For publication

A National Orchard Inventory for Scotland

Area Report for:
Angus

Collaborating Organisations:
Forward Coupar Angus

Report version 1.0 dated 31st March 2018

prepared by
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Project national partners:
Scottish Natural Heritage
Orchard Research & Enterprise CIC

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Scottish Natural Heritage
Dualchas Nàdair na h-Alba
All of nature for all of Scotland
Nàdar air fad airson Alba air fad

This document reports on work carried out under contract to Scottish Natural Heritage.

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Lorna Gibson, former GIS Officer at Crispin Hayes Associates who made a first deskstudy assessment of nearly two thousand sites across Scotland.

Thanks for all your contributions

Summary

Keywords

orchard; fruit tree; top fruit; apple; pear; plum; undercrop; EUNIS G1.D4; Angus

Background

There has been growing interest in traditional orchards in Scotland for a little over a decade. This interest has a great breadth; from cultural heritage and horticultural practice, to historic varieties and the gradual disappearance of this unusual Scottish habitat.

The National Orchard Inventory for Scotland Project aims to create a comprehensive orchard inventory for the nation. This has probably not been attempted for over a century, perhaps since the 1885 Congress. The rationale that underpins this aim is that an Orchard Inventory will form the basis for addressing a number of issues linked to the decline of orchards over the last four decades and create a strong foundation for their revival. Simply put, we need to know what's where in order to change the downward trajectory.

The project began in 2013 with a pilot study which since then has received funding support from Scottish Natural Heritage. The programme has grown since that time to add further phases so that at the time of writing more than half of Scotland's orchards have been surveyed and recorded. The national project is reported separately, and is available at the project website www.scotlandthefruit.org.uk

Main findings

- A total of 36 orchard sites were surveyed, of these 18 were found to be intact orchards.
- The total acreage of orchards remaining in this area was found to be 8.3 ha and the average area of each orchard was 0.34 ha.
- The survey showed that a modest area of orchards have been lost, and this has been more than offset by newer orchards. However the lost orchards are the larger mature ones that had high cultural and biodiversity value.
- Most of the orchards contain less than 30 trees and are in a domestic setting. Four larger orchards of commercial size are recorded.
- Though apple dominates, cherries are unusually prevalent, together with other species reflecting their domestic use.
- The tree stock contains trees of all age ranges.
- Veteran tree features indicate the orchards contain modest levels of biodiversity.
- The overwhelming majority of orchards have some or active management, and this is at a much higher rate than typically found elsewhere in Scotland.
- Many orchards have new plantings and younger trees, and this shows orchards renewal is occurring.
- Soft fruit and also vegetables are grown in a significant minority of orchards. This is at a higher level than most of Scotland.
- Most fruit is used for family and friends, some is sold commercially and little is left to waste.
- Livestock are grazed in a few of the orchards, these being fowl and sheep.

To conclude, Angus contains a small number of small orchards, most of which are very actively managed and from which the fruit is used within the domestic setting. There are a handful of commercial sized and estate orchards which sell their fruit. Many of the more historic large mature orchards have been lost, and new orchards tend to be for domestic use.

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1 INTRODUCTION

There has been growing interest in traditional orchards in Scotland for a little over a decade. This interest has a great breadth; from cultural heritage and horticultural practice, to historic varieties and the gradual disappearance of this unusual Scottish habitat.

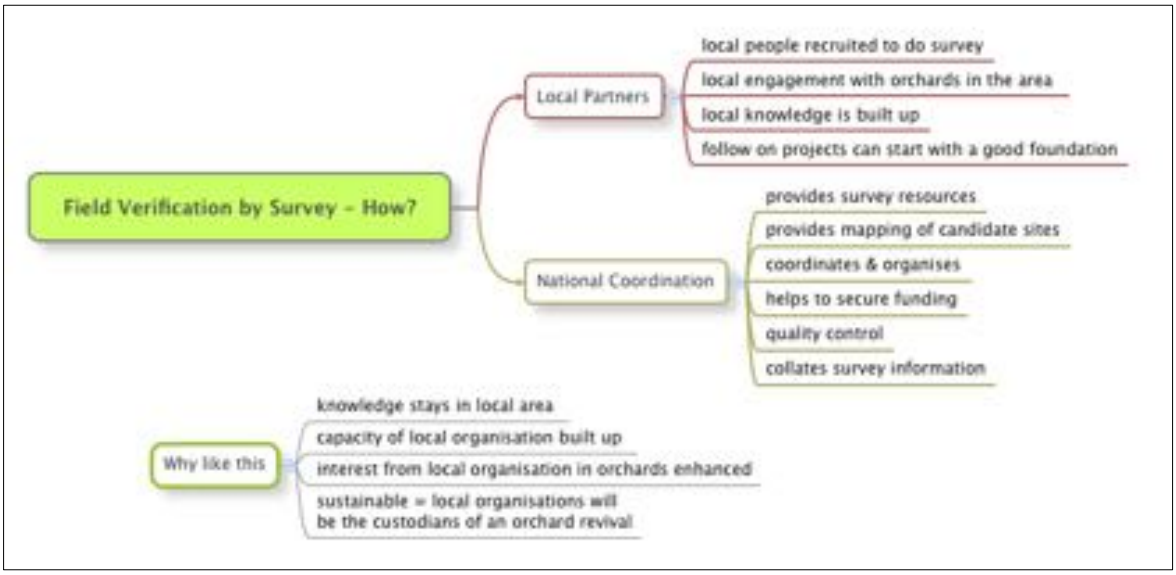
The National Orchard Inventory for Scotland Project aims to create a comprehensive orchard inventory for the nation. This has probably not been attempted for over a century, perhaps since the 1885 Congress. The rationale that underpins this aim is that an Orchard Inventory will form the basis for addressing a number of issues linked to the decline of orchards over the last four decades and create a strong foundation for their revival. Simply put, we need to know what's where in order to change the downward trajectory.

The project began in 2013 with a pilot study which since then has received funding support from Scottish Natural Heritage. The programme has grown since that time to add further phases so that at the time of writing more than half of Scotland's orchards have been surveyed and recorded. The national project is reported separately, and is available at the project website www.scotlandthefruit.org.uk

This document is one of a series of reports that provide results for particular areas, which are usually coherent with the local authority domain. The purpose of producing these 'Area Reports' is to make results relevant to local organisations and local people. It is intended to raise awareness about their orchards and their cultural heritage, and to identify issues that may be contributing to their decline and, in some cases, revival.

2 COLLABORATION

The national project is structured to partner collaboratively with local groups. Resources, systems and coordination are provided nationally, fieldwork is organised and carried out by the local collaborating organisations.



The graphic shows what each partner brings to the field survey work. The reason why we have structured the project like this is also shown. We want knowledge to be retained locally so that capacity is built and a sense of ownership and interest in local orchards is strongly established. We think this will be the most sustainable way to create a foundation for an orchard revival.

As a project partner, the local collaborating group has a copy of the data collected in their area.

3 BACKGROUND TO THE AREA

Angus is noted for its arable and livestock more than its orchards. It has favourable soils and a climate that is suited to fruit growing. It has a variety of climactic zones. Inland, the Glens are not especially favourable for orchard cultivation, but Monifieth, Forfar, Carnoustie and Montrose do not suffer excessive rainfall. Towards the coast the area enjoys good levels of sunshine, some of the highest in Scotland.

Though Angus is noted for its commercial soft fruit growing, the orchards tend to be for non-commercial purposes, and therefore mainly for their own domestic use. There is however a local apple juice producer who buys fruit from local orchards so some low-level commercial orchard activity does exist.

Not all of Angus has been covered by the work reported here because we were unable to identify collaborating groups in the north east of the area. However, the reported work does provide an useful picture of orchards in the area.

4 METHODOLOGY

The methodology for the project (of which this area is a subset) is described in Annex 2.

To summarise, a two stage approach is adopted.

1. A deskstudy is carried out, looking for orchard sites from mapping, historical data, existing surveys and other sources. This is collated on a Geographical Information System. Each site is given a unique number and a location map created. Nationally the deskstudy considered 1859 sites of which 1728 were considered candidates for field verification.

2. Field verification. Each candidate site was visited and surveyed by a volunteer surveyor. Photos were taken where possible. The survey results were submitted to the national project.

Finally the results are collated and reported.

The Local Facilitation for this area was provided by Wendy McCombes of Forward Coupar Angus.

Time input for field verification work is reported in Annex 2.

