

# THE CONDITION OF ORCHARDS IN NORFOLK

June 2006



## Norfolk Phase 1 Orchard Survey

*Carried out by*

**The East of England Apples and Orchards Project**

*On behalf of*

**The Norfolk Biodiversity Partnership**

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## 1. ORCHARDS IN NORFOLK

Orchards have been a feature of Norfolk's farmed landscape for at least a thousand years. In the eleventh century the Little Domesday Book for Norfolk recorded two villas with names associated with apples, 'Appleton' and 'Applethorpe'.

The earliest record of a named variety of apple being grown in England occurs in a manorial record for the Manor of Runham, near Great Yarmouth, dated 1204. This lists the annual tithe payment as including, '...200 Pearmains and 4 hogsheads of Pearmain cider.' (*Morgan & Richards, 1993, p41*)

In 1406 accounts from Norwich Cathedral Priory record the existence of a 'cherry yarde' and 'appleyard' (*Greenoak, 1983, p90*), and during the reign of Elizabeth I the city of Norwich was described as, '...either a city in an orchard, or an orchard in a city, so equally were the houses and fruit trees planted' (*Common Ground, 2000, p55*). In 1558 William Bulleyn made special mention of the county's cherry orchards (*Greenoak, 1983, p90*).

During the Tudor period Huguenot immigrants from the Low Countries settled in the county, bringing with them their horticultural knowledge and skills, and quite possibly some of the apple varieties which still exist locally today.

Most of the county's orchard fruit varieties arose during the last three hundred years. From the mid eighteenth century onwards Norfolk's larger commercial nurseries, such as Lindley of Catton, Mackie of Tuckswold and Daniels Bros. of Lakenham, played an important role in promoting new local cultivars, alongside other UK and European varieties.

Cider making, or 'cyder' as it is spelt locally, was recorded in the Manor of Banham, in South Norfolk, in 1281. (*Norfolk & Norwich Archaeological Society, 1899, part 1.*) It remained a cottage and farm-based craft until the mid-1800s, when the Rout and Gaymer families built large specialist cider-making works at Banham, which used the traditional mixture of dessert and cooking apples (unlike West Country 'cider', which uses specially developed cider cultivars). In 1896 William Gaymer moved to nearby Attleborough, where he built the largest cider-making factory in East Anglia, serviced by many local fruit growers. However, by 1935 most of the apples used were grown outside the county, arriving at the factory by rail (*Mosby, 1938, pp182*). The factory closed in 1995.

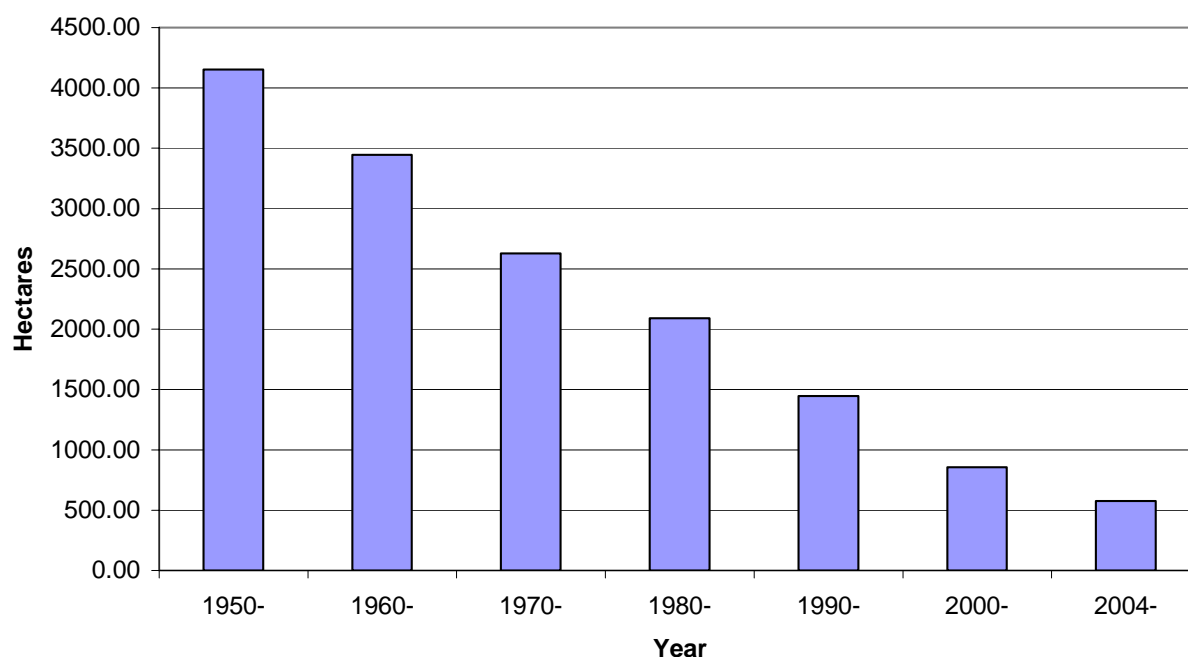
Commercial top fruit growing only began in the county after 1850, when the onset of an agricultural depression led many farmers to diversify and establish orchards. This occurred principally on the heavier loams of east and south Norfolk and in the far west, on the clay and silt soils to the east and south of Wisbech, which was at the centre of an extensive orchard area encompassing north Cambridgeshire and south Lincolnshire. These first commercial orchards were often planted close to the newly established railway network, which enabled freshly picked fruit to be sent quickly and cheaply to markets in the Midlands and the North of England. The Fenland orchards, which specialised in culinary apples and plums, also served a number of local canning factories, as well as the Chivers jam-making works at Histon near Cambridge, which opened in 1873 (*Mosby, 1938, p208*). All these works, and others in east Norfolk, have now closed.

Just after WWII, Norfolk Fruit Growers, a farming co-operative founded in 1926 by a group of mainly soft fruit growers, planted many acres of orchards in north, mid and south east Norfolk. They also built extensive controlled atmosphere storage facilities at Hoveton and Aldeby to handle the produce. Both facilities closed in the 1990s. Just east of Norwich the Ministry of Agriculture built Burlingham Horticultural Station, to teach fruit growing methods and to undertake research. This also closed in the 1990s.

Over the last thirty years there have been considerable changes affecting the economics of fruit growing in the UK. Britain's entry into the EC in the 1970s resulted in a sudden increase in the annual amount of cheap imported top fruit being sent from Europe, and new food adulteration legislation meant apples and plums could no longer be used as 'bulking agents' by UK jam manufacturers. Furthermore, agricultural farm subsidies at this time were heavily biased towards cereal production and grubbing grants were made available to fruit growers who wished to remove their orchards. A combination of these factors led to the destruction of many orchards.

Agricultural and Horticultural Census returns, shown in Fig 1. below, illustrate the drastic decline in Norfolk's orchard acreage during the latter half of the twentieth century.

**FIG 1. Area of Orchards in Norfolk 1950 – 2004**



**Source: Department for Environment, Food and Rural Affairs**

In 1999 a Biodiversity Action Plan for Traditional Orchards was created by the county's Biodiversity Partnership to help protect and enhance orchards in Norfolk. (See Appendix I)

In 2005 this group, still concerned about the loss and fragmentation of orchards across the county, and particularly traditional orchards, decided to fund this survey to obtain a better understanding of the present situation regarding these habitats.

## **2. NORFOLK PHASE 1 ORCHARD SURVEY**

Funding for this survey was provided by the Norfolk Biodiversity Partnership. The East of England Apples and Orchards Project co-ordinated the fieldwork and produced the survey report. Fieldwork began in April 2005 and was completed by June 2006.

### **2.1 AIMS**

The aims of this survey were to:

- Assess the distribution and condition of all types of orchard in Norfolk
- Locate remaining traditional orchards, assess their condition and their relationship to surrounding habitat

### **2.2 METHODOLOGY**

Sites selected for survey included all orchards in Norfolk that are marked on the OS Explorer 1:25 000 Millennium Edition maps. It is appreciated that this will not cover all orchards in the county, as not all have been mapped. However, it is hoped that it will include all of the more sizeable holdings.

It was believed that some parishes in South Norfolk contained small orchards that were not shown on this map edition. In these cases, 1inch 7<sup>th</sup> Edition maps were used in addition to the Explorer Millennium maps. Any orchards shown on the 7<sup>th</sup> Edition maps that still existed at time of survey were included in this survey.

In addition to these mapped orchards, any other orchards that were known to, or discovered by, surveyors have also been included.

Because an orchard was mapped on the Millennium Edition map, it should not be assumed that the orchard still existed in 1999/2000. Therefore, this survey should not be interpreted as an accurate loss of orchards in Norfolk between the years 2000 and 2006

The survey was designed to be conducted from Public Highways and other Rights Of Way, thus removing the need to gain permission for access, which is often a problem in this type of survey.

Surveyors were trained to recognise fruit and field boundary species, tree forms, orchard management systems, and to assess land use.

Training took place in Walpole Highway, Terrington St John, West Walton and Marshland St James, where a wide range of orchard types exist.

Surveyors recorded the following information, wherever possible:

- Any increase or decrease of area of orchard on, or adjacent to, a mapped site
- Present land use, if site was no longer orchard
- Surrounding land use and habitat
- Fruit species present
- Tree structure and density
- Evidence of tree and/or sward management
- Details of windbreaks, hedgerows or other field boundaries

*(See Appendix II for a copy of the survey form)*

All orchards were placed in at least one of 3 categories, according to tree form, size, and density

- Intensive: High density plantings, usually in spindle or other centre leader Forms.
- Extensive Medium density plantings, in large spindle or half standard forms.
- Traditional Low density plantings in standard or large half standard forms.

Some sites had mixed plantings, and were placed in more than one category

In a very few cases, it was not possible to view the site at all from a PROW. In this case, recent aerial photographs were used to ascertain whether the orchard appeared to exist or not.



