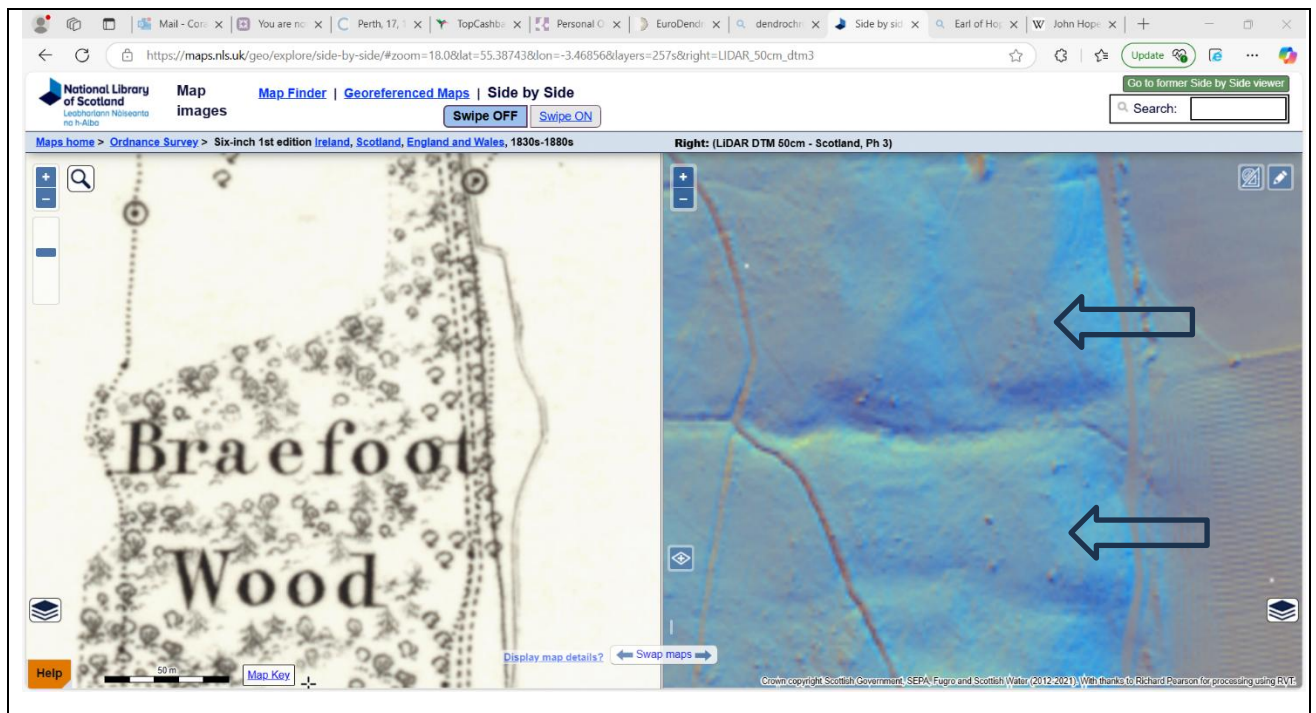


Figure 7 Extract of NLS maps side by side viewer showing part of Braefoot Wood (aka Dairy Wood) on (Left) the first edition OS 6 inch map (surveyed 1856) and (Right) Scotland Phase 3 Lidar Digital Terrain Model at 50 cm resolution. The arrows point to areas containing possible traces of old enclosures with upstanding features within. Link to this view to explore and see at greater scale: [Side by side georeferenced maps viewer - Map images - National Library of Scotland](#)