5 STRUCTURE OF RESULTS

The results are structured in this report in three distinct sections:

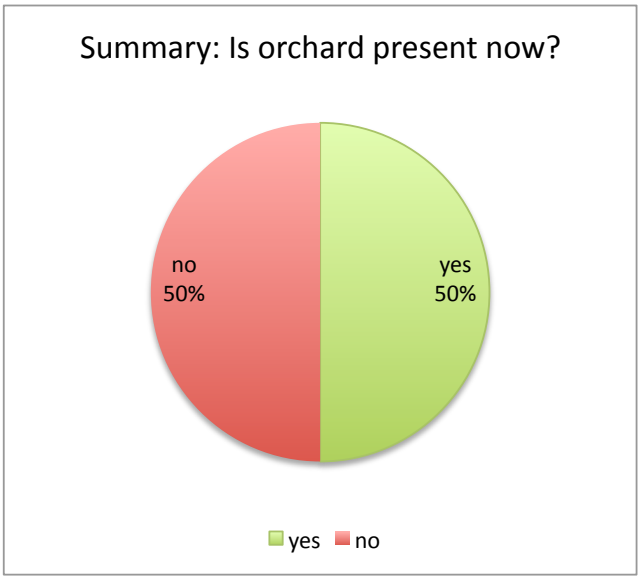
- Numeric and classification information (quantitative), together with overall conclusions.
- Anecdotal and comment information, qualitative aspects.
- Representative photo gallery. A collection of photos with descriptive captions that illustrate the orchards of the area.

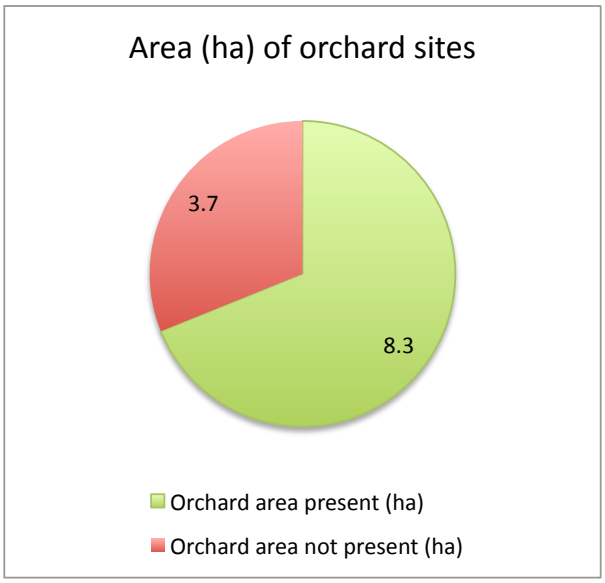
Photos have been submitted for a total of 24 sites.

6 NUMERIC AND CLASSIFICATION INFORMATION

Quantitative Data Results

We have analysed the data collected and have turned it into a more presentable form by creating a graphical output. In the section below, those graphs are presented with a commentary.





The graphs above show the headline results of whether orchards were found to be present on candidate sites (left pie chart), and the total associated area (right pie chart).

Field surveywork was completed for this area for 36 candidate sites. Of that number, 18 sites were found to have an orchard present and of those 1 were new orchard sites, the balance resulting from our deskstudy. Our definition of an orchard is a collection of 5 or more fruit trees in proximity. By 'new sites' we mean sites not identified in our deskstudy - so new to us. Many, though not all, are recently planted orchards.

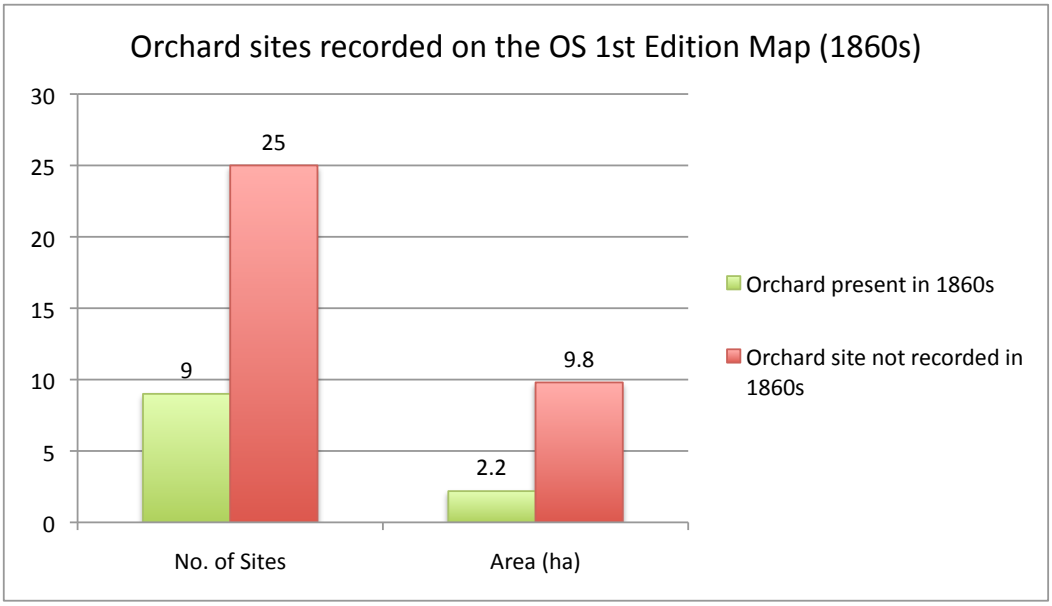
The fieldwork also found that a total of 18 sites were not orchards at the time of survey. Most of these latter sites were identified in the deskstudy as likely to be orchards from mapping, historical, or previous survey data. As such it is likely to represent some of the loss of orchards.

A further 1 site(s) were visited where it was not possible to gain access or make a determination as the existence of an orchard.

In terms of the acreage of sites, the fieldwork found that 8.3 ha of the orchard sites were present in Angus. This represents 69% of the total area of deskstudy + new orchard sites. The average area of an orchard is 0.34 ha.

The graphs show that there has been some loss of orchards, both in terms of numbers and total area. It has been only sligthly offset by newly planted orchards. The loss is significant because it has occurred in many of the larger mature orchards (including walled gardens) that have historical as well as high biodiversity value.

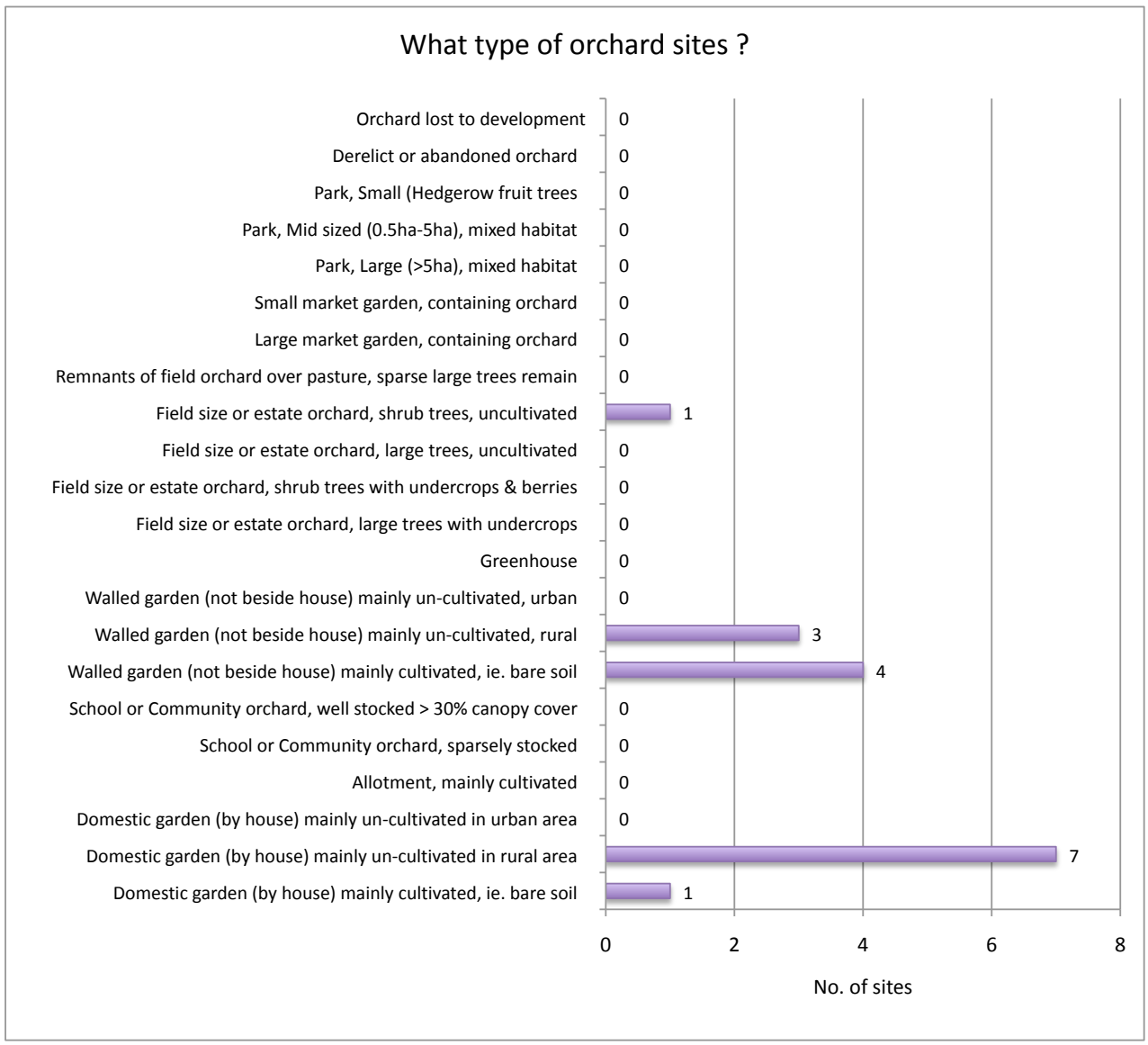
For a historical perspective on the significance of this trend we have also analysed the OS 1st edition data which was assessed for each site during the deskstudy. The OS 1st edition was surveyed in the late 1850s and early 1860s, and covered most of Scotland and was very detailed. It represents a good resource for historical analysis.



