

Orchards in The National Trust: an Overview of their History, Economics, Wildlife and People

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Introduction

Within the quarter of a million hectares of National Trust land in England, Wales and Northern Ireland, 80% of which is farmed, it would be surprising if orchards were not well represented. However, in 30 years of biological survey of Trust properties orchards were, until recently, neglected. This is, in part, because some are within gardens outside the usual biological survey search area and others in farmland were not considered as a nature conservation feature. Today our orchards are mapped, but to find out what they are like and how they are used we needed an audit. This paper describes some initial results of our *Orchard Audit 2008*. We focused on attributes of traditional orchards (see Appendix 1 for definition) - henceforth called orchards - that seem to add most to their value as wildlife havens, producers of wholesome foods and drinks and as wonderful places in their own right. This is a preliminary report based on data that may need to be checked for accuracy; more data is expected to come in over 2008. For two properties, where a revival of interest in orchards is taking place, we present case studies. These show how without taking into account economic and social values, the environmental significance of orchards will be hard to sustain.

Where, what and how much

A majority (75%) of our orchards are found in four Trust regions: West Midlands, Devon & Cornwall, Wessex and the North West (Figure 1). Most (66%) occur in the wider estate (farmland, parkland and other designed landscapes) with the remainder in gardens.

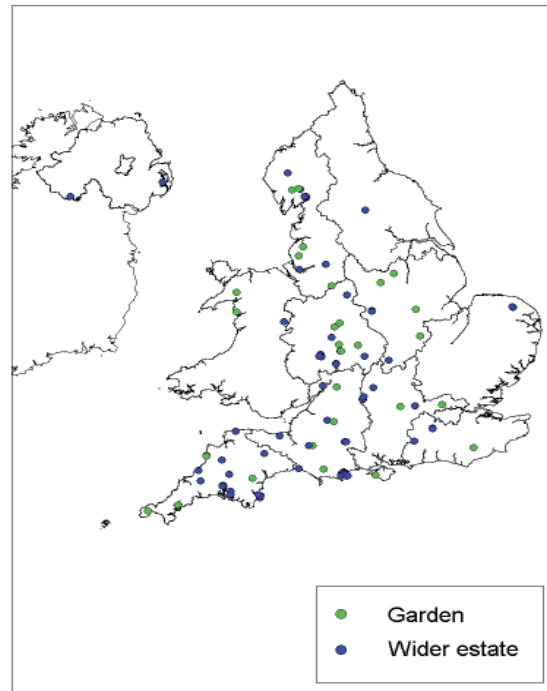


Figure 1. The distribution of traditional orchards on National Trust land.

The total area of orchards reported on Trust land is small at 71.3ha. Most (70%) of the 101 orchards in the sample were also small (average 0.7ha, range 0.05ha – 4.0ha). However, both total area and average size would be higher if they included data from the Brockhampton and Killerton Estates in Herefordshire and Devon respectively, where there are several orchards totalling some 100ha, probably making up over half of the Trust's known orchard holdings. Surprisingly, most orchards on Trust land were reported to be less than or equal to 100 years old, suggesting their establishment post-dates other features of the estates in which they lie.

Apples are found in most (85%) of the orchards but only half (48%) had pears. In terms of stone fruit, plums are frequent (40%),

with damson and cherry less common (32% and 23% respectively). Nut trees (walnut and hazel) are infrequent, found in only 13% of orchards. In terms of numbers of trees, apples are again the most common (58%); interestingly, nearly a third of the trees in Trust orchards are stone fruit with damson (17%) being the most common of these (Figure 2). In the Brockhampton and Sizergh (Cumbria) Estates, stone fruit (damson) accounts for three quarters (77%) of the trees. Apple varieties were known in 67 orchards in which there was an average of 12.1 (range 1-120). For stone fruit an average of 1.3 was recorded (N = 69, range 1-27).

The oldest trees were mostly (90%) less than or equal to 100 years old. A majority (80%) of the youngest trees were under 10 years old reflecting recent planting as part of orchard restoration or creation projects.

Past and present management

Today Trust orchards are grazed less and mown or cut more than in the past (Figure 3). Similarly the number of orchards applying inputs to either the land or trees (FYM, inorganic fertilisers, herbicides, fungicides, pesticides) (historically low) is even lower today (Figures 4 & 5).