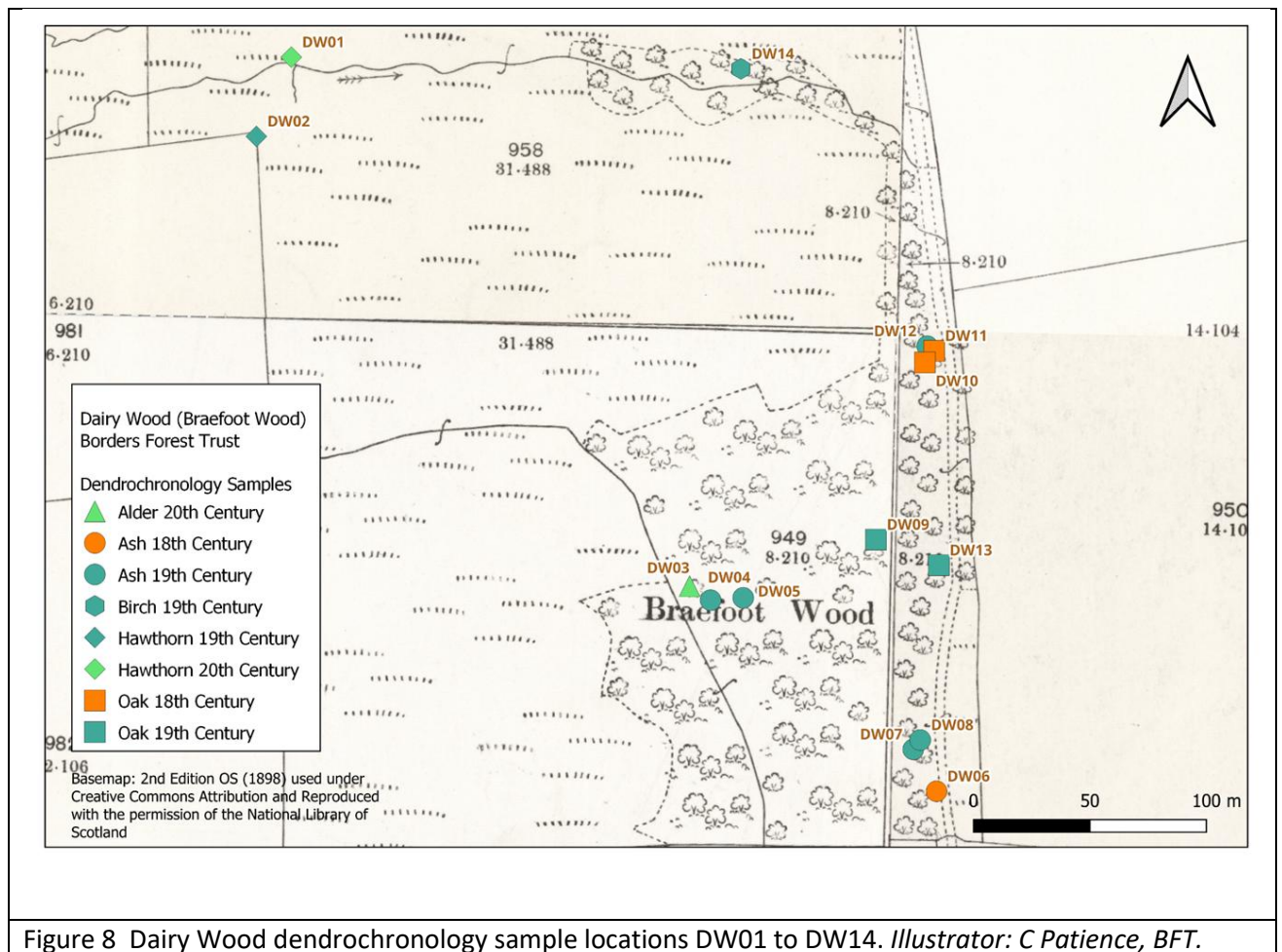
A recommendation of this study is to develop a project to undertake additional archaeological reconnaissance work specifically at Dairy Wood to locate any remains of the pre-improvement *Erioc-stane* township so that its preservation can be accommodated within the site's conservation management plan. Onward investigations of the township would make an excellent community archaeology project and could reveal the age, origin, duration and lifeways of the settlement.

In summary, the historic map evidence (Quelch 2024) has indicated that this area was an intensely managed and largely treeless farming landscape by the mid-18th century, a landscape which underwent significant re-organisation during the subsequent improvement era, probably in the early 19th century based on the documentary evidence (Harkness 2025). The character of many of the mature trees at Dairy Wood (Quelch 2024, Part 3), especially amongst the oak, ash and alder specimens, suggested they could include trees of great age. The map evidence, however, if taken at face value for the lack of trees, suggested that none of Dairy Wood's extant trees would pre-date the later 18th century. To verify or refute this, we needed to look at the trees themselves, through the lens of dendrochronology.