In Angus a determination for the presence of an orchard on the OS 1st Edition was made for a total of 34 candidate sites. The graph shows that of these, a total of 9 candidate sites were an orchard. The total area for these orchard sites was 2.2 ha in 1860s.

These data represents an interesting story for the Angus area. Though these data only include candidate sites that our deskstudy assessed there was a reasonable prospect of an orchard being present, further analysis shows that there are only two remaining orchards of the nine sites recorded in the 1860s.

It is clear that since the 1860s more orchards have been planted and more exist in Angus today than at that time.

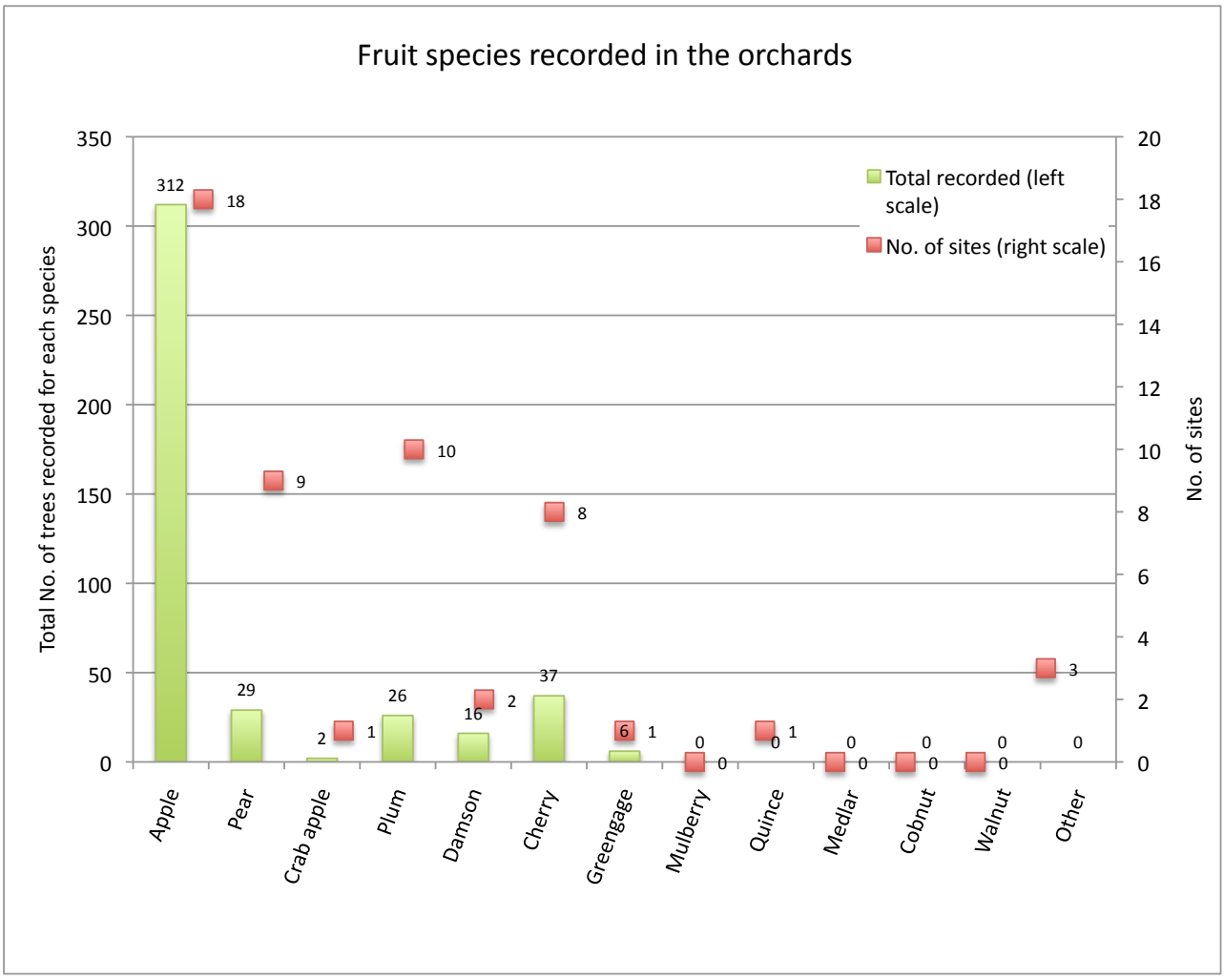


The type of site was recorded as a simple metric that can give a powerful insight into the type of orchard being considered, as well as assisting in the habitat classification using the European Nature Information System (EUNIS). Hence the apparent complexity of site types.

The graph shows the largest classification are for types of domestic orchard by houses. The second largest classification group is for walled garden orchards. Thirdly a field scale orchard, a site type that would be considered for commercial purposes.

Stewardship and Agricultural Payments

In the area being considered, it has been reported that no orchard(s) are part of a Stewardship scheme. In terms of orchard sites where an agricultural subsidy is being claimed, the survey found no orchard(s) were registered within the Integrated Administration and Control System (IACS) which relates to EU agricultural payments. This figure is probably an under-representation as there is some incentive to classify the land as other than an orchard.

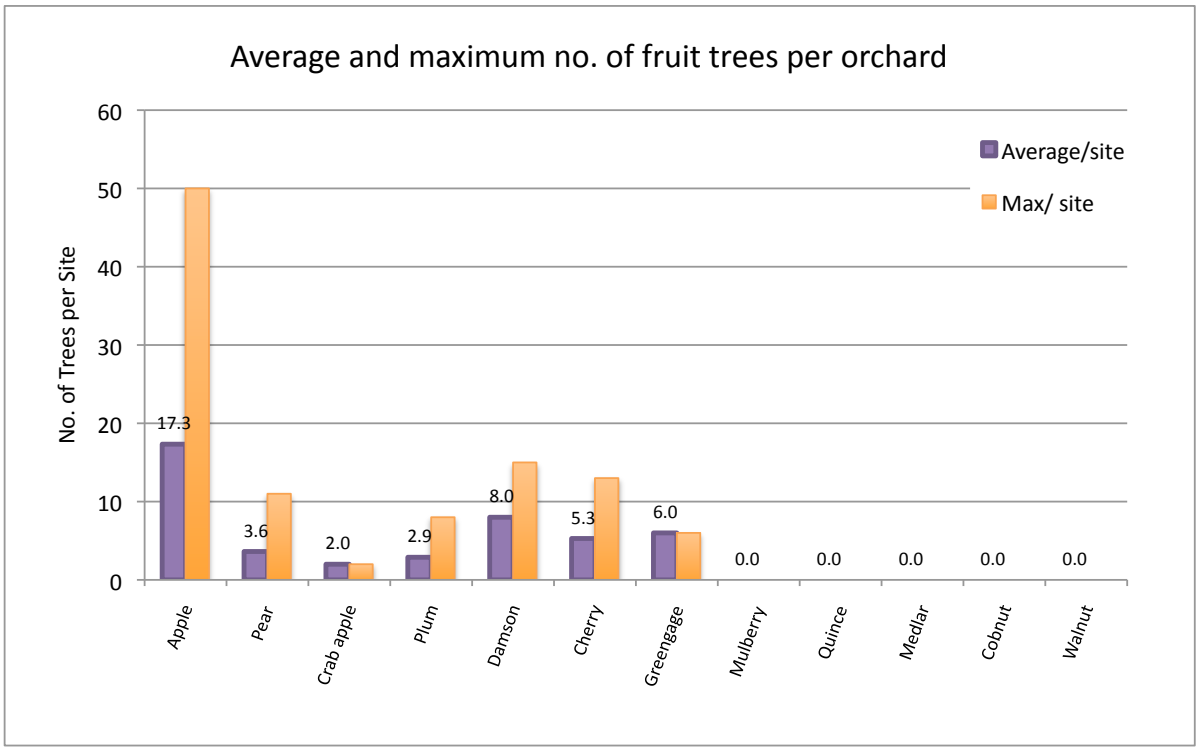


A broad range of top fruit species were recorded to gain a full picture of fruit produced. The green columns (left scale) represents the total number of trees recorded for each species in the area being considered. The red markers (right scale) represent the number of orchards in which that data was collected. In some cases it was not possible to determine numbers for individual species in an orchard, so the total number of sites surveyed is likely to be greater than the maximum number of sites recorded here.