### **3. ORCHARD SITES SURVEYED**

A total of 473 sites were included in the survey, 6 of these sites proved to be inaccessible to surveyors.

#### **3.1 SITE CLASSIFICATION**

Accessible sites were classified into 4 groups:

**Traditional Orchards** are defined as sites containing wide-spaced standard trees or large half-standard trees, with the main part of the tree canopy above head height.

**Other Orchards** are defined as sites with small half-standard trees or spindles, at close density (less than 4m between trees)

**Remnants** are sites that had only a very small number of fruit trees remaining, and where the land use could no longer be considered to be mainly orchard (eg: a few trees left on field margins, or scattered trees in gardens or paddocks) Typically, a remnant would be less than 20 trees

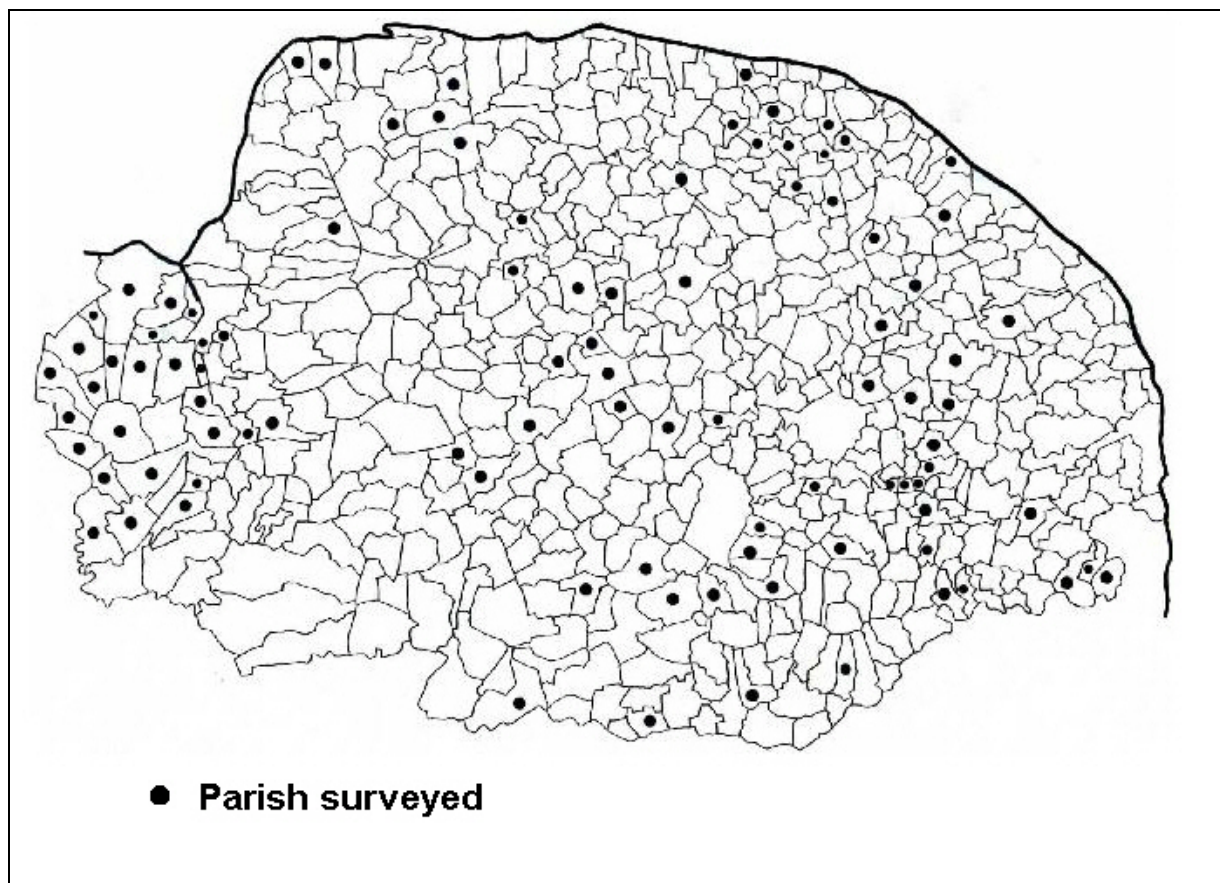
**Lost** are sites that had been mapped as orchard on the OS Explorer Millennium Edition maps, but no longer contained any fruit trees.

**Fig.2 Norfolk Phase 1 Orchard Survey**

<b>CATEGORY</b>	<b>NO OF SITES</b>	<b>%</b>
<b>Lost</b>	<b>204</b>	<b>43.13</b>
<b>Traditional orchards</b>	<b>105</b>	<b>22.20</b>
<b>Other orchards</b>	<b>106</b>	<b>22.41</b>
<b>Traditional orchards remnants</b>	<b>31</b>	<b>6.55</b>
<b>Other remnants</b>	<b>21</b>	<b>4.44</b>
<b>Unknown</b>	<b>6</b>	<b>1.27</b>
<b>TOTAL</b>	<b>473</b>	

- **51.71% of surviving orchard sites contain traditional orchard habitat**

**Fig. 3**      **Map of Parishes Surveyed**

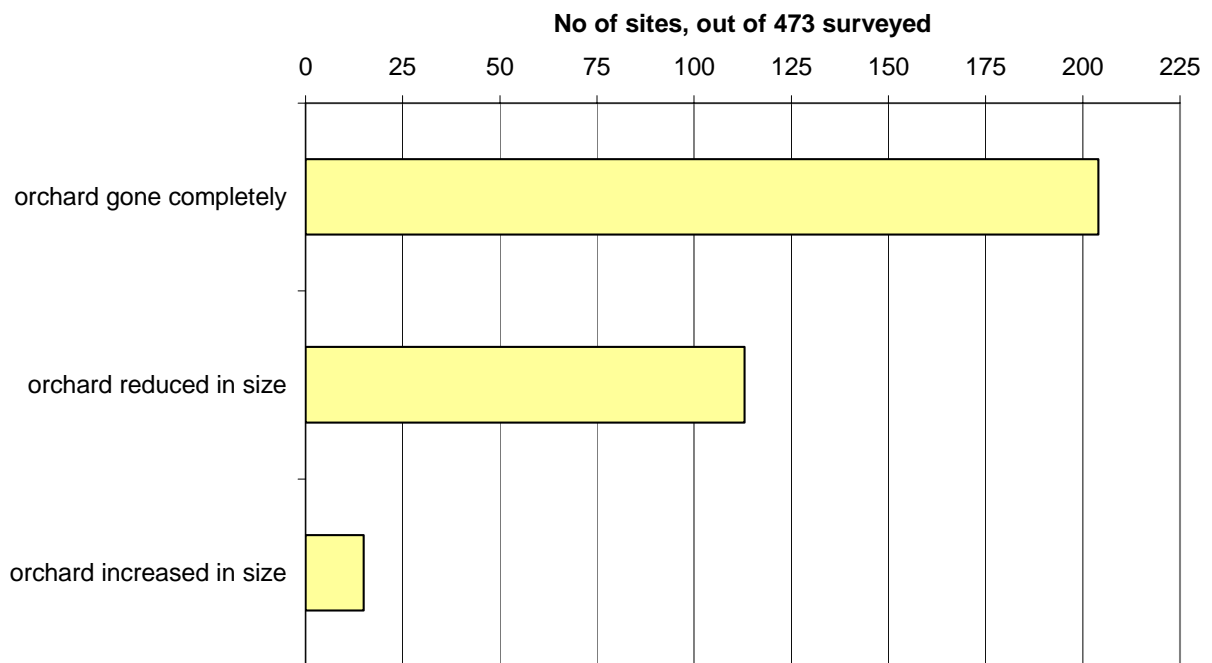


### **3.2 LOSSES AND GAINS**

- 43.13% of sites were found to have no remaining orchard trees
- 23.89% of sites contained orchards that had been reduced in size, compared with the mapped areas.
- 10.99% of sites had been so far reduced that only a few remnant trees remained
- Only 3.17% of sites showed some increase in orchard area

*See Fig 4 below*

**Fig 4 Changes in orchard size (of 473 sites surveyed)**



- **43.13% of sites surveyed showed total loss of orchard habitat**

### **3.3 CURRENT LAND USE ON LOST AND REMNANT SITES**

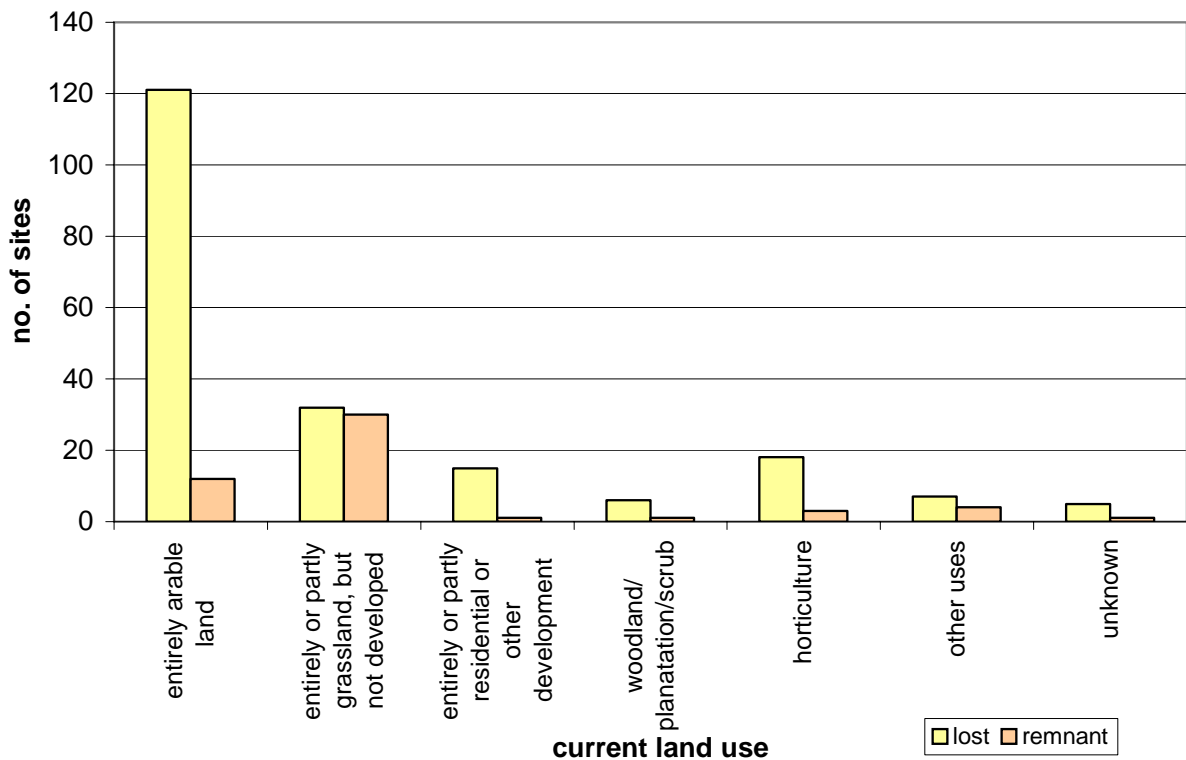
A total of 263 lost or remnant sites were identified, the majority of which had been converted to arable land. (See Fig 5 graph, below and Fig 6 table, following)