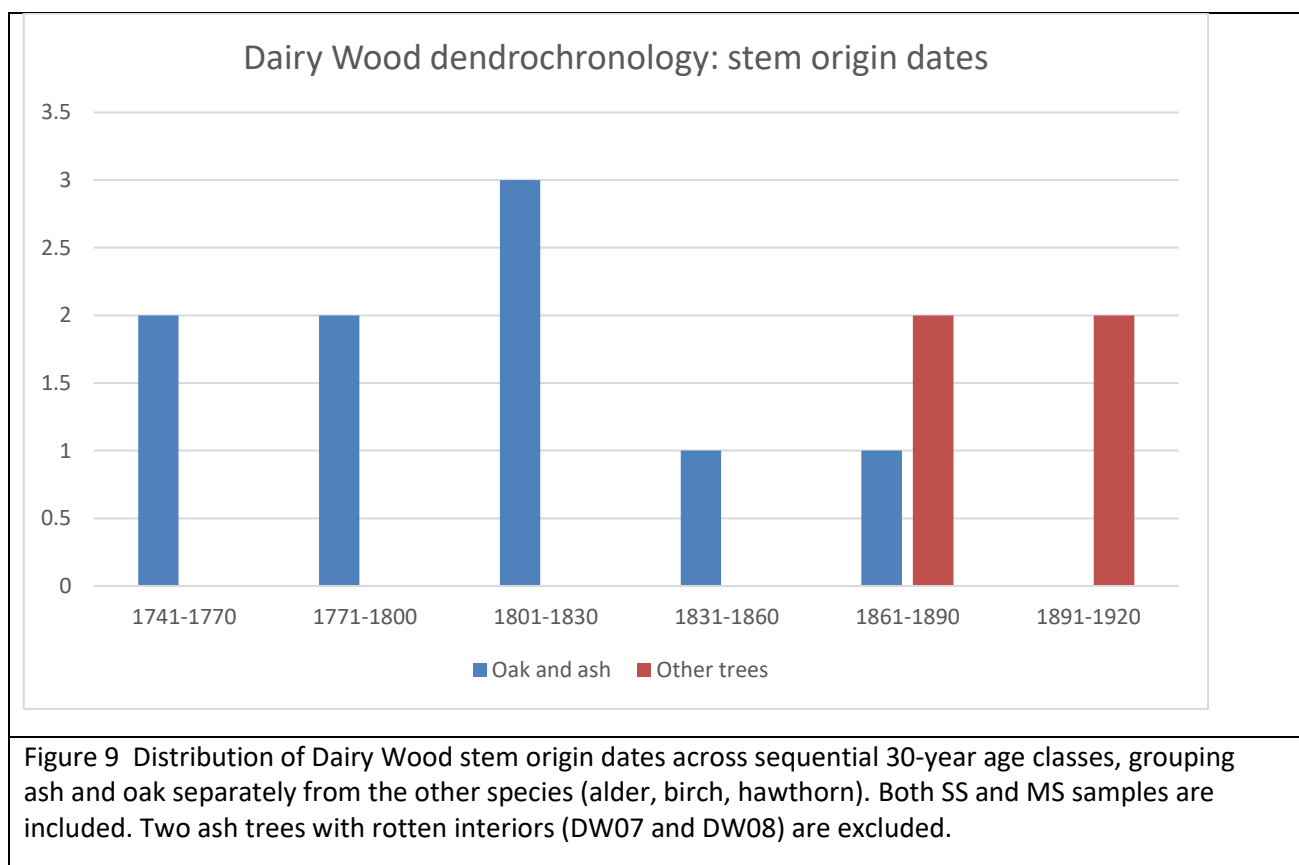
Dendrochronology

After reconnaissance work in Dairy Wood to identify the best candidates for tree-ring analysis, fourteen trees across a range of species and tree-forms were sampled in June 2024 (Mills 2024). Living tree samples were taken using a Swedish Increment Corer which extracts a narrow core of wood (Figure 1). Deadwood samples were taken as chain-sawn disks. Records made for each sample included species, location, stem girth, sampling height, tree form, whether single-stem (SS) or multiple-stem (MS), and whether living or dead when sampled. The SS samples reveal the tree's age. MS trees, depending on species, can represent past coppice management, with the stem age information capable of revealing when the coppice was last cut. This is most relevant for oak and other commercially coppiced species while some other tree species present can form MS naturally or under grazing pressure.