The total number of individual trees recorded in the survey was 428. We also recorded a size range for each orchard. An estimate of the total number of trees from this size range data is 372. This demonstrates reasonable agreement, given that number of individual trees is not always recorded in every orchard.

The graph tells the story of this area. The apple dominates in the orchards recorded as part of this survey, being present in all of the orchards. Cherries are the second species which is not the case across much of Scotland. There are a few of pears, plums and damsons which also do well in the area.

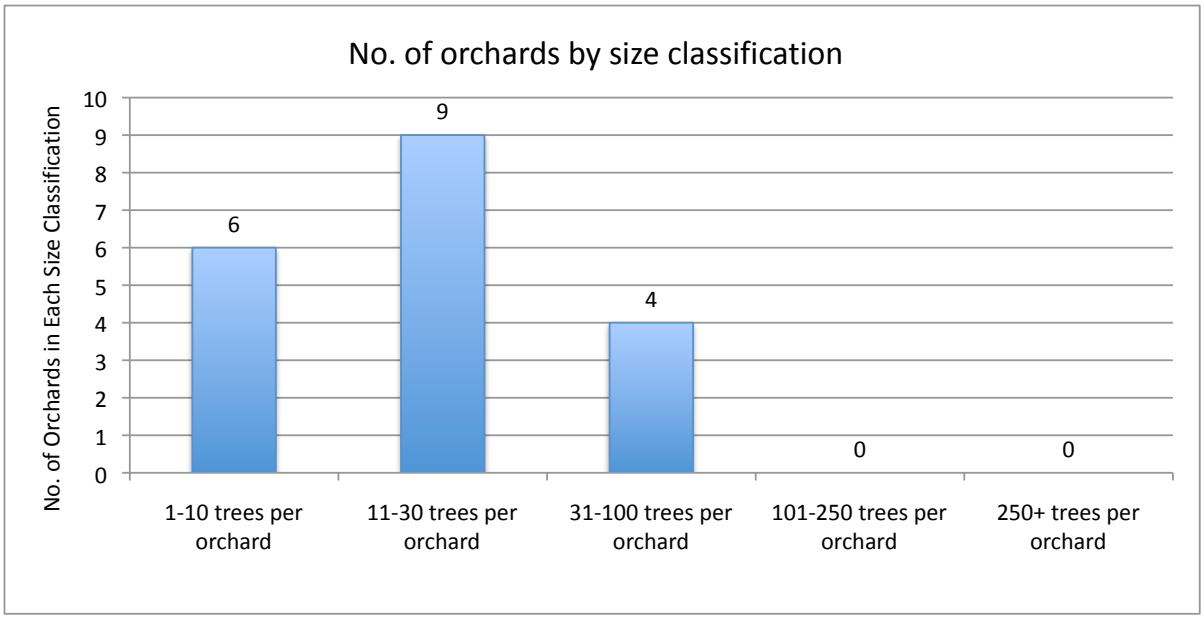
There are few of the other orchard species that are typically found in small numbers elsewhere.



The graph above represents the average and maximum number of each species in the orchards of the area. It does not represent the typical stocking of an average orchard.

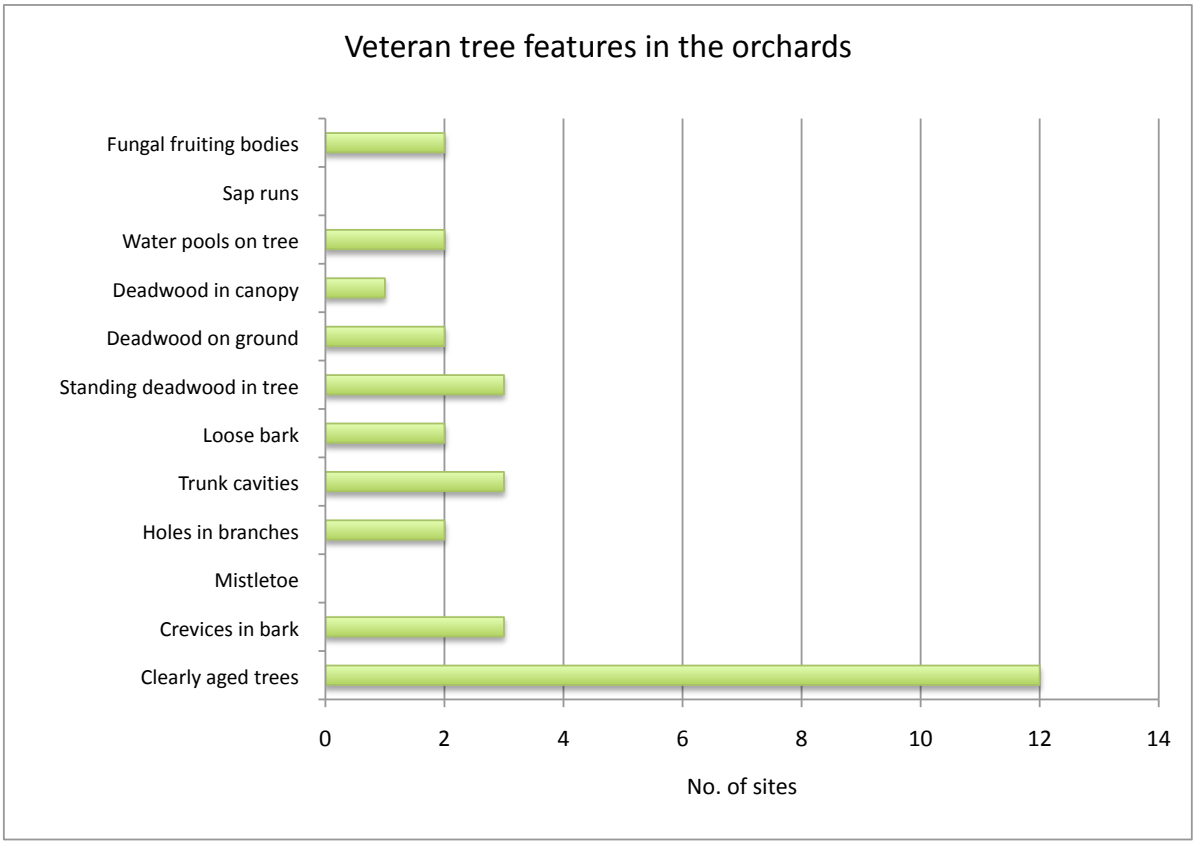
The short purple column on the graph show the average number of each species in the orchards. The taller orange columns show the maximum number of a species found in any orchard in the area.

The high numbers for apples in the orange columns reflect the single commercial sized orchard. The purple (average) provided a more realistic picture of the typical contents of an Angus orchard. This shows that orchards are typically mixed, with apple as the main species, and then a number of other species in support.



As well as asking how many individuals of each species of tree were present, we also wanted a general sense of the size of an orchard, and therefore size range classification was recorded, as shown in the graph above.