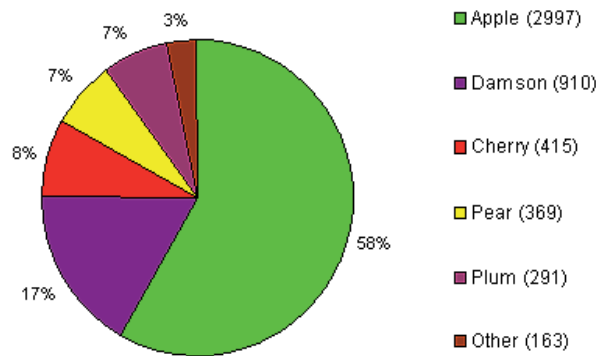


Figure 2. Frequency distribution of orchard fruit. N = 5145 trees

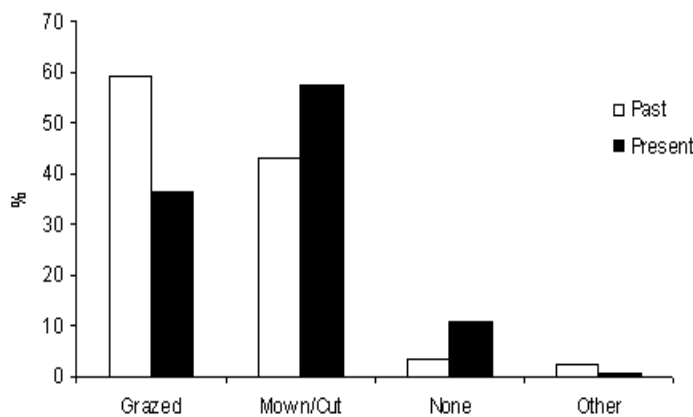


Figure 3. Frequency distribution of past and present land use management

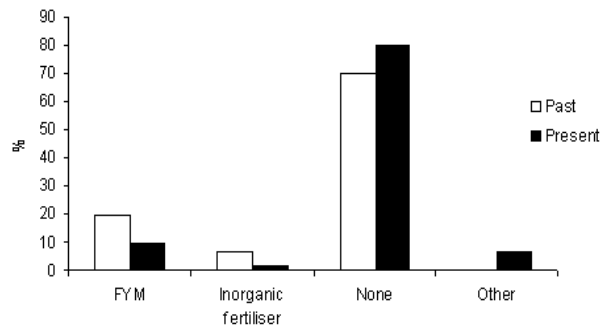


Figure 4. Frequency distribution of past and present ground layer inputs

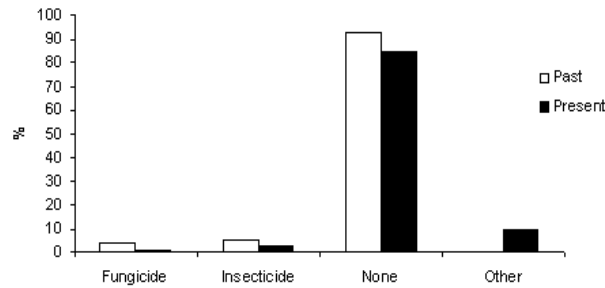


Figure 5. Frequency distribution of past and present tree inputs

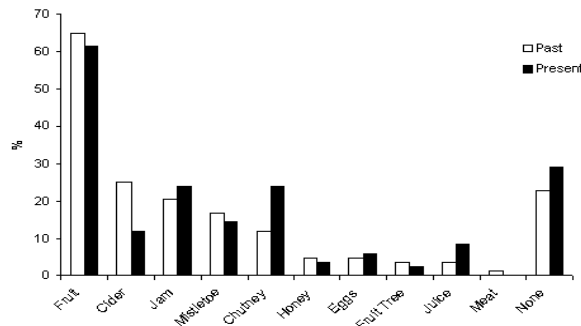


Figure 6. Frequency distribution of products past and present

The audit revealed changes in the use of products from our orchards over time. Cider is made in less than half the orchards that it used to be, but there has been an increase in the production of chutney, juice and jam (Figure 6).

We also now use over half (60%) of our orchards for community engagement activities of which a third are Apple/Orchard Days.

Condition assessment

The HAP group has yet to produce Condition Assessment guidelines for Traditional Orchards. In this audit (see Appendix 2 for definitions of categories used) most of our orchards (79%) were judged to be in a Favourable or Unfavourable Recovering condition. A quarter were in an Unfavourable No change/Declining condition and only 3% had been lost (Figure 7). Note that this assessment summary includes a category not usually used in condition assessments of features: Favourable – declining.