Standard dendrochronological techniques (English Heritage 1998) were employed in the analysis. The measured tree-ring date-span of a samples does not alone reveal the origin date for a tree or stem. An allowance, known as the 'pith offset', must be made for any rings missing at the centre of the sample (because a tree core does not always hit centre). Another allowance is made for the sampling height up the stem because it takes several years for the young tree or re-growing coppice stem to reach sampling height (usually waist or chest height). The estimated vertical growth rate used is ten years for a sapling or stem to reach 1m height (Bishop et al 2022; Mills et al 2012; Mills 2022; Mills et al 2022).



The oldest trees identified at Dairy Wood through dendrochronology (Mills 2024, Table 1) were oak and ash originating in the mid-18th century, clustered low down near the road (Figure 8). Graphing the results (Figure 9) shows how the oak and ash are older than the other sampled tree species of alder, birch and hawthorn.



The oldest individual stem origin date is AD1742 for SS oak DW10, of 4m girth, closely followed by AD1751 for one of three massive stems of ash DW06. Another stem of DW06 originates around AD1781, while SS oak DW11 is also 18th century in origin, a more precise date precluded by a rotten centre. These two species, oak and ash, do not occur in the wooded cleuchs. As the most economically valuable species present, with a discrete distribution, it is postulated that oak and ash were planted into the pre-improvement field system boundaries in the mid to late 18th century. At least two of the oldest trees identified through dendrochronology started growing before the 18th century Tait and Udney estate plans were made (in AD1767 and updated 1778) but as very young trees would not have been prominent in the landscape then. It seems likely, given the apparent density of trees shown at *Braefoot Wood* on the first edition OS mapping, that there were more such trees originally which have been lost over time. We are lucky to be able to undertake this study while a few old trees remain, especially given the ash are succumbing to dieback.

Several ash stem origin dates cluster around AD1812-1816 (Mills 2024, Table 1), so while the possibility of a planted origin needs to be considered for them, a regeneration phase is also possible, self-seeded from the older ash trees already present, perhaps in a period of reduced grazing pressure. However, since the dendrochronology work was undertaken, documentary research (Harkness 2025) has revealed a stage of farmland re-organisation in 1813 when nearby common land was divided between the landowners of the Braefoot/Ericstane and Corehead farms (see above). This record could signify a wider phase of agricultural 'improvement' changes at this time, favouring an interpretation of these ash trees having been planted in *Braefoot Wood* at about this date. We have found in our work more generally that many Scottish planted woods originate in the very late 18th to early 19th century, when landowners 'improving' ideas about forestry as well as farming coincided with the Napoleonic Wars era when the value of domestic

woodland products rose steeply (Stewart 2003; Smout et al 2005). These improvement-era plantations were often planted into old pre-improvement fields and settlements, as we have found in several other studies, for example at Loch Katrine in the Trossachs (Mills et al 2009; 2012) and at Ardura Community Forest on Mull (Mills & Quelch 2024). The rather denser and apparently well-established Braefoot Wood shown on the first edition OS mapping surveyed in 1856 suggests that there were more trees present then than now, presumably representing greater numbers of planted-origin trees being present then.



Figure 10 Multi-stem oak DW09 in April 2024 with left to right: Catriona Patience, Peter Quelch and Coralie Mills. Dendrochronology showed one stem originated in 1833 interpreted as the date of the last coppicing episode. This is the only MS oak in Dairy Wood now. Photo: Dendrochronicle.