- 51.95% of lost/remnant sites are now arable land.
- 24.22% of lost/remnant sites have been converted wholly or partly to grassland.
- 8.2% of lost/remnant sites are used for horticulture. Several of these sites are now planted with soft fruit.
- 6.25% of sites contained residential or other development.

It is likely that many of the losses to arable were made in the 1990s, so that land could be registered under the Integrated Administration and Control System (IACS) subsidy scheme and therefore be eligible for an Arable Area Payment.

Grassland conversions have mostly been found to be paddocks, and a significant proportion of orchard remnants occur in paddocks. The presence of horses or ponies in a remnant must be interpreted as a threat to the trees, unless the animals have been excluded from areas where trees the remain.

**Fig. 5 Land use on lost and remnant sites**



**Fig. 6 Land use on lost and remnant sites - Table**

	<b>lost sites</b>	<b>remnant sites</b>
arable	121	12
arable and grass	2	1
car park	1	0
garden	4	3
grassland	29	29
grassland and plantation	1	0
grassland and industrial	1	0
horticulture	18	3
plantation	3	0
recently grubbed – proposed use not known	2	0
recently grubbed – orchard to be replanted	1	0
residential development	4	1
residential and amenity	1	0
residential and arable	3	0
residential and garden	1	0
residential and grassland	2	0
residential and industrial	2	0
scrub	1	0
smallholding	0	1
woodland	2	1
unknown	5	1
	<b>204</b>	<b>52</b>

**Totals**

<b>Lost and Remnants:</b>	
<b>Total no of sites</b>	<b>256</b>

**• 43.13% of sites surveyed showed total loss of orchard habitat**

#### **4. PARISH-BY-PARISH ANALYSIS**

The 473 sites surveyed were found throughout 97 parishes. 71 of these parishes were found to have remaining orchards or remnants. (See Fig.8, *Parish Breakdown.*)

*Fig 7 Map of Orchard Records by Parish* shows that the most of the remaining orchards/remnants are concentrated in distinct geographical areas.

The greatest concentration of orchards, including most traditional ones, were found in 15 neighbouring parishes lying on the marine silt/clay lands of Norfolk Marshland, to the west of the River Great Ouse. (See Fig. 7, *Map of Orchard Records by Parish*)

Fig. 3 (*Map of Parishes Surveyed*) shows that orchards in the parishes situated to the east of the River Great Ouse were more geographically scattered. The survey found that recent losses have created an even more fragmented habitat. Furthermore, parishes outside the Marshland area tend not to contain a mix of both traditional orchard/traditional remnants and other types of orchard habitat.

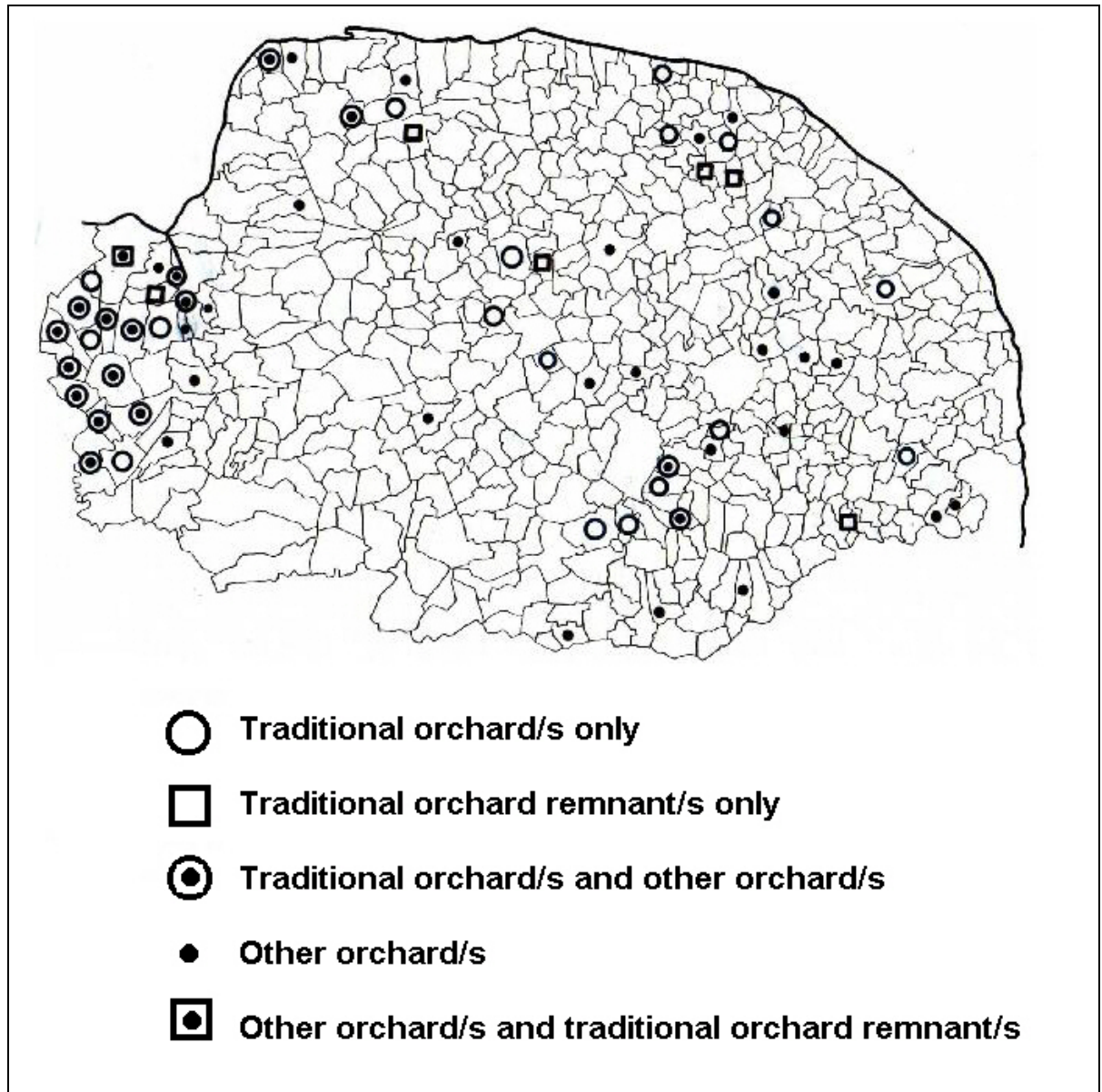
Parish-by parish results are also represented by Local Authority (LA) area (See Figs. 9-13, following, and *Appendix III*). This has been done to help local government officers assess the type of orchard habitat in their own LA at a glance, and the percentage losses.

- **71.48% of all remaining orchards/remnants occur to the west of the River Great Ouse**
- **75.74% of remaining traditional orchards/remnants occur to the west of the River Great Ouse**
- **50% of traditional orchards/remnants are found in 5 parishes**