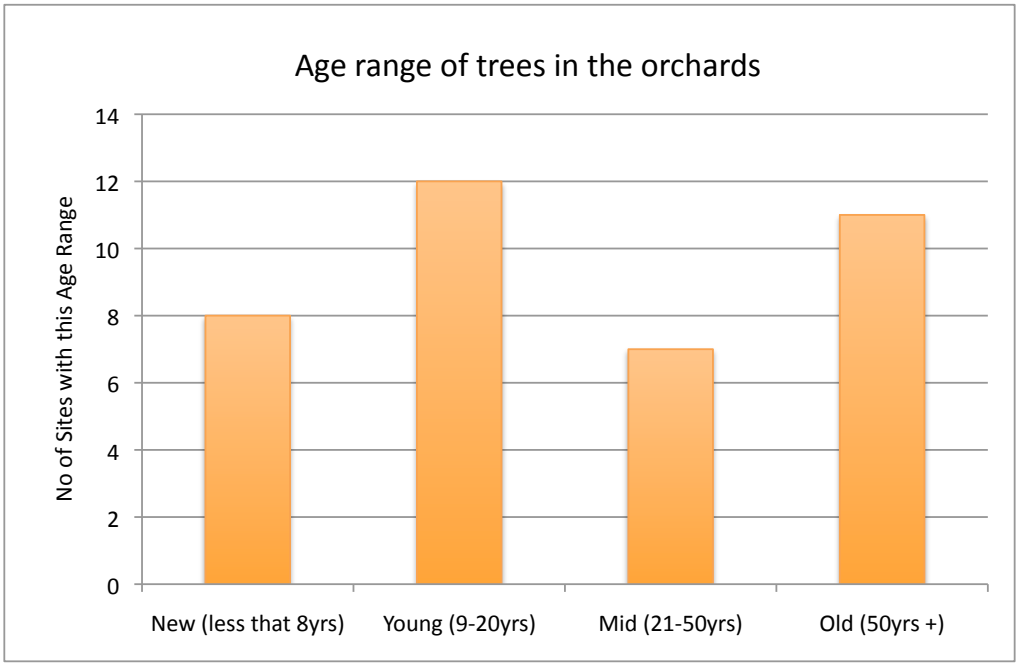
The graph shows that vast majority of orchards had 30 fruit trees or less. A few have up to 100 trees. No orchards have more than 100 trees which we consider to be an overtly commercial size. There is a lower number of large orchards than many other parts of Scotland, which is surprising given the proximity to markets such as Dundee.



Veteran tree features are used as biodiversity indicators. Therefore the more veteran tree features present, the higher the likely biodiversity in the orchards. There was a total of 32 veteran tree features recorded in the orchards in this area. This demonstrates significant biodiversity.

Its useful to assess how mature the trees in an orchard are. We consider trees over around 50 years old to be mature. Mature trees of older varieties generally are more established in terms of their steady yield. However, there is also potential for more disease. A further dimension is that orchards with mature trees have greater biodiversity potential.

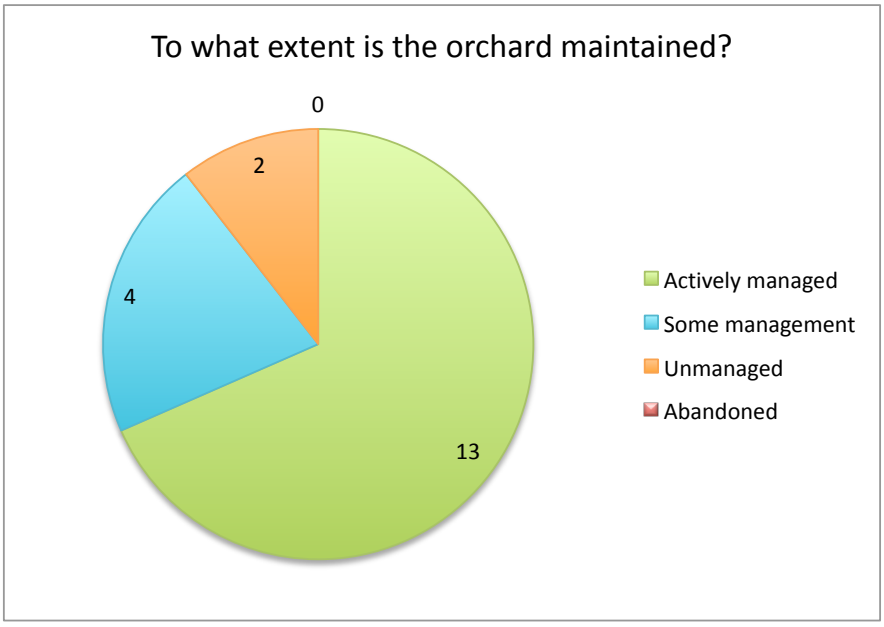
The average proportion of older trees for the orchards was 36%. This figure was calculated from the 20 sites where data was recorded. There will however be a great variability with some orchards being entirely mature, and some being entirely young.



The age of trees contained in each orchard was recorded. Ages were grouped into 4 categories to simplify the assessment in the field.

Each orchard may contain a number or all the age ranges reflecting the plantings over the years. Predominantly old trees indicates a mature collection of orchards. If no new or young plantings are recorded in an area, this indicates that the presence of orchards in the area is potentially threatened.

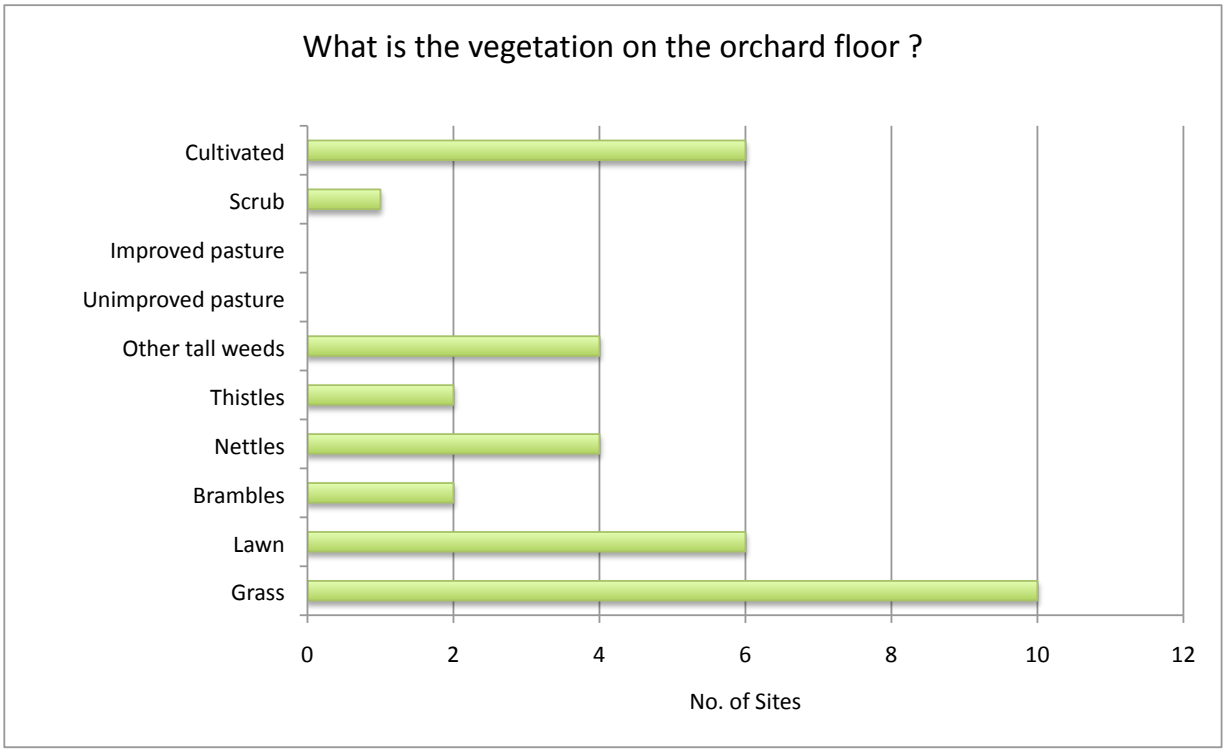
The graph shows all age ranges being represented. Though there has been some loss of orchards, it is reassuring that significant numbers of new plantings are recorded.



The extent of orchard management is given above. A total of 19 sites have data recorded for them. The figures in the chart are the number of orchards determined to be in each particular category.

The graph shows that the overwhelming majority of orchards have some or active management. This demonstrates much higher levels of orchard management than are found in many parts of Scotland.

High proportions of abandoned and unmanaged orchards are an indication that there needs to be a local focus on raising awareness on maintenance issues. Maintenance skills project are also a popular way of building capacity locally.