The strongest evidence for subsequent woodland management is an old MS oak (DW09, Figure 10) with a large footprint and a characterful form, interpreted as a lapsed coppiced tree. Two of its three stems are now hollow, so the interpretation is based on sampling the one sound stem. Dendrochronology indicates that this stem started to grow in the early 1830s. While coppicing is the most common cause of a multi-stem form in old Scottish oaks, it is not the only possible explanation. Browsing damage in the early stages of a sapling's life can also cause such a form, as can forgotten caches of acorns buried by squirrels or jays. However, the large 'footprint' of this particular oak does rather support a longer coppicing history. Assuming this was the case, this oak was last coppiced in the early 1830s and could have undergone several cutting cycles before then, based on 19th century guidance on appropriate coppice cycle intervals for Scottish oak coppices (Gilchrist 1874) and on the tree-ring evidence from other historic coppices (Mills 2011; Mills &

Quelch 2019a). Oak tree DW09 is the only example of a coppiced oak in Dairy Wood, so perhaps others have been lost over time, or this is an outlier from other coppiced trees elsewhere on the farm.

The other species sampled, alder, hawthorn and birch, returned a range of later 19th and early 20th century dates (Figure 9 and Mills 2024, Table 1) and are likely to represent natural establishment, albeit as the consequence of land-use change in this evolving agricultural landscape.

A major shift in land-use must have occurred in and around the study area sometime in the later 18th or early 19th century, from a landscape of pre-improvement small mixed-farming townships, each under multiple occupancy, to improvement-style larger single farm units like *Erickstane* farm as shown on the first edition OS map. The very late 18th century to early 19th century seems the most likely time for this major re-organisation to occur at the study site, after the inheritance of the Annandale estates by the Earl of Hopetoun was confirmed in 1792. The record of the division of nearby common land in 1813 coincides with the stem origin dates of several ash trees in Braefoot Wood and could signify the time at which the major changes to convert the lands into an 'improved' estate farm were made. This is a tentative interpretation and merits further research both documentary and archaeological to flesh out the timeline for that change. Thereafter, farming at the study site was predominantly pastoral within newly created larger fields bounded by stone dykes as shown by the OS mapping surveyed in 1856.

The interpretation of the tree-ring evidence is that Dairy Wood includes a legacy of some mid- to late-18th century oak and ash trees planted into pre-improvement field margins followed by a further phase of early 19th century plantation of ash alongside some coppice management of established oak trees as the improvement-era re-organisation of the farming landscape took place. Together these planted oak and ash trees probably represent much of the tree cover in the reasonably dense *Braefoot Wood* shown on the first edition OS mapping surveyed in 1856. Thereafter there was a degree of loss or removal of some of the planted trees, leading to a sparser woodland character now, although there was also natural establishment in the later 19th to 20th centuries of other smaller native tree species, including alder and hawthorn, into the areas between the steep-sided cleuchs, leading to the open mixed wood pasture character of Dairy Wood perceived today.

Dairy Wood in context

As previously discussed (Mills 2024), Peter Norman's excellent booklet on wood pastures in Dumfries & Galloway shows that the history of any one historic wood pasture is unique and that there are many possible trajectories (Norman 2005). In considering Norman's classification of wood pasture types, we see that Dairy Wood does not fit neatly into any one class but shows aspects of several types. The relevant classes of wood pasture detailed by Norman (2005) are:

A 'Wood pastures of old working farms: Large trees in the middle of fields were not tolerated during 18th century and especially 19th century farming and estate improvements, but some trees escaped this process. Such trees were usually located on the poorer agricultural land where the limited benefits of clearance may have reduced the incentive for removal. Those trees that remain are often on small banks that would have been difficult to cultivate, and sometimes they are associated with clearance cairns ... Such trees are therefore probably the remnants of a partial clearance of wood pasture.'

B 'Upland wood pastures: Most upland woods were unenclosed and grazed by sheep, cattle or deer, and may sometimes have been pollarded. Some degraded remnants of these native woods

still remain at high elevation as wood pasture, having escaped agricultural improvement, and, more recently, conversion to forestry. They consist of widely spaced trees that are often linked to, or merge into, broadleaved woodland or include patches of natural woodland, particularly in refugia such as cleughs, ravines, crags and islands.’ See also Quelch (2010) for more information on upland wood pasture character, history and formation processes.