**Emneth  
Marshland St James  
West Walton**

**Upwell  
Walpole Highway**

**Fig. 7**      **Map of Orchard Records by Parish**



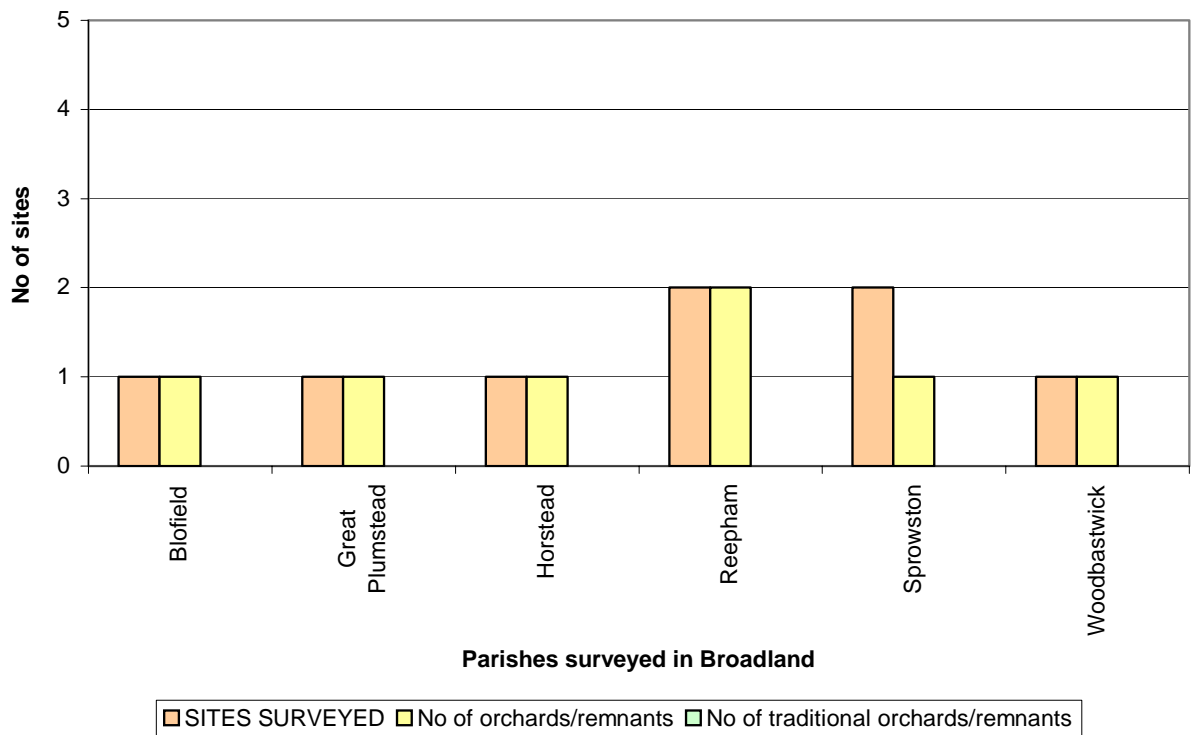
**Fig. 8 Parish Breakdown**

PARISH	SITES SURVEYED	TOTAL NO OF ORCHARDS	NO OF TRADITIONAL ORCHARDS	TOTAL NO OF REMNANTS	NO OF TRADITIONAL REMNANTS
Aldborough	1	1	0	0	0
Aldeby	4	1	0	2	0
Ashill	2	2	0	0	0
Ashwell Thorpe	1	1	1	0	0
Attleborough	3	0	0	0	0
Baconsthorpe	1	0	0	1	0
Bacton	1	0	0	0	0
Bergh Apton	2	0	0	0	0
Besthorpe	1	0	0	0	0
Billingford	1	0	0	1	1
Blofield	1	1	0	0	0
Bradenham	2	0	0	0	0
Brettenham	1	0	0	0	0
Briston	1	0	0	0	0
Broome	1	0	0	1	1
Burgh St Peter	1	0	0	0	0
Burnham Thorpe	1	1	0	0	0
Burston	1	1	0	0	0
Carleton Rode	1	1	1	0	0
Clenchwarton	5	3	1	0	0
Colby	1	0	0	1	1
Denver	1	1	1	0	0
Ditchingham	1	0	0	0	0
Downham Market	1	0	0	0	0
East Dereham	2	0	0	0	0
Emneth	68	33	15	6	6
Erpingham	1	0	0	1	1
Flitcham	5	5	0	0	0
Forncett	2	1	1	0	0
Framingham Earl	1	1	0	0	0
Great Plumstead	1	1	0	0	0
Gresham	1	0	0	0	0
Gressenhall	1	1	1	0	0
Hanworth	1	1	1	0	0
Hoe	1	0	0	0	0
Holme next Sea	1	1	1	0	0
Holverston	1	0	0	0	0
Honing	3	0	0	0	0
Horstead	1	1	0	0	0
King's Lynn Seeche	6	2	1	1	0
Ludham	1	1	1	0	0
Marlingford	6	1	0	0	0
Marshland St James	35	20	8	2	1
Matlask	1	1	1	0	0
Mulbarton	1	1	0	0	0
Nordelph	1	1	1	0	0
North Creake	2	2	2	0	0
North Elmham	1	1	1	0	0
North Pickenham	1	0	0	0	0

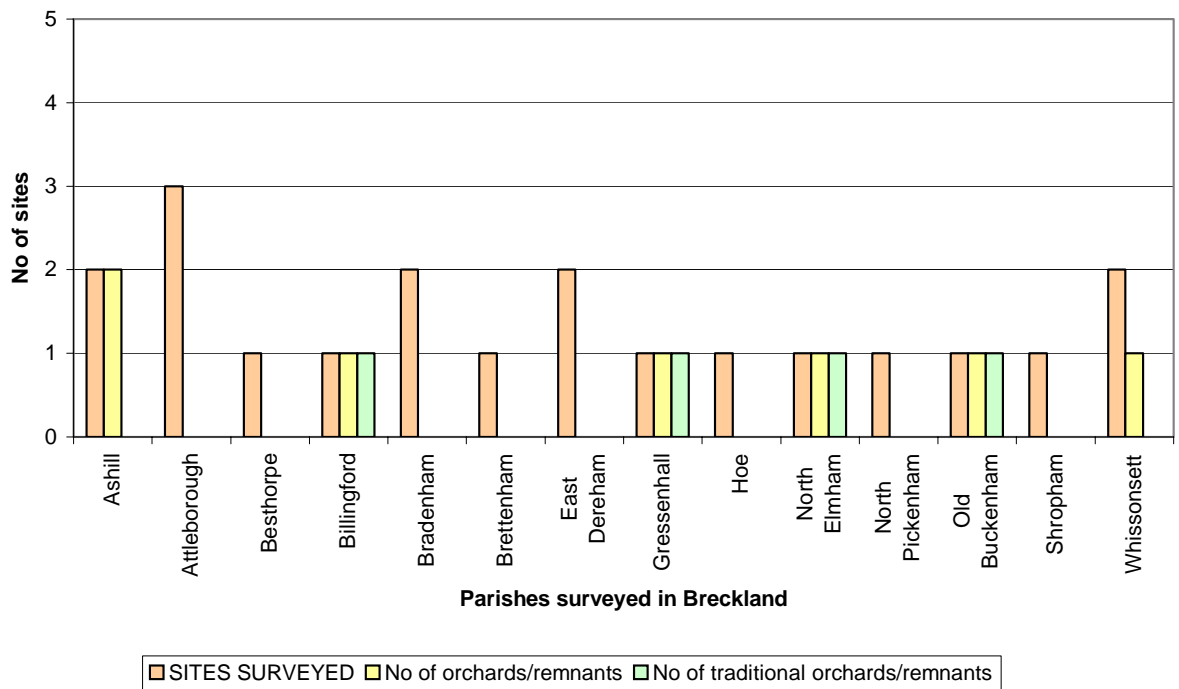


PARISH	SITES SURVEYED	TOTAL NO OF ORCHARDS	NO OF TRADITIONAL ORCHARDS	TOTAL NO OF REMNANTS	NO OF TRADITIONAL REMNANTS
North Runcton	1	1	1	0	0
Norton Subcourse	2	2	2	2	0
Old Buckenham	1	1	1	1	0
Outwell	29	4	4	3	1
Pudding Norton	1	0	0	0	0
Reepham	2	2	2	0	0
Rockland St Mary	1	0	0	0	0
Roughton	1	1	1	0	0
Runcton Holme	3	1	1	0	0
Runhall	9	2	2	0	0
Saxlingham Nethergate	1	0	0	0	0
Seething	1	0	0	0	1
Setchey	1	1	1	0	0
Shouldham	1	0	0	0	0
Shouldham Thorpe	7	0	0	0	0
Shropham	1	0	0	0	0
South Creake	1	0	0	0	1
South Lopham	1	1	1	0	0
Sprowston	2	1	1	0	0
Stanhoe	2	2	2	1	0
Starston	1	1	1	0	0
Stow Bardolph	2	2	2	1	0
Surlingham	3	0	0	0	0
Swanton Abbott	2	2	2	2	0
Swardeston	2	1	1	1	1
Terrington St Clement	11	2	2	0	3
Terrington St John	23	10	10	5	4
Thornham	1	1	1	0	0
Thorpe Market	1	0	0	0	0
Tilney All Saints	3	0	0	0	2
Tilney St Lawrence	7	5	5	5	1
Tunstead	4	0	0	0	0
Upper Sheringham	1	1	1	1	0
Upwell	45	19	19	13	9
Walpole	16	8	8	5	0
Walpole Cross Keys	6	2	2	2	1
Walpole Highway	14	7	7	7	2
Walsoken	24	19	19	5	4
Watlington	2	0	0	0	0
West Lynn	2	1	1	1	0
West Walton	35	18	18	9	2
Wheatacre	5	1	1	0	1
Whissonsett	2	1	1	0	0
Wiggenhall St Germans	7	1	1	1	1
Woodbastwick	1	0	0	0	1
Wreningham	2	1	1	1	0
Yaxham	1	1	1	1	0
Yelverton	1	0	0	0	1
<b>TOTALS</b>	<b>473</b>	<b>211</b>	<b>211</b>	<b>105</b>	<b>52</b>
					<b>31</b>