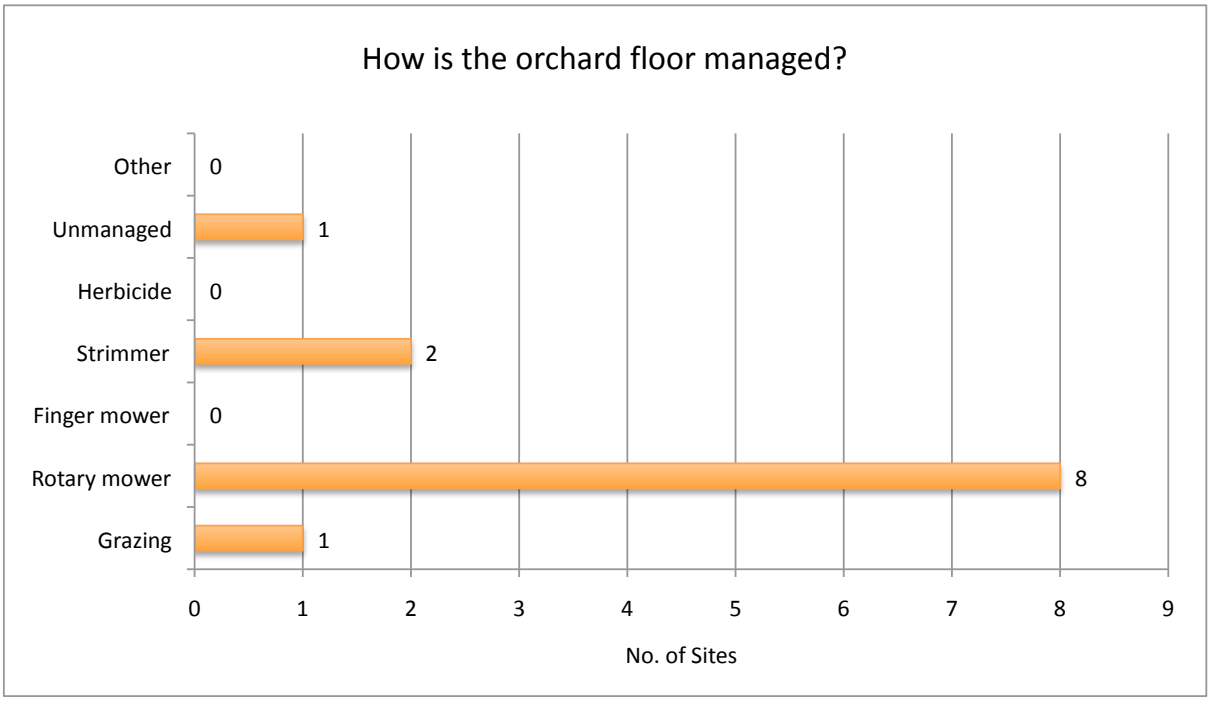


The orchard floor is an important part of the orchard habitat, both for biodiversity but also as a further element of the growing space. The generic term used across various habitats, is the 'field layer'.

Each site may have several field layer types, for example parts of it may be mown into a lawn while other parts are unimproved pasture with thistles. We are also interested in orchards that are cultivated as this was a practice that was once much more common.

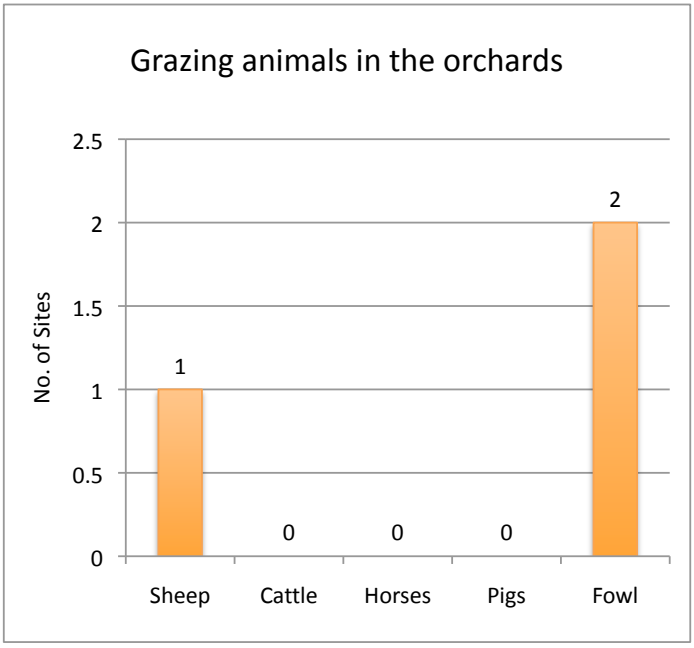
The graphs shows that though many orchards have some sort of managed grass as a field layer, there are a few that have various tall weeds and scrub.

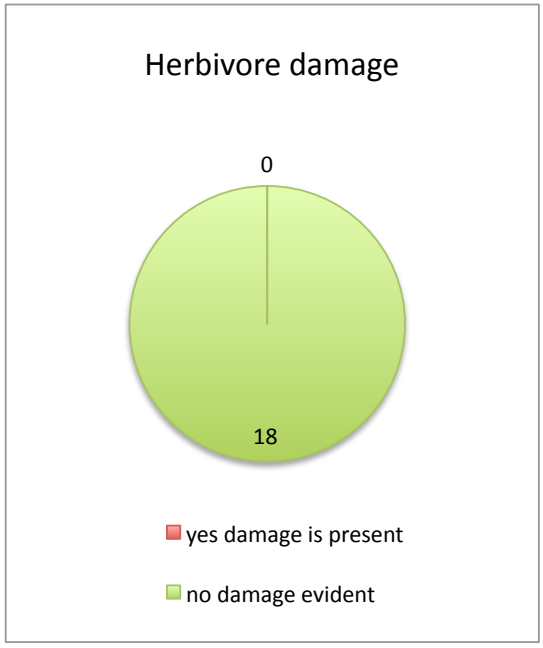
There are also a significant minority of 6 orchards that are also cultivated showing a more complex use of the land.



Each orchard can record more than one method for managing the orchard floor. The reference to the finger mower may be unfamiliar. This is a type mower that has a flat cutter bar like a hedge trimmer. The reason for recording this separately is that there is some evidence that this sort of mower does far less damage to invertebrate life in the sward than a rotary mower, which tends to suck up and eviscerate the sward contents.
In our experience herbicide use is under-reported by orchard keepers.

Unsurprisingly, the graph shows that the common method of management is by rotary mower. However, use of a strimmer comes second, with grazing and an unmanaged field layer also occurring.



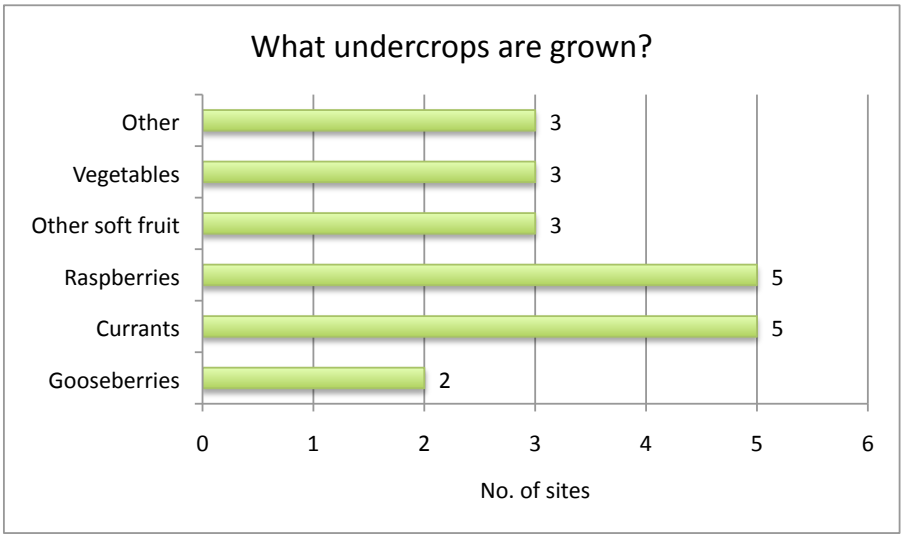


Each orchard can record more than one type of animal grazing the orchard floor.

The graph (above left) shows that fowl and sheep are present in a few orchards. Sheep are often popular and make a good use of the orchard floor; horses can be benign provided that good tree protection is present otherwise they can be devastating.

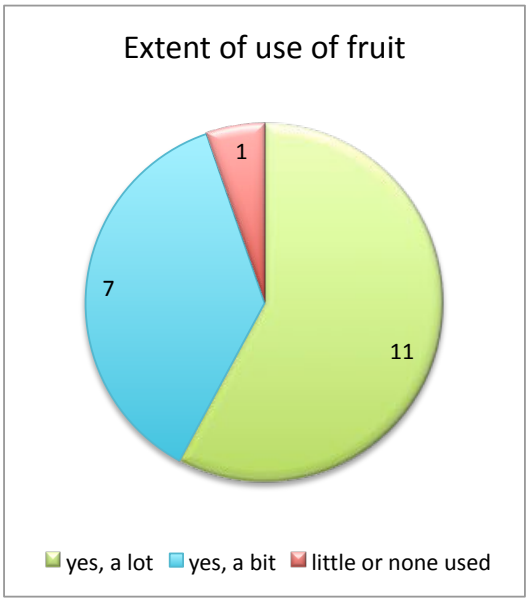
The pie chart shows that where recorded, herbivore damage was not evident on any sites.