C ‘Medieval Hunting Forests: Hunting was the main recreation of medieval kings and nobles, and a number of hunting forests were established in Scotland, held directly by the Crown or local barons and churchmen. They are often bounded by natural features such as rivers, and are often close to a castle. The trees may have been of natural origin, but there would have been deliberate selection and possibly planting of favoured species.’

D ‘Landscaped pastures: During the 18th and 19th centuries some landowners in Dumfries and Galloway planted trees, not only to create parkland around the big house, but also to enhance their wider estates.’

E ‘Scrub pastures: There are many examples of scrub pasture across Dumfries and Galloway, and unlike all of the other types of wood pasture listed above, the distribution and extent of scrub pastures may have actually expanded in recent years. In its simplest and perhaps most widespread form the scrub consists entirely of gorse, but other types are dominated by hawthorn, blackthorn, or in rare examples, juniper.’

Thus, we can see various aspects of the above five categories represented in Dairy Wood. Like (A) some old pre-improvement farm trees have survived, possibly on now indiscernible pre-improvement field banks. Like (B) Dairy Wood has escaped modern forestry plantation and is used rather like an unenclosed upland wood for grazing now, with fairly free movement of cattle through it but, significantly, it lacks any obvious pollards which supports the interpretation that it did not originate as an unenclosed upland wood pasture. Regarding (C), we know that Upper Annadale was indeed part of a baronial medieval hunting forest, but what we cannot discern is the connection between any earlier woodland cover and the oldest trees now present. Could the oldest surviving oak and ash be descendants of an even older lost generation of medieval trees? Category D could be relevant to the origins of the apparently planted older trees at Dairy Wood, with Corehead and Ericstane/Braefoot being rather higher status places in the past than is evident now, so there may have been an enhancement objective as well as economics behind the planting of oak and ash in certain locations. It is even possible that tenant farmers were required to plant trees as part of their farm lease. The spread of species like hawthorn and alder over the 19th and 20th centuries into the old field system at Dairy Wood fits very much into the definition of ‘Scrub pastures’ at Category E.

The more old, wooded landscapes we study in Scotland, the more we see that there is rarely one simple answer to explain the current character of a site, and that small old woods can be amongst the most complex and interesting of all. We can see this complexity and diversity at other old woods we know in this region. For example, at Lochwood near Beattock, which originated as a hunting reserve around a castle, there has been continual woodland presence since at least late medieval times (Baillie 1977; Baillie 1982; Norman 2005, 9) and some of the old oak tree forms do appear to have been deliberately managed. Similarly, at Caerlaverock Castle Wood on the Solway coast there has been some tree cover since at least the 13th century, as recorded in the pollen record, with historic coppicing and pollarding in evidence in the surviving oak forms (of as yet undetermined age), mostly growing on early castle enclosure banks and believed to be planted. However, Caerlaverock Castle Wood has never been so wooded in the past as it is now and would

have been a far more open series of enclosures and fields with wooded banks between them in late medieval and post-medieval times (Mills et al 2020).

Elsewhere in Dumfriesshire, our study at Barhill Wood, beside Kirkcudbright, revealed that the landscape was largely devoid of tree cover by the mid-18th century, and that Barhill Wood originated as a late 18th century plantation with a very wide range of species planted then and subsequently coppiced into the early 20th century (Mills & Quelch 2019b; Mills et al 2022). However, agricultural needs were incorporated from the start. Only the rocky knolls were planted leaving small, sheltered grazing paddocks on the better land in between in a more distinct separation of woodland and farming than is indicated at Dairy Wood. Our various case studies elsewhere show just how diverse the trajectory of historic wooded landscapes can be. However, a theme emerging from a number of studies in south west Scotland is the close co-existence of woodland and farming over a very long time.

The longer timescale

The tree-ring study can only consider the history of Dairy Wood over the lifespan of its oldest surviving trees, in this case taking us back to the mid-18th century. Similarly, the historic map records begin in the 17th century but only provide detailed landscape information from the mid-18th century onwards, with significant gaps between the dates of the most helpful maps. There is potential for a longer history to be uncovered through other avenues of research including archaeology, dendrochronology, palaeoecology and historical documents.