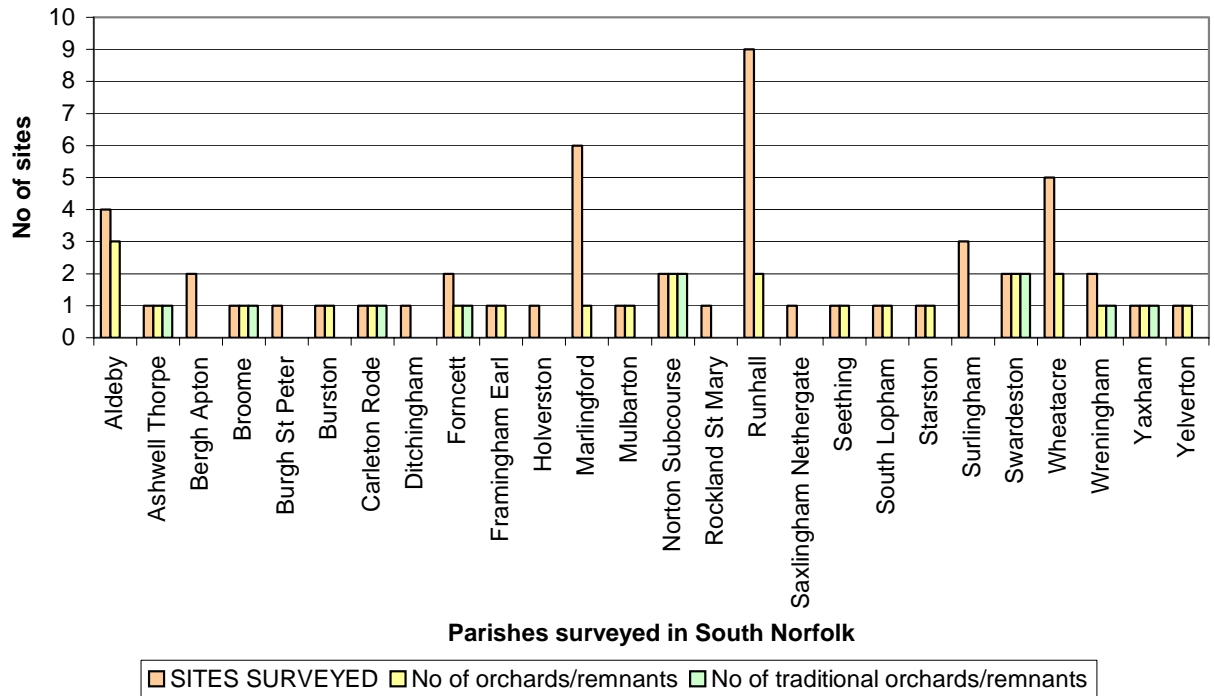
**Fig. 9 Broadland**



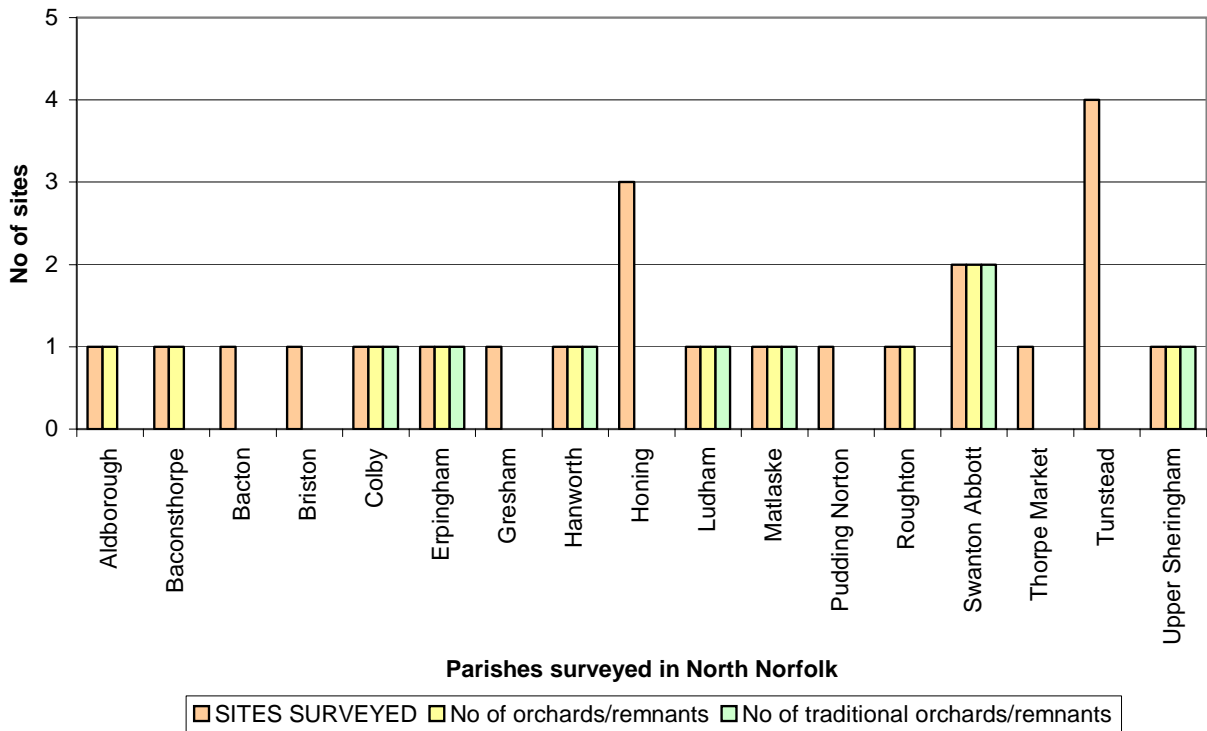
**Fig. 10 Breckland**



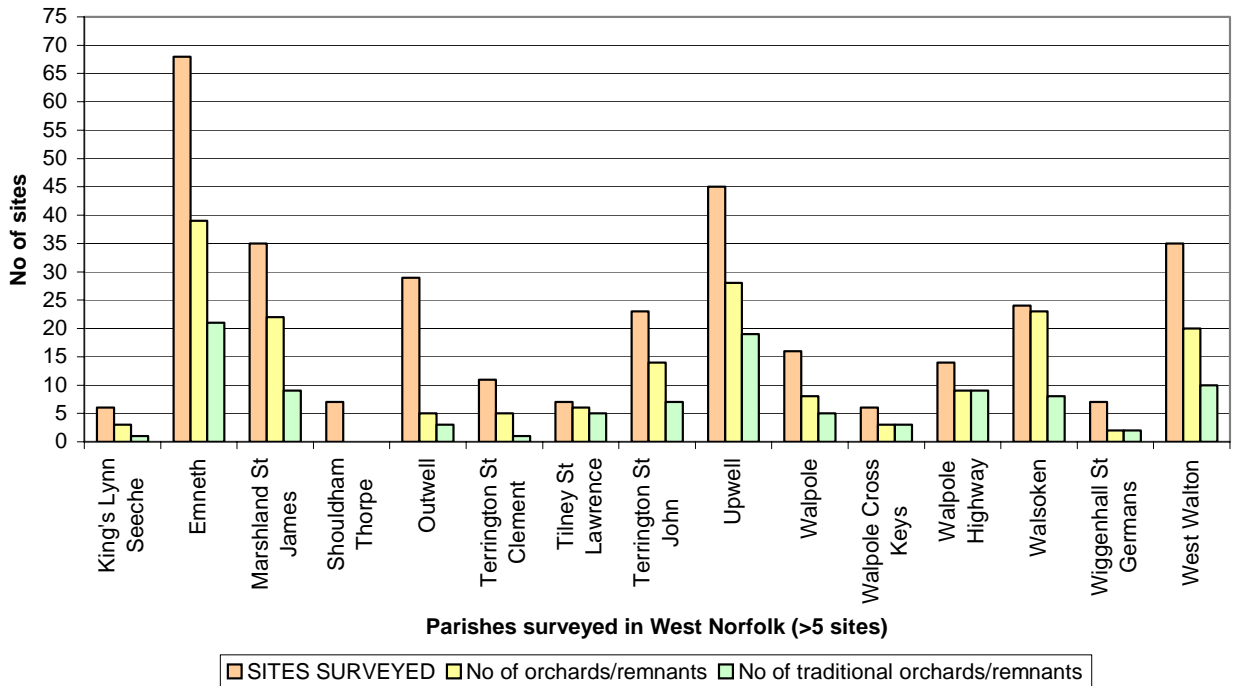
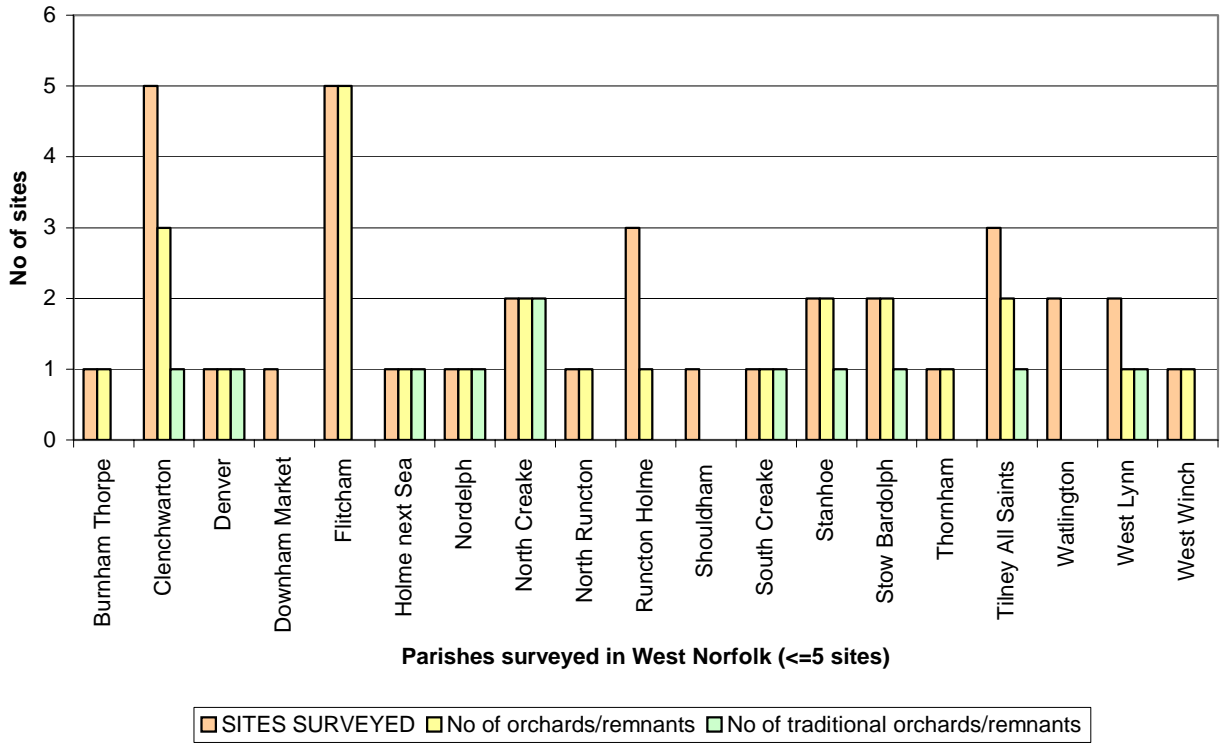
**Fig. 11 South Norfolk**