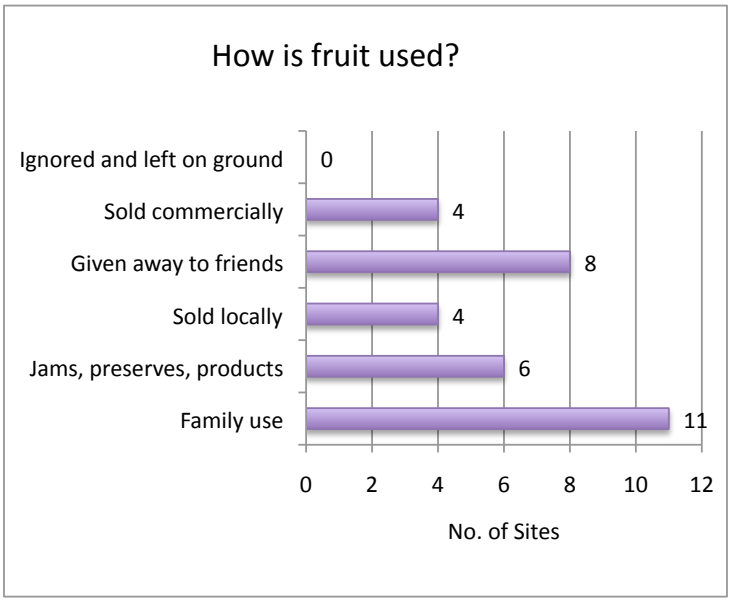
Not all recorded damage can be attributed to grazing livestock, as deer and rabbits also play a role.



The growing of other crops within an orchard – known as undercrops - was formerly a much more common practice than it is today. Each orchard can have more than one type of undercrop recorded.

The graph above shows that undercrops are still common in this area. There is a higher level of undercrops in Angus than in many other parts of Scotland.





The use of fruit was determined for 19 sites. Though the categories in the pie chart are fairly broad, they do give a clear indication of the proportion of orchards that are well harvested. It also gives an indication of the scale of the unused local resource.

The chart shows that over half of orchards report that they use the fruit a lot. Another substantial proportion use some of their fruit. Few use little or none of their fruit. This is a much higher level of use than is found in much of the rest of Scotland.

The bar graph (above right) provides detail on how fruit is used. An individual orchard can record multiple uses. So while the family may use some, they may also leave unused fruit on the ground.

The graph shows that family use, followed by jam, preserves, products and then by giving the fruit away was most common. A reasonable number of orchards sell their fruit locally, and 4 orchards sell commercially. These commercial sales are at a higher level than most of Scotland.

No orchards leave fruit on the ground.

7. ANECDOTAL AND COMMENT INFORMATION

A qualitative data summary

7.1 Introduction

Anecdotes and comments add a lot of colour to the survey of orchard sites. They are more valuable than they may first appear because they help interpret individual sites and whole areas in relation to their orchards. They also form an important record of local oral history that may not be recorded elsewhere; this may be about the family and its own orchard, or it may be about the characteristics, history and purpose of orchards in the area, and how this formed a part of its economic and cultural heritage.

7.2 Structure and Presentation

Guidance and training for the field surveywork encouraged the collection of anecdotal history, comments, pertinent information relating to the orchard being considered. This was written up on the survey form and submitted to us in that way.

The data presented below are a selected summary, representing what we consider to be the most interesting aspects of the qualitative data collected. We have identified emergent themes from these data and have categorised them accordingly.

The comments have been been subject to some editing. Our intention is to maintain them as verbatim as reasonable. The editing has been restricted to typos, spelling and minor changes to assist understanding. We have carried out further editing to comply with data protection. We have therefore also redacted content that would enable an individual person to be identified.

7.3 Anecdotal and Comment Data Categorised by Theme

Surveyors noted that a number of historic walled gardens and their orchards in the area have either disappeared or have deteriorated either through neglect or change of use:

An old walled garden with only 2 remaining old cherry trees from historical orchard. The space has been plants with rows and rows of elders which were at one time used to make wine. The farmer says they are about to be taken out. There are sheep in the area just now. Farmer not at all interested in the old trees. ANGU0010

Spoke to the woman who has lived in the adjacent cottage for 50 year. The area on the map is part of the walled garden of [an estate house] and has not been used as an orchard for the last 50 years. The area is grazed by horse and access was not possible. There are probably 2 sickly looking apple trees or crab apple trees against the walls. ANGU0034

The area shown on the map is the old walled garden of [an estate house]. The walled garden is not owned by the owners of [the] house but has been owned by developers for around 20 years. The intention was to build houses on the plot.[...] I was able to see a lot of weeds and teasels about 7 ft tall. ANGU0048

No orchard present in what was once a walled garden. ANGU0041

However, there are also signs that some of the declining estate gardens and their orchards are being restored or replaced elsewhere on the property:

[The house] was a fruit farm in the early 1900s. In WW2 the house was requisitioned and the garden used to grow vegetables. The present owner [...] bought the house in March 2013. [The owners] are keen to preserve as much as possible in the walled garden but they have little knowledge of orchard management and are unable to identify the fruit trees. The old apple trees are arranged in rows and also along the walls of the garden. There are also extensive plantings of currants and raspberries. This old orchard has a lot of secrets.
[The owner] has had a tree surgeon into the garden and quite a number of trees are marked for removal.
It would be preferable if someone with specialist fruit tree knowledge would come and give [The owner] the advice he needs. I suspect that many of the old trees are local heritage varieties - but they need to be identified.
Present owner does not know the varieties, although there are some very, very old trees here. ANGU0005

[The site] used to be an orchard but is now a veg garden in a walled garden. About 10 years ago [the owner] planted about 4 cordon apples in the walled garden. [...] However, [the owner] had recently planted apple and plum trees in a different location on the other side of the house. This is reported separately. ANGU0030

Surveyors noted a number of well maintained and well used orchards in the area, in domestic as well as historical walled gardens, often containing a significant number of mature fruit tree specimens:

There are 2 parts to the orchard at this site, one associated with each of two adjacent houses. One, the smaller is accessible from the track and is next to [a] Cottage.
The other is not accessible as it is behind the second house. [...] In total I think there are about 25 trees with the majority apple. There are possible plum and pear but I could not tell for certain. Many of the trees in the larger part of the orchard are old and appear to be at least 80 years old.
Some of the old trees look worthy of a follow up. [...] ANGU0006

Many very old trees. The garden was planted in 1845 and some tree are thought to date back to then. The gardener does not know the varieties of many of the trees.
A delightful, well managed and resourced wall garden which produces a large amount of soft and tree fruit. The gardener is very keen to have the varieties of the tree determined. There is a Facebook site "Stracathro Walled Garden" that advertises open days etc. [...]
Sold locally. The owner has a garage and garage shop on the main A90 road to Aberdeen. ANGU0036

[House of Dunn, National Trust for Scotland property] [30 apples and 10 pears] planted between 1987 and 1993. There is scope to plant more fruit trees in the garden. The Community Outreach ranger is keen to work with Community Groups to achieve this. Angus Apples a local juicing company comes and buys the apples. Fruit also sold in the NTS Shop in the House of Dun. ANGU0002

This is a historical garden which is open to the public. [...]
Fruit is used in the house and sold. Angus Apples comes and collects apples to make apple juice, which is sold commercially. ANGU0004

Obviously a managed orchard. I could not identify all the trees. There was a small vegetable garden next to the orchard. The fruit trees were pruned and mature. The trees were surrounded by grass, which presumably was cut during the year. [...] ANGU0029

One farm used fruit trees as part of the cover for their free range chicken run:

Farm / chicken manager said varieties were not known as the 8 apple trees came in part of the "job lot" of trees that were planted when the woodland area was created for the chickens. This piece of woodland was created to provide a pleasant habitat and cover for the free range chickens that are produced on the farm.
The fruit is allowed to drop and the chickens eat it. ANGU0032

Fruit use in the area included 6 orchards with local or commercial sales, and qualitative data revealed that 4 of those orchards sold their excess apples to local fruit-processing businesses - 3 to the Angus apple juice and 1 to Cairn O'Mohr winery.