It is known that Upper Annandale formed part of the baronial Annandale Forest (i.e. a hunting reserve, not necessarily a woodland) in medieval times. Annandale Forest was granted to Robert de Bruce (ancestor of Robert the Bruce, King of Scots) by King David I in AD1147 x 1153, as identified in Scotland's earliest surviving forest grant (Gilbert 1979, 21 & 345). Further historic documentary research would be desirable to look into deeper time at Dairy Wood and environs. It is currently difficult to say how wooded this landscape was in the prehistoric, medieval and early post-medieval periods. However, the historic maps indicate that Upper Annandale was largely an open treeless agricultural landscape by the mid-18th century, when the first detailed maps were made, which would echo the situation across much of the country, for example as was the case around Kirkcudbright by that time (Mills & Quelch 2019b; Mills et al 2022).

The national tree-ring record for Scotland over the last millennium (Mills & Crone 2012; Mills & Crone 2024) shows that in general Scotland was largely depleted of useful timber resources by the late medieval period, and that much of Scotland was importing timber from the 15th century. However, that record is dominated by east coast and high-status sites, with no records for the south west beyond the few historic oak timber sites analysed by Baillie in the 1970s (1977; 1982). From the few records available, it appears that this region retained a local oak timber supply for longer than the east coast lowlands. Far more could be learned about this regional timber supply and related woodland history through undertaking dendrochronology on historic buildings in south west Scotland. More localised studies of buildings in upper Annandale could also reveal much more of relevance to woodland history here.

A powerful way to reveal the vegetation history for earlier periods would be to undertake pollen analysis, with related radiocarbon dating of sediments, from one or more deep peat profiles in Upper Annandale. This could be augmented with pollen analysis of peat from any peaty hollows in or near Dairy Wood to obtain a more local picture of vegetation and land-use change over a long timescale. Borders Forest Trust's first woodland restoration project at Carrifran was greatly informed by the pollen results from deep peat at nearby Rotten Bottom (Tipping 1994; 2002), the

find site of a Neolithic yew bow (Canmore 71910: [Rotten Bottom | Canmore](#)), as detailed by Borders Forest Trust on their website at <https://bordersforesttrust.org/wild-heart/carrifran-wildwood/woodland-types>

The archaeology of Dairy Wood and of Upper Annandale more widely can also provide much relevant information about land-use, environment and landscape change over a longer timescale. It is clear from the archaeological reconnaissance work undertaken across the wider Ericstane Farm lands by Calluna Archaeology (James 2023) that this has been a managed landscape for millennia, given the density of known prehistoric and later sites present, although very few have been subject to detailed survey work or archaeological excavation. A community excavation led by AOC Archaeology was undertaken in 2024 of an Iron Age site immediately to the north of Dairy Wood, for which the report is awaited. The results of environmental sampling and botanical analysis there will be relevant in this regard.

Ericstane and Corehead today feel remote because they are at the ‘dead-end’ of a long single-track road from Moffat. However, until around the late 20th century, the road from Moffat to Ericstane Farm continued diagonally up the brae to connect with the road to Edinburgh above on higher ground to the west. As shown on Roy’s mid-18th century mapping, that route also led to a connection to the north-south running Roman road just a little further west. Much of the Roman road network in Scotland remained in use through the medieval period and often until the 18th century when the modern road network began to develop in Scotland. Thus, this northernmost part of Upper Annandale was a more connected and more strategically important place in the past than it appears to be now.

Relevance to future management

The following paragraph was written by Nicola Hunt and Catriona Patience of BFT for the Dairy Wood article in the Scottish Forestry journal (Mills et al 2025), explaining how the results of the woodland history work and other related studies will inform the future management of the site. Crucially, this recognises the importance of a continued benign grazing regime to maintain the biodiversity and open woodland character of the site.