**Fig. 12 North Norfolk**



**Fig 13 King's Lynn and West Norfolk**



## **5. ORCHARD STRUCTURE**

Details of orchard structure recorded were:

- Tree forms present
- Tree density and height (estimated)
- Any fruit species that were visible and identifiable
- Presence of windbreaks, hedgerows or other field boundaries

### **5.1 TREE FORM**

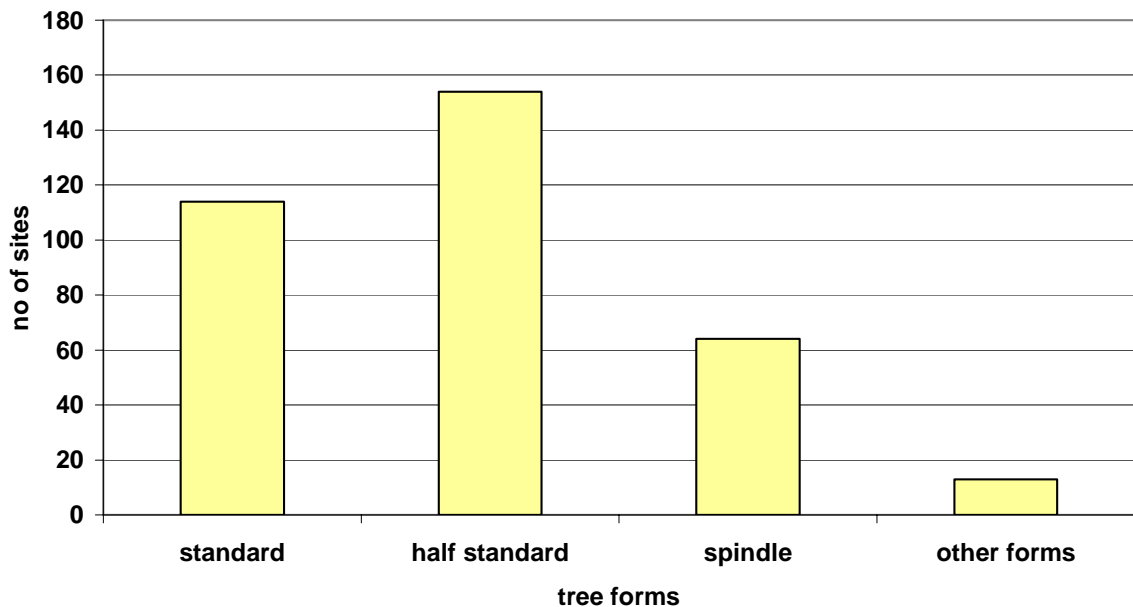
Definitions of tree forms are given in Appendix IV

- 43.35% of orchards or remnants had standard trees present
- 58.56% had half-standard trees present
- 24.33% had spindles present
- 4.94% had other tree forms present

A number of orchards had more than one tree form present

*See Fig.14 Below*

**Fig 14 Tree Forms - in existing orchards and remnants**



## 5.2 TREE DENSITY AND HEIGHT

As this was a roadside survey, it was not possible to accurately measure tree density and height. Therefore, the records in this section of the survey are based on surveyors' estimations.

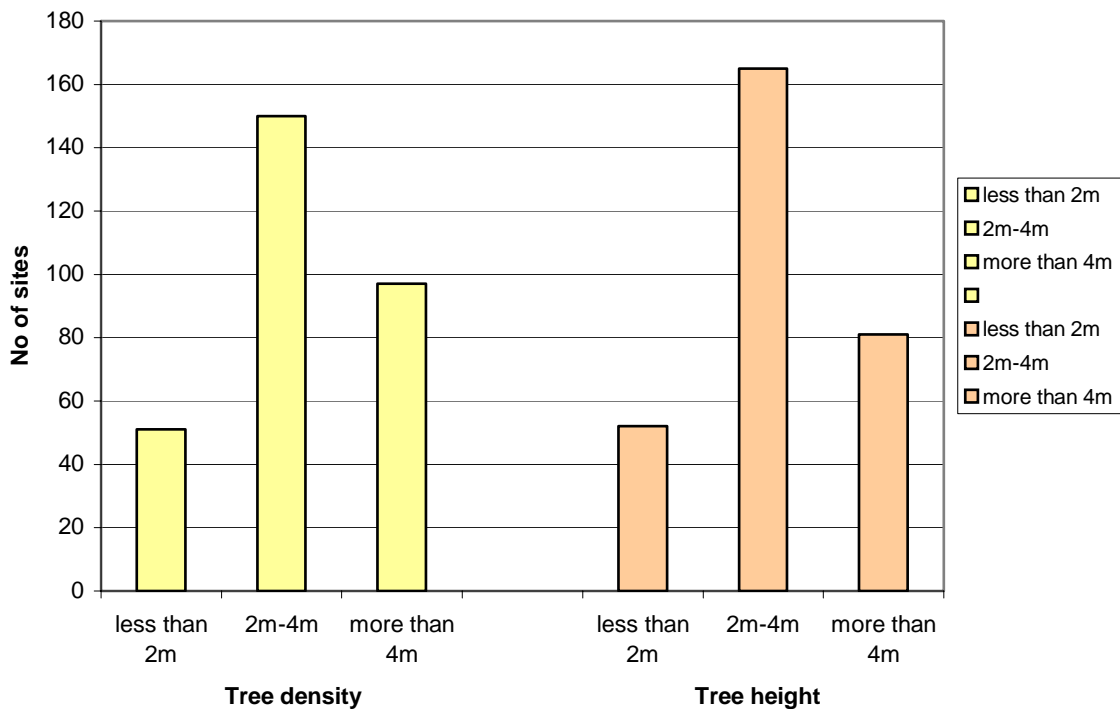
Density is the estimated distance between trees within the rows, or within blocks of rows in the case of intensively planted multi-row beds. Distance between rows is not considered

Density was generally related to tree form, with spindles or other dwarf forms often at densities of 2 metres or less, half-standards were generally at a spacing of around 3 or 4 metres apart and standards at a density of over 4 metres apart. Half-standard and standard plum orchards were usually more densely spaced than apple orchards of the same type.

Dwarf trees tended to be in spindle form, although some small open centre trees were sometimes found in commercial orchards. The majority of half-standard orchards were in the 2- 4 metre height bracket.

See Fig. 15 below

**Fig. 15** *Tree density and height – existing orchards and remnants*



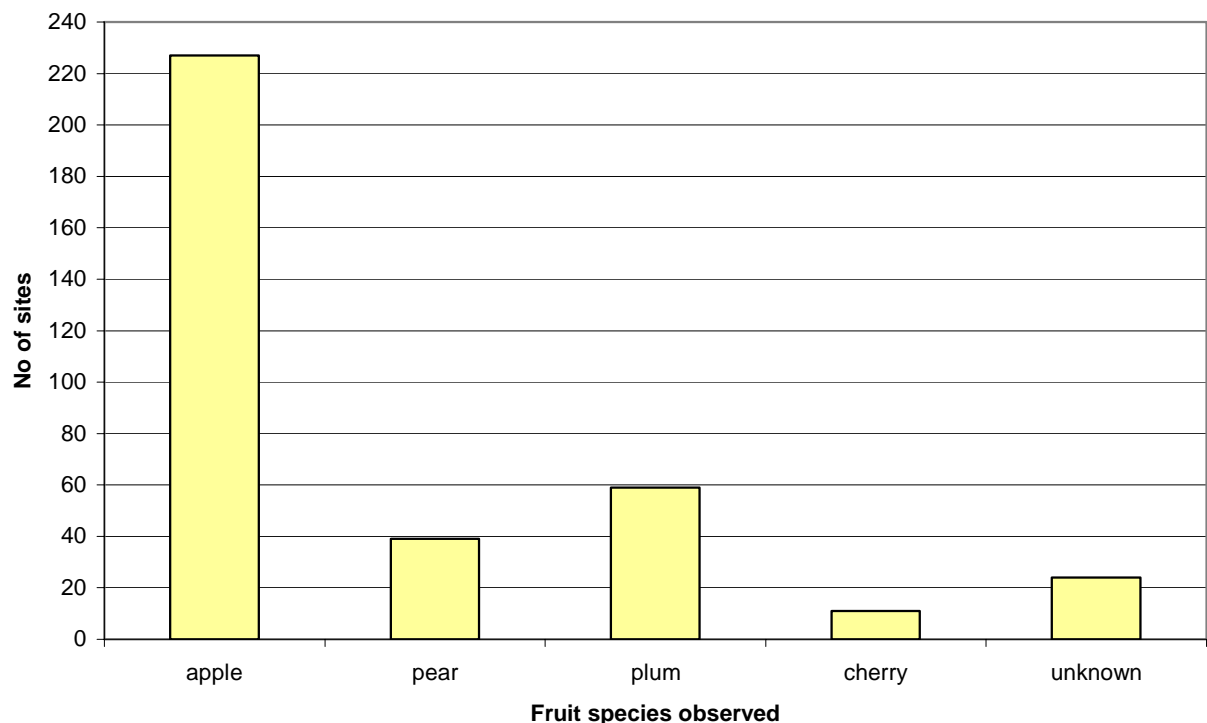
### **5.3 FRUIT SPECIES**

This is the most incomplete sector of the survey. In 9.13% of the existing orchards and remnants, it was not possible to identify fruit species at all, on account of restricted access and poor views of the trees. On most sites, it was only possible to ascertain the fruit species that were close to the Highway or PROW. Full access and an accurate record of all fruit species present was only possible on a few sites.