8. CONCLUSIONS

The results presented above, and also in the following photographic record, lead to the following conclusions:

- A total of 36 orchard sites were surveyed, of these 18 were found to be intact orchards.
- The total acreage of orchards remaining in this area was found to be 8.3 ha and the average area of each orchard was 0.34 ha.
- The survey showed that a modest area of orchards have been lost, and this has been more than offset by newer orchards. However the lost orchards are the larger mature ones that had high cultural and biodiversity value.
- Most of the orchards contain less than 30 trees and are in a domestic setting. Five larger orchards of commercial size are recorded.
- Though apple dominates, cherries are unusually prevalent, together with other species reflecting their domestic use.
- The tree stock contains trees of all age ranges.
- Veteran tree features indicate the orchards contain modest levels of biodiversity.
- The overwhelming majority of orchards have some or active management, and this is at a much higher rate than typically found elsewhere in Scotland.
- Many orchards have new plantings and younger trees, and this shows orchards renewal is occurring.
- Soft fruit and also vegetables are grown in a significant minority of orchards. This is at a higher level than most of Scotland.
- Most fruit is used for family and friends, some is sold commercially and some is left to waste. Livestock is grazed in a few of the orchards, these fowl and sheep.

To conclude, Angus contains a small number of small orchards, most of which are very actively managed and from which the fruit is used within the domestic setting. There are a handful of commercial sized and estate orchards which sell their fruit. Many of the more historic large mature orchards have been lost, and new orchards tend to be for domestic use.

ANGU 0010 elders.jpg

Plate 01. A plantiation of elders in an old walled garden - once used for production of elderberry wine.

ANGU0010 water pool.jpg

Plate 02. An ancient cherry tree in a farm walled garden.

ANGU0029-1.jpg

Plate 03. A mature well maintained medium-sized domestic orchard

ANGU0035-2.jpg

Plate 04. A newly planted field-sized farm orchard with an unmanaged floor.

ANGU0046 Mirabelle plum 2.jpg

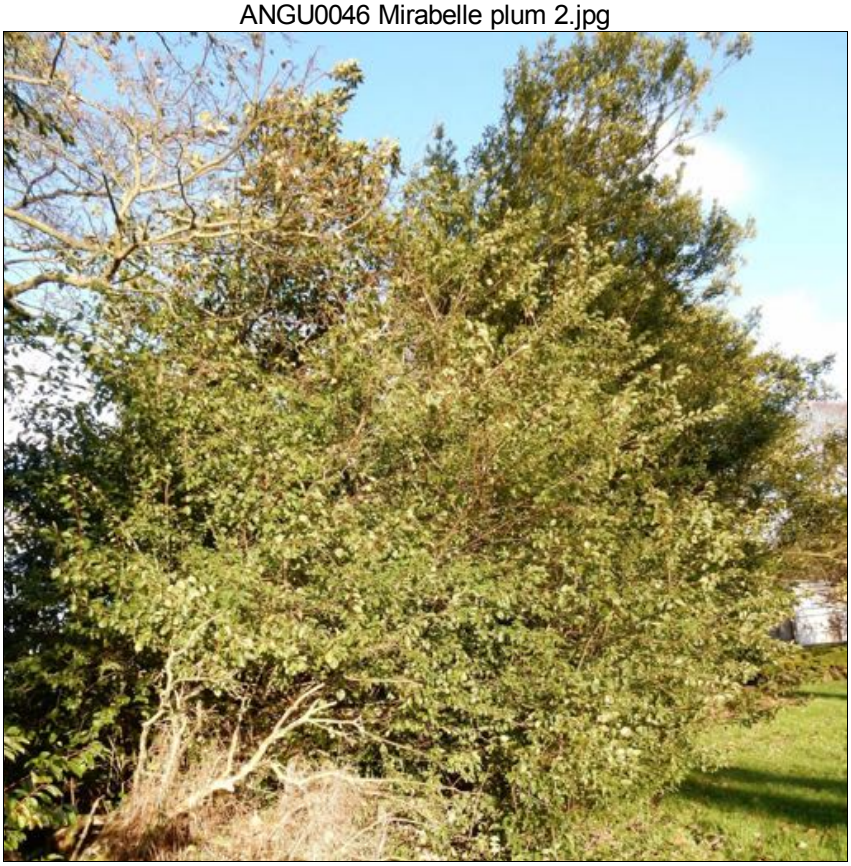


Plate 05. An unmanaged specimen

ANGU0047 Arbour 3.jpg

Plate 06. A 35-year old arbour of 39 Bramley apples in one of the orchards in the area.

ANGU0049 - 1.jpg

Plate 07. A young, established, small orchard in a domestic garden.

ANGU0001 - 3.jpg

Plate 08. A mature apple orchard in a domestic garden. Most trees are over 80 years old.

ANGU0005 row of trees.jpg

Plate 09. A walled garden once used as a fruit farm and a vegetable garden now with a remnant of an abandonned orchard. New owners are keen to restore the walled garden to productivity.

ANGU0006 - 2.jpg

Plate 10. A mid-age established orchard in a domestic garden.

ANGU0038-3.jpg

Plate 11. A newly planted small apple orchard in a rural domestic garden.

ANGU0039-3.jpg

Plate 12. A predominantly mature medium sized orchard in a farm walled garden.

ANGU0036-4.jpg

Plate 13. A very productive and well maintained Victorian walled garden with a wide range of fruit trees, some of them very mature.

ANGU0036-8.jpg

Plate 14. An aerial view of the well mantained Victorian walled garden with extensive fruit plantings, including... range of fruit trees in glasshouses.

ANGU0012 - 1.jpg

Plate 15. A small orchard in a walled garden.

ANGU0014 - .jpg

Plate 16. A mature apple tree providing cover for a chicken run in a walled garden orchard.

ANGU0014.jpg

Plate 17. A productive walled garden with a small, well-mantained orchard. Some of the fruit trees visible at t... wall in the background and in the lawn.

ANGU0041.jpg

Plate 18. No orchard present in what was once a walled garden.

ANNEX 2: METHODOLOGY

A2.1 Methodology for GIS Deskstudy

The following methodology was implemented for the Deskstudy.
GIS system: MapInfo Professional v11.5 software with Data Capture Tool
Identifying locations; Various sources of data to determine orchard locations:

- Visual search of aerial and historic mapping.
- Existing survey data. Sites listed in existing surveys are reassessed.
- Additional existing datasets:
  - The OS MasterMap 'Orchard' attribute.
  - RCAHMS-Historic Land-use Assessment database
  - Regional orchard projects datasets
  - National Trust for Scotland Demeter Plants Database
  - Agricultural Census,historic data (not site specific)
  - Dunn 1885 Apple Congress report (time constraints meant that only a few sites from this marvellous tome were considered)
  - and other publically available datasets, such as community orchard listings.

A more detailed description of the deskstudy methodology and its results are published in reports for Scotland as a whole. These are available at www.scotlandthefruit.org.uk

A2.2 Methodology for Field Verification

The implementation of field verification is structured as follows:

- Fieldwork is devolved to a local collaborating organisation. Ideally this is a competent local not-for-profit organisation with a track record demonstrating ability to organise and deliver locally.

- Local Facilitator. The local collaborating organisation employs or contracts a person, the Local Facilitator, to be the local interface and organiser of volunteer surveyors. This has been a paid role.

- Recruitment of surveyors. The local organisation uses various channels to recruit volunteer surveyors. The channels include local press, presence at events, membership lists, other organisations, and formal & informal networks.

- Resources are provided by the National Coordinator (in this case Crispin Hayes Associates). Site specific resources such as site location maps and candidate site lists are shared via cloud services with the Local Facilitator. Other generic material is distributed via www.scotlandthefruit.org.uk which is used as the project website. This includes the webforms used to record survey data.

- Allocation. The Local Facilitator allocates sites to volunteers, and manages their progress, ensures instructions including the risk assessment are understood.

- Mentoring. Some volunteer surveyors are very competent at all aspects. Others require a little mentoring. The Local Facilitator carries out this role, if necessary taking the volunteer on a training site visit.

- Survey Data. The Local Facilitator ensures that survey data is submitted together with photos, and that all files are identified with the site unique identification. Quality checks are also carried out, and queries referred to volunteers.

- Data processing. Further quality checks are carried out on the data, and corrections made, if necessary with reference to the Local Facilitator and the volunteer surveyor.

- Merging. The field verification data is added to the Deskstudy data for each site via the Geographical Information System and other database tools.
- Amendments and snagging. Revision of site boundary and other Deskstudy details are carried out on a site by site basis. Snagging is carried out as required.
- Output. Further work may be required: for example redacting personal data fields, and extracting some site subsets, before the finalised dataset is output.

A2.3 Field Verification time input statistics for this area

Some statistics were recorded on the time input of various aspects of the Field Verification.

Time-on-site is reported on each surveyform by the surveyor. The average time on site in this area was 32 mins. The maximum time on site was reported as 120 mins, while the minimum was 10 mins.

In Angus, the total time-on-site was recorded as 18 hours.