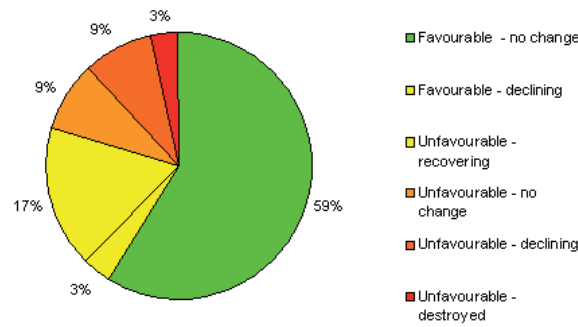


Figure 7. Frequency distribution of orchard condition and trends

We consider this to be an important one that if accurately measured can pick up rapid adverse changes to orchards judged to be in a good condition.

Our condition assessment used, amongst other attributes, the management of dead and dying timber and presence of certain wildlife. For the former, over half of respondents recorded some level of retention with most leaving it standing or lying on the ground. For the latter (65%) of orchards recorded birds, invertebrates, plants and lichens as important attributes.

What does this all mean?

Many of the attributes of Traditional Orchards on National Trust land probably reflect the national picture: a concentration of (small) orchards in the west of the UK; the predominance of apples for which there are more varieties than for other trees; the fact that most orchard sites are 100 years old or less, and the decline of old trees and increase in young trees – the “age class crisis”. So many orchard sites have been lost over the last fifty years that any over 100 years old are noteworthy.

What’s in store?

The renewed interest in orchards is crucial for their survival and is also very exciting. No other habitat so clearly offers such a unique combination of biodiversity, landscape character, cultural, social and economic significance. Their new BAP status can only reinforce this. It will also provide opportunities to raise awareness and

establish the wider role our orchards can play in a changing climate. Their undisturbed soils and permanent pasture are carbon stores and sinks and, possibly, contribute to flood risk alleviation.

To realise the potential of traditional orchards we need:

1. Survey, research, development. General and specialist biological survey of the orchards and their landscape context is needed to assess not only what is within orchards but whether it can disperse to other orchards.
2. Market research and development of business plans for orchard products.
3. A critical appraisal of the societal benefit of orchards.
4. A bigger and more accurate audit of apple and other fruit varieties which will allow development of categories of threat and measures to conserve those most at risk from extinction.

As joint lead with Natural England for the UK HAP for Traditional Orchards the National Trust is committed with partner organisations, groups and individuals to maintain what we have, get it into favourable condition, (where it is not already) and increase its area. As a result we aim to see more biodiversity and more people enjoying our orchards and more consumption of the gorgeous fruit varieties and other local produce that these beautiful places provide.

A closer look at Brockhampton and Cotehele

These two examples show how the Trust is making the most of its orchards and all they have to offer. They begin to demonstrate how we are meeting our ‘Triple Bottom Line’ (financial performance, the value and benefit we deliver to people, and the impact we have in conservation and the environment) and provide us with some reassurance both financially and environmentally in an increasingly uncertain future.

Acknowledgements

We would to thank all those who supplied data for the Trust’s Orchard Audit 2008.

Appendix 1.

Traditional Orchards Definition

A sub-group of the UK HAP group discussed the definition of what is meant by a Traditional Orchard and agreed it is the definition that was used in the BAP case for orchards to become a priority habitat and is the one therefore accepted by conservation organisations, agencies and Government and is as follows:

Traditional orchards are defined for priority habitat purposes as orchards managed in a low intensity way. Low intensity management means that these orchards are managed with little use of chemicals like pesticides and inorganic fertilisers, the trees are relatively long-lived and reach the veteran stage and the grassland under the trees is usually grazed by cattle or sheep or cut for hay. In contrast, intensive orchards are managed for large-volume fruit production by high inputs of chemicals, including pesticides and inorganic fertilisers, by dense planting of short-lived, dwarf fruit trees and by frequent mowing of the orchard floor between the tree rows.

However the group also discussed the need for a mappable definition so that we can construct inventories. It was agreed to adopt the simple rules used for the PTES traditional orchard inventory. These refer to the distance between crown edges and number of trees. For this project, the crown edges of trees must be

within 20m of each other to be included in the orchard patch, and there must be five or more trees within 20m of each other’s crown edges. These features are readily seen and are measurable on aerial photographs.