*‘Dairy Wood will continue to see low-intensity agriculture, in the form of seasonal grazing by cattle, which will maintain the mix of herb-rich rush and sedge wetland amongst the open grown trees. To ensure the succession of native trees, a selection of naturally regenerating alder, oak, birch and hazel is being protected to complement the planting done a decade or so ago by the Solway Heritage project throughout the woodland. Unfortunately, ash was the dominant species planted then, and all of these have succumbed to dieback. There is some indication that wych elm *Ulmus glabra* was once present on the site (Singleton 2023), and targeted enrichment planting of wych elm and native crab apple *Malus sylvestris* supported by the Royal Botanic Garden Edinburgh’s Scottish Plant Recovery project, along with bird cherry and species of willow will increase the biodiversity value. ‘*

Recommendations for future studies

There are three types of further study where additional investigation could add significantly to the understanding of the site’s heritage, both cultural and natural. After considering what the research has revealed so far, onward recommendations are:

- A. To undertake additional archaeological reconnaissance work targeted specifically at Dairy Wood to locate any remains of the pre-improvement *Erioc-stane* township so that its preservation can be accommodated within the site’s conservation management plan. Once located, onward investigations of the township would make an excellent community archaeology project and

could reveal the age, origin, duration and lifeways of the settlement. Related documentary research may be able to reveal who some of the inhabitants were. It is important for ecological restoration work to acknowledge the more peopled past of landscapes like this one and to understand the past land-use practices which shaped the cultural landscapes being stewarded into the future.

- B. To expand the work on the documentary history of Ericstane and Corehead, which so far has seen only a preliminary study of the Johnstone Earls of Annandale family over the last few centuries to inform our understanding of landownership at Dairy Wood (Harkness 2025). Two aspects of further documentary research would be especially valuable, the first to look at earlier records regarding ownership and use before the 18th century, and the second to look for written evidence about the old farming townships, including how and when they were erased and how the new larger improvement-style farm units were created.
- C. To undertake pollen analysis as close to the site as possible to reveal the longer record of vegetation change and land-use history. A deep peat profile to give a long vegetation record for Upper Annandale augmented by more local records from peaty hollow(s) in or close to Dairy Wood would be ideal. Scientific dating of key levels within the profiles would be needed and close interval pollen sub-samples over the upper one to two millennia would be especially useful for informing BFT's wider work at Corehead and Ericstane.

There are many other possible avenues of useful future research of course, but these three areas would complement each other greatly and would also enhance the results from the studies already undertaken, informing both BFT's site management and public engagement work.

Conclusions

If we were to travel back in time to the mid-18th century, we would not recognise Dairy Wood as a wood, but as the lands of busy farming townships, divided into rigs and small fields, with some useful trees growing on the field boundaries and with the most densely wooded areas being semi-natural woodland in the steep-sided cleuchs, as today. The interpretation of the available evidence is that in the early 19th century, as an aspect of the improvement era re-organisation of Ericstane/Braefoot farm, more trees including ash were planted into the old fields to form the rather denser *Braefoot Wood* shown on the OS mapping surveyed in 1856. The character of a wood pasture has been acquired over time in the subsequent loss or removal of some of those more economically useful trees and in the natural spread of native trees like alder into the old small fields. This happened over a period when the land-tenure changed from multi-occupancy to a single farm unit through the agricultural-improvement era, and as the lands in and around what is now Dairy Wood shifted to a more predominantly pastoral use.

Dendrochronology has established a precise chronological framework for the old trees in Dairy Wood over the last three centuries, Comparison of those results with the historic maps evidence, and with documentary evidence of past landowners, has teased out different phases of this cultural wooded landscape's evolution. Perhaps the most important point to emerge is that, over the last few centuries, the results indicate an evolution from fields to wood, and not the other way round as one might expect from something which has been previously labelled as an 'ancient wood pasture'. The results therefore indicate that farming and woodland establishment can, and probably should, co-exist here under a relatively benign grazing regime.

Synthesis of multiple strands of evidence from ecology to historical map research and dendrochronology has created a holistic picture of Dairy Wood's condition and complex emergence over the last few centuries. These complementary studies have allowed us to appreciate the woodland as a product of the interplay between ecological potential and changing

land management over time. Rather than a natural, untouched remnant, this woodland has a complex evolution and represents a long human involvement with the land, a picture reflected in many other woodlands across Scotland. Through uncovering and understanding Dairy Wood's past, its management can be designed sensitively to ensure the preservation and enrichment of its ecological and cultural heritage into the future.

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