- Apple proved to be the most widespread crop, occurring in 86.31% of all orchards and remnants surveyed
- Plum was the next most frequent crop, found in 22.43% of sites.
- Pears were recorded on 14.83% of sites.
- Cherries were recorded on only 4.18% of sites

*See Fig. 16 below*

**Fig. 16 Fruit Species observed – existing orchards and remnants**

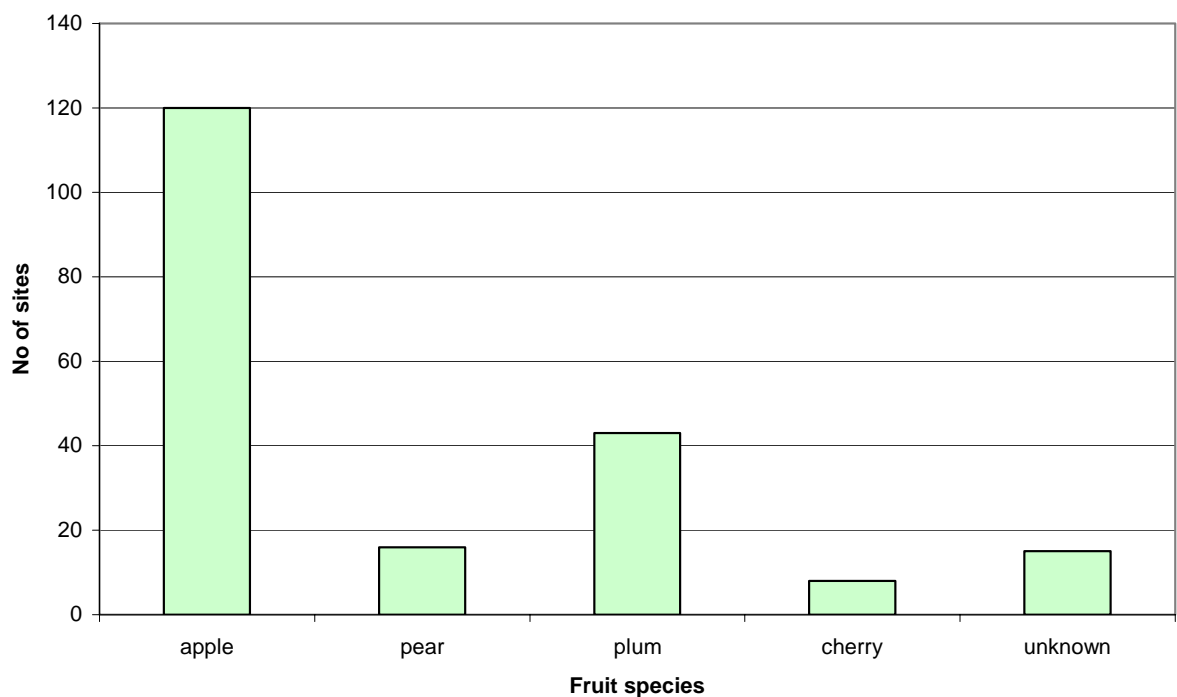


The distribution of fruit species in traditional orchards was slightly different to the distribution of fruit species in other orchards. Personal observations by surveyors also indicate that the traditional orchards are likely to contain a wider number of fruit varieties than commercial orchards. Recording varieties was outside the scope of this survey.

- Apples were found in 88.24% of traditional orchards
- Plums were found more frequently in traditional orchards, occurring in 31.62% of traditional sites and only 12.6% of other sites.
- Plums were mostly found in mixed orchards, plum-only traditional orchards were only found on 4.41% of sites (6 sites). 4 of these sites were in the parish of Emneth. This is in contrast to neighbouring Cambridgeshire, where 18% of traditional orchards were plum-only sites (*EEAOP, 2005*)

See Fig.17 below

**Fig. 17** *Fruit species observed – traditional orchards*





## **5.4 WINDBREAKS AND FIELD BOUNDARIES**

Details of field boundaries were recorded. The windbreak/hedge species noted could be split into the following groups:

- Populus
- Alnus (often *A. cordata*)
- Salix (various)
- Prunus (various)
- Conifers (various non-native)
- Crataegus
- Mixed native hedges/trees

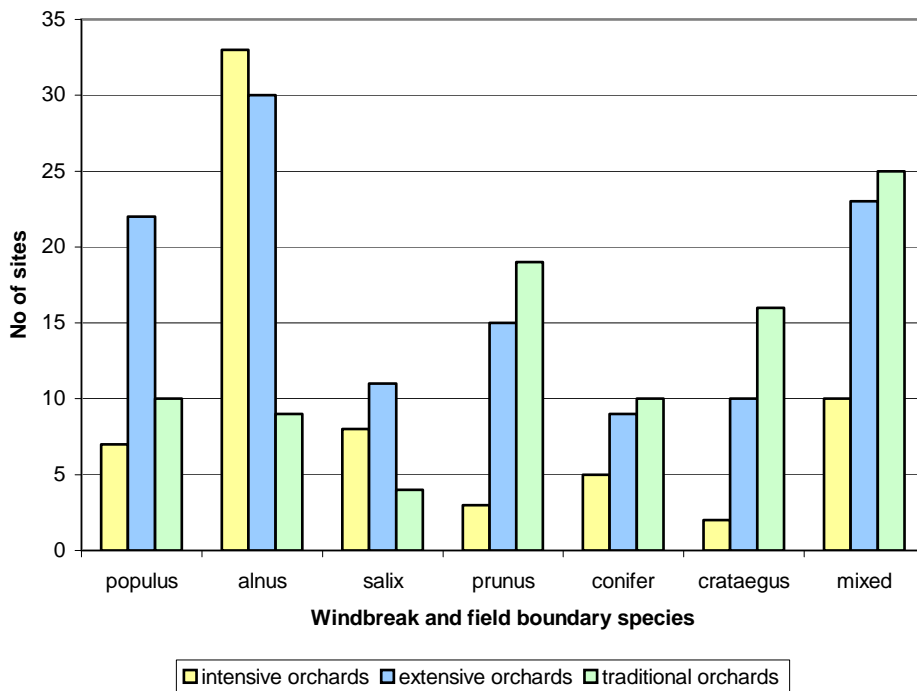
As dykes were such a typical feature of Marshland orchards, their presence was also recorded

Intensive orchards were generally found to have the least diverse windbreaks, with lines of non-native alnus species as the prevalent form.

Traditional orchards were more likely to have boundaries made up of native species. Plums were also commonly used as windbreaks in traditional orchards.

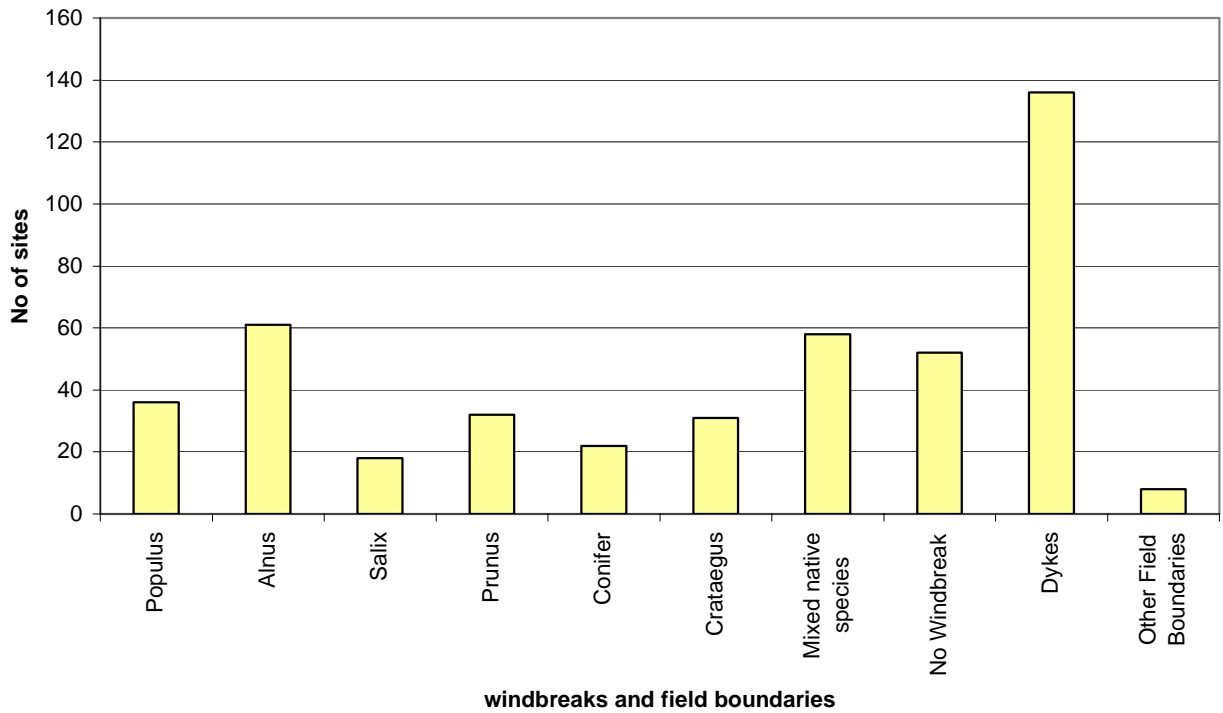
*See Figs 18, below and 19, 20 following*