The group decided the minimum size of a traditional orchard is defined as five trees, but the potential interest of fewer numbers of trees is acknowledged. Areas with fewer than five trees or scattered trees with crown edges more than 20m apart are identified as relict orchards and, where appropriate, considered as potential restoration sites.

‘Linear’ orchards, composed of fruit trees occurring along hedgerows and walls, were also discussed as they may be of particular significance if they form connections between orchard parcels in the landscape.

Traditional orchards generally comprise standard trees, not dwarf trees or bush trees. However, field experience has shown that there are a variety of forms in orchards known to be old, traditionally managed orchards, and these orchards have biodiversity value. The key factor is the management intensity rather than tree form. The group agreed that the definition should not be restricted to particular tree forms.

Appendix 2.

Orchard Condition and Trend Categories

- **Favourable – no change:** the orchard is managed/good tree age structure/all the trees are in good health/orchard floor is grazed or mown/cut/good evidence of wildlife/presence of deadwood is evident = Excellent
- **Favourable – no change, Favourable – declining, Unfavourable – recovering:** the orchard is managed/some tree age structure/most of the trees are in good health/orchard floor is grazed/mown/some evidence of wildlife/some presence of deadwood is evident = Good
- **Unfavourable – recovering, Unfavourable – no change, Unfavourable – declining:** there is some management/some tree age

structure/no more than half the trees are in good health/orchard floor is grazed/mown = Fair

- **Unfavourable – no change, Unfavourable – declining:** there is very little management/poor tree age structure/orchard is becoming overgrown/most the trees are in poor health/orchard is overgrazed = Poor
- **Unfavourable – declining:** the orchard has been abandoned /there is no management/very poor tree age structure/only remnants remain/orchard is very overgrown/all trees are in very poor health/orchard is very overgrazed = Very Poor
- **Unfavourable – destroyed:** the orchard has been destroyed/virtually nothing remains = Destroyed

Brockhampton Orchards - case study

An historic orchard landscape

The National Trust's Brockhampton Estate (670ha, SO 682 254) lies in east Herefordshire, abutting the border with Worcestershire, at the point where the Bromyard plateau descends towards the Teme valley. The estate consists of parkland, woodland, mixed farmland and traditional orchards.

Orchards are a long established feature of the estate and the wider local landscape. Two of the



Brockhampton orchards © NT/Simon Barker

extant ones are marked in the same position on an estate map of 1737; others appear on the Tithe map of 1829 and all the extant orchards were on the 1904 Ordnance Survey map of the

area. As elsewhere there were significant losses during the second half of the twentieth century. Map and field evidence indicates that orchards occupied more than 50ha compared with the 21ha in thirteen orchards that survive today (Evans, 2004). At Brockhampton losses have been stemmed and reversed in recent years.

Damsons of the prolific local variety 'Shropshire Prune' are the commonest fruit and they also occur in hedgerows, a feature of the local landscape (Widdicombe, 2006). In addition to their culinary use, they were also harvested to make dye. Within living memory this formed the basis of a significant local industry, when large numbers of damsons were transported to the Black Country for this purpose.

There are several cherry orchards, a feature typical of the Teme valley, and smaller numbers of apples (cider and dessert), plums and pears. In recent years a few quinces have been planted in one orchard, adding a new twist to local tradition.

Orchards and their fruits are deeply ingrained within local culture. Much of the conservation and restoration of orchards at Brockhampton has been driven by the enthusiasm of Property Manager, Les Rogers, a 'Bromyard boy' with decades of experience of working on the estate and a passion for orchards and orchard produce. Over the past ten years £20,000 has been spent on the capital costs of orchard restoration. Funding from external sources (including Defra's Countryside Stewardship Scheme and a sponsorship from Covent Garden Soup) has been matched by National Trust project funds.

Biodiversity of the orchards

The driver for much of the conservation and restoration work in orchards has been their biodiversity value. In 2000 The National Trust's in-house Biological Survey Team found Brockhampton's orchards to be of "very high wildlife value" (Foster & Jackson, 2002) recording three main features of nature conservation importance:

- The old fruit trees themselves, which support many invertebrates of wood decay habitats, including five Nationally Scarce beetles, in addition to the value of their flowers and fruit to a wide range of insects and birds.
- Mistletoe *Viscum album*, abundant on the older trees, supports four out of the six insect species known to be associated with this plant. These include the Nationally Scarce bug *Anthocoris visci* and the weevil *Ixapion variegatum*, first recorded in the UK in one of the orchards on the estate during the 2000 survey. This ‘mistletoe weevil’ has been discovered at several other old orchard sites in Gloucestershire, Herefordshire and Worcestershire.
- The old pasture underlying some of the orchards is unimproved and supports flower-rich grassland attributable to the MG5 *Centaurea nigra* - *Cynosurus cristatus* community within the National Vegetation Classification. This grassland is also attractive to insects, including the Nationally Scarce bee *Nomada flavopicta* and commoner species such as the common blue butterfly *Polyommatus icarus* and the day flying micro-moth *Pyrausta aurata*.



Apples and Mistletoe © NTPL/Neil Campbell-Sharp

To many visitors the most obvious wildlife within the orchards is their birds. These include mainstays such as the Bullfinch *Pyrrhula pyrrhula* and wintering thrushes Redwing *Turdus iliacus* and Fieldfare *T. pilaris*. Old orchard trees seem to be particularly important

for the Lesser Spotted Woodpecker *Dendrocopos minor*, an elusive and fast declining species.



Male bullfinch and blossom © NTPL/NaturePL/Paul Hobson

This growing appreciation of the wildlife value of the old orchards at Brockhampton has been reinforced by recognition of the significance of traditional orchards for local and national biodiversity. Ten years ago the Herefordshire and the Worcestershire Local Biodiversity Action Plans (LBAPs) were amongst the first to identify traditional orchards as a Priority Habitat, a status now confirmed within the UK BAP.

At Brockhampton the orchards and their wildlife have figured prominently in new interpretation, including static displays and leaflets describing estate walks, whilst the benefits to biodiversity have proved a persuasive tool in leveraging funds for orchard restoration, both internally and externally.

Orchard people and products

If conservation of wildlife has been a key driver in the restoration of Brockhampton’s orchards, this has come with the realisation that their long term survival must be linked to their economic and social value, not least because most of them are located on tenanted farmland. The flagship of the economic and social regeneration of the orchards has been the development of a damson preserve, made by the wives of some of the

estate's farm tenants from damsons harvested from the orchards at Lower Brockhampton. Visitors to the fourteenth century moated manor house at the heart of the estate are invited to participate in picking the fruit. Gathering of the damsons has become an engagement 'event' in its own right. From modest beginnings in 2003 the production of 'Brockhampton Brand' damson preserve has grown to the point where it is now supplied to National Trust's shops and catering outlets within West Midlands Region, requiring the creation of new kitchen facilities to keep up with demand.



Brockhampton's award winning damson jam © NT/Adam Moore

Elsewhere on the estate, the revival in the fortunes of cider has led to the cider fruit being harvested once more (some is left for the birds). In the absence of a ready supply of children to employ as bird scarers the resumption of a commercial cherry harvest is more difficult.

The revival of the centuries-old orchard tradition on the Brockhampton estate has been built upon recognition and celebration of their biodiversity, rekindling their contribution to the local economy and engaging the enthusiasm of people, whether residents or visitors. All three elements are essential to ensure the conservation of the estate's orchards through the twenty-first century and beyond.

Cotehele Orchards – case study

The National Trust's Cotehele Estate on the banks of the River Tamar in East Cornwall (SX 422 685) was the home of the Edgcumbe family for some 600 years, before being acquired by the National Trust in 1947. Its 5.3ha of orchards are in the care of Gardens Team. Most of them (4.5 ha) are apple orchards and the remainder are cherry. Over the winter of 2007/2008, a new orchard – the 'Mother Orchard' - was planted as a gene bank of local varieties that have become under increasing threat as orchards disappeared. This orchard holds 120 Cornish and Devonshire apple and other fruit tree varieties. With 270 trees in 3.24ha, it is now the largest orchard on the estate. These trees will act as 'stock' trees from which the National Trust can propagate to disperse to the public and other properties in the region to secure the survival of varieties.

History

The oldest and most established orchard site at Cotehele is pre 1731. Thanks to a mild climate, high rainfall and shelter on the banks of the Tamar, Cotehele has a long and rich history associated with horticulture. Crops were initially grown to provide food for the local smallholders who sold their surplus produce to markets.