**Fig. 18 Distribution of Windbreaks – all orchards and remnants**

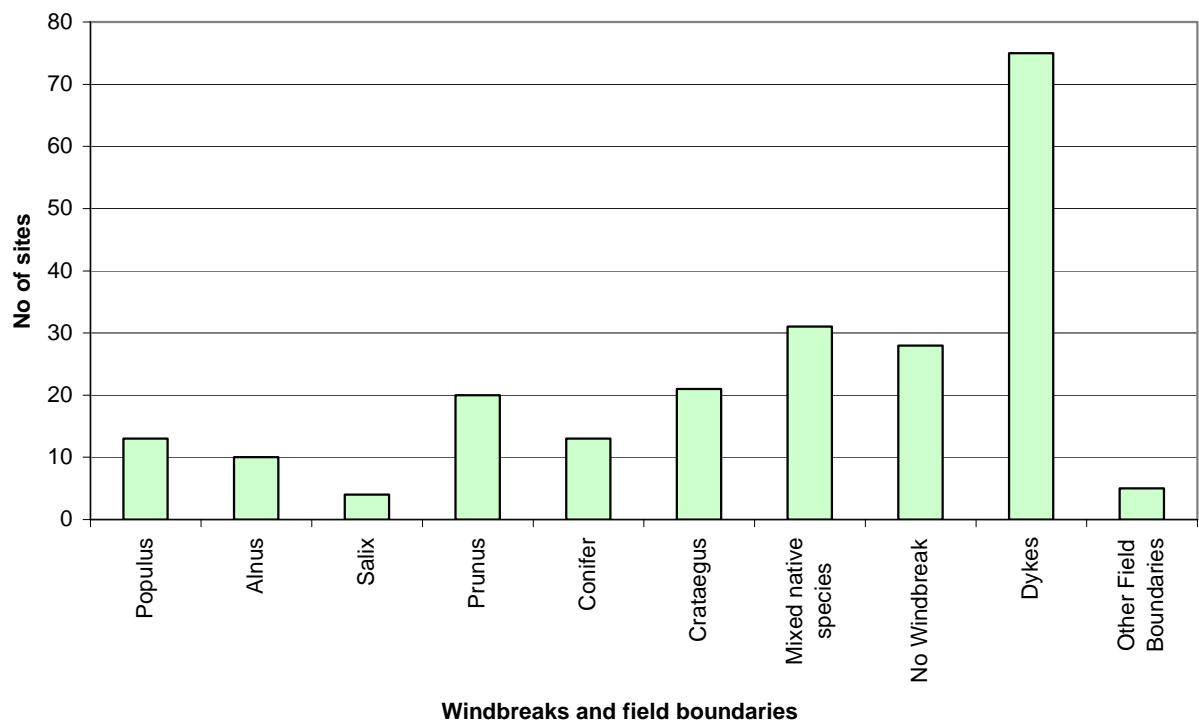


See page 27 for definitions of intensive, extensive and traditional orchards

**Fig. 19 Windbreaks and Field Boundaries – all orchards and remnants**



**Fig. 20 Windbreaks and Field Boundaries – traditional orchards and remnants**



## **6. ORCHARD CONDITION**

Surveyors assessed the management regime and overall condition of each orchard where possible.

### **6.1 TREE MANAGEMENT**

Orchards were classified according to their tree form and density

Intensive	High density dwarf trees, usually in spindle form. (tree density of 2m apart or closer)
Extensive	Medium-density plantings, usually in half standard form (tree density of 2 – 4m apart)
Traditional	Low density plantings of standard and large half standard trees

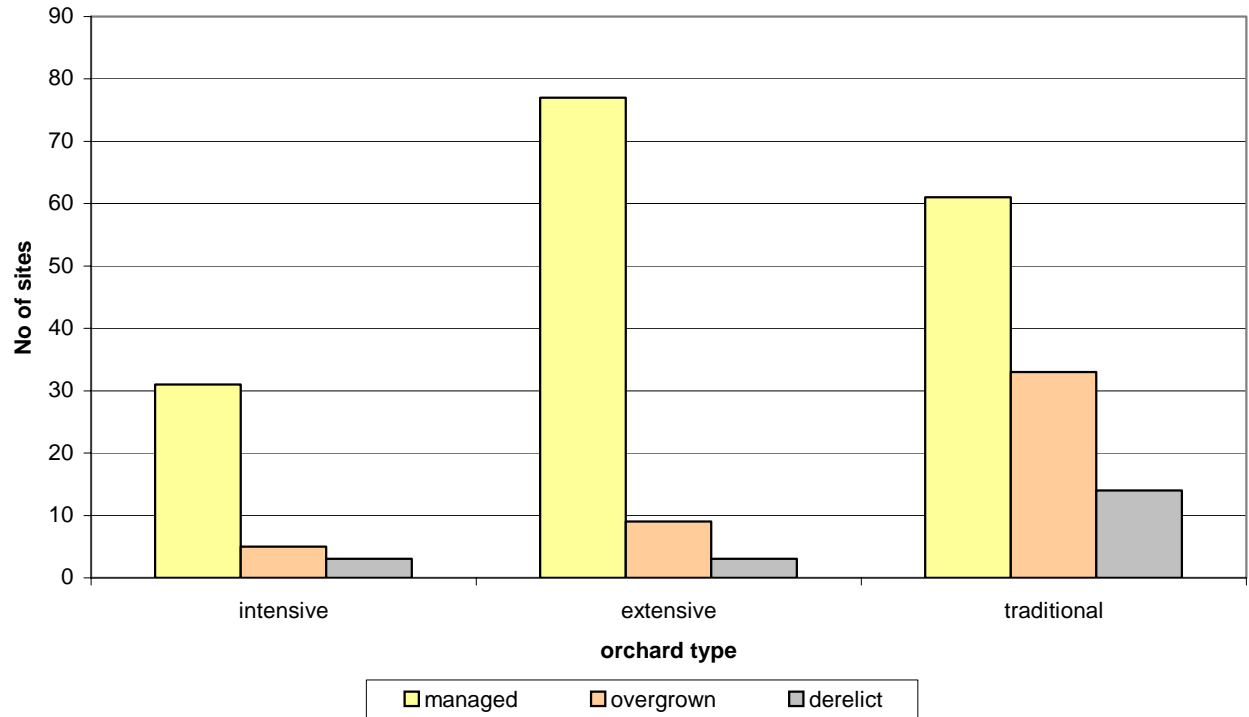
Details of tree management (if any) were also recorded. Some orchards fell into more than one group.(eg: trees overgrown AND derelict)

“Managed” orchards	Trees obviously pruned in the recent past.
“Unmanaged” orchards	Trees appear to have been left unpruned for several years.
“Overgrown” orchards	Trees left unmanaged for so long that the original tree form is obscured.
“Derelict” orchards	Significant amounts of dead wood, broken branches, fallen trees, etc. In the case of plums, suckers from rootstocks dominating the grafted trees.

- 67.39% of intensive orchards showed signs of tree management. 10.87% were found to be overgrown
- The percentage of managed extensive orchards was similar, at 66.38%.
- Traditional orchards fare less well, with only 44.85% showing signs of tree management. 24.26 % of traditional orchards had trees that were overgrown and 10.29% showed signs of dereliction

*See Fig 21, following*

**Fig. 21 Orchard management**



- **Approximately 1 in 10 intensive orchards surveyed were unmanaged**
- **Almost 1 in 4 traditional orchards were unmanaged**

## 6.2 SWARD MANAGEMENT

The following details of field layer and other vegetation were recorded where possible:

Use of herbicide under trees - strip spraying or base spraying

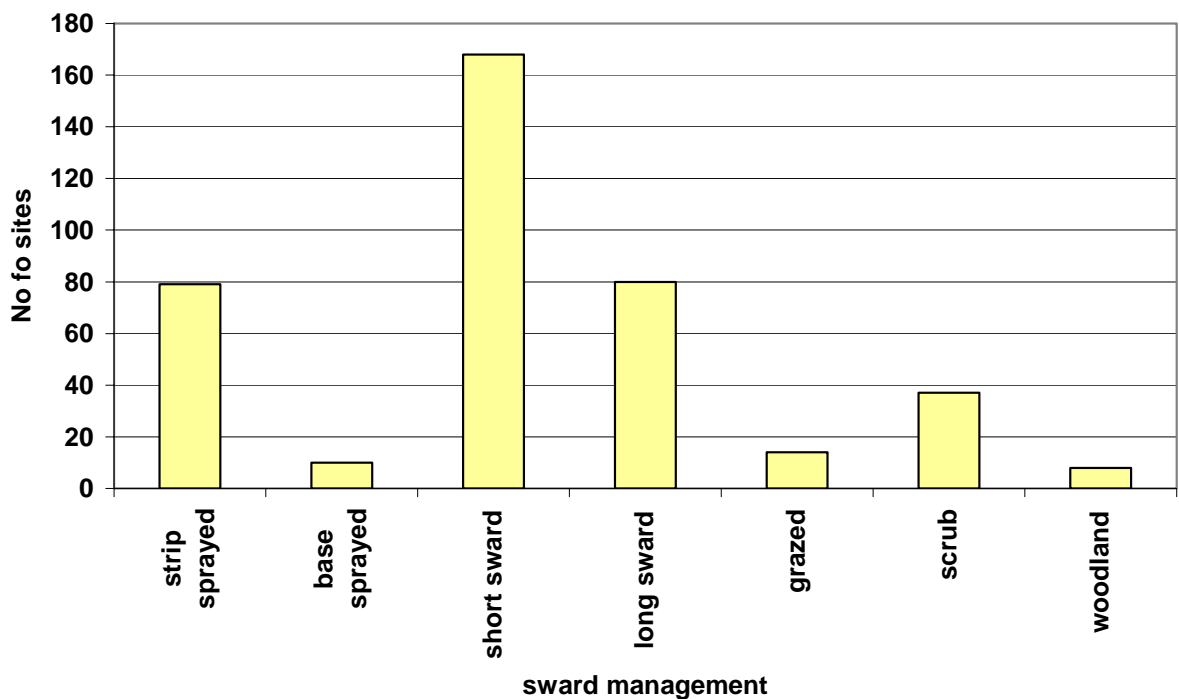
Grass management – long sward, short-mown sward, evidence of grazing animals.

Scrub development - including bramble, elder and rootstock suckers.

Succession to woodland – the development of non-fruit tree species .

See Fig. 22 below

**Fig. 22 Sward Management – all existing orchards and remnants**