Early developments of the fruit industry came from the demand for apples for cider which, favoured over water for its ability to keep well, was taken on board sea-faring ships in great quantities. The Devonport area, developing into an important naval port, relied



Cotehele old orchard and hives © NT/Chris Groves

heavily on local cider producers. Apple trees were grown in vast, informal orchards on both sides of the Tamar. Reports from 1796 describe the beauty of the valley and its unkempt orchards, full of pink and white blossom from the cherry and apple trees.

Many local apple varieties remind us of this history, instilling a strong sense of place. Some are named after those who bred them or their place of origin such as 'Hocking's Green' bred by Mr Hocking, a market gardener at Coad's Green around 1860 and 'Colloggett Pippin' named where it was bred (Colloggett Farm, Botus Flemming). Fruit enthusiasts James Evans and Mary Martin have collected many of these varieties since 1982, generously donating graft material to the National Trust for the 'Mother Orchard'.

Social

Apple days always generate interest at Cotehele with around 2000 visitors during our apple weeks in 2005 and 2007. The reintroduction of the Wassail has proved very popular, with the number of participants increasing significantly over the years, from about thirty in 2005 to 160 in 2007.

The planting of the new 'Mother Orchard' has provided a great opportunity to engage with local communities. The tree sponsorship scheme, promoted as 'Celebration' planting in which people could sponsor a tree to mark a personal celebration such as a wedding, anniversaries, birthdays, christenings and the like, has had a high take up. Over the winter of 2007/2008, the sponsors were invited to plant their tree(s) and given a tour of the orchard, providing the opportunity to find out more about the local heritage. The interest was strong, and feedback very positive.

The Mother Orchard also provided an opportunity to forge links between the National Trust and Prince's Trust. For example, as part of a fourteen week programme, fifteen young people worked in the orchard for two weeks dismantling fences, planting trees and learning new skills such as dry stone walling. This

increased their confidence, and provided them with new skills and (hopefully) better employment prospects.

Economics

The stable income from the orchards is from the production of apple juice, which was the subject of a Fine Farm Produce Award in 2007. The harvest, mainly from the most established orchard at Cotehele, covers around 0.8 ha and contains ninety trees. From this orchard 2.5 tonnes of apples producing 2000 litres of juice are harvested by the Gardens Team. The juice is produced off site by a local juice and cider producer. This is purchased at a cost price of £1.60 and retails at £3.75 per litre bottle, making a gross profit of £4,300. Demand is so



Planting fruit trees with the Prince's Trust © NT/ David Bouch

high that we are only able to supply the Shop and Restaurant for ten months of the year. There is also demand from other properties in Devon and Cornwall that Cotehele could supply if production was increased.

Support for the 'Mother Orchard' project came from the National Trust and Objective 1 funding (East Cornwall Regeneration Project). The £50,000 grant allowed for the propagation of the trees, a one year Orchard Officer post, construction of an agricultural building to house a cider press and a perimeter deer fence to protect the trees.

The 'Mother Orchard' should contribute to meeting demand. However, the selection of traditional standard rootstocks means an



Harvested apples © NT/David Bouch

expected lag time of seven years before harvesting the crop. The creation of this orchard has meant that 3.2ha has been added to the workload of a 5.3ha garden that is managed by the Gardens team. The tree sponsorship scheme has generated income that can be spent during the lag time using outside contractors for grass cutting and hay making. Minimum donations of £30 to sponsor a tree were requested and 190 trees made available for sponsorship. To date (June 2008), 134 trees have been sponsored, generating an income of over £4,000.

Wildlife

The orchards under the National Trust's care at Cotehele are currently undergoing organic certification. Traditional orchards can be rich in wildlife. The oldest orchard contains mature standard trees, supporting many species of lichens as well as plentiful mistletoe, which provides berries for birds. The grass is now being managed as a hay meadow, which will reduce its fertility and so a greater diversity of hay meadow species than just a few grass species. Invertebrates and small mammals take advantage of the flowers and cover provided by the grass.

Future

At present the 'Mother Orchard' is achieving the aims set before its realisation. However, there are numerous opportunities for the future to make this space even more engaging for all of Cotehele's visitors, to make it a richer habitat for wildlife and for it to finance its own future.



Rupert Lampart-Torr and his planted tree in the 'Mother Orchard' © NT/David Bouch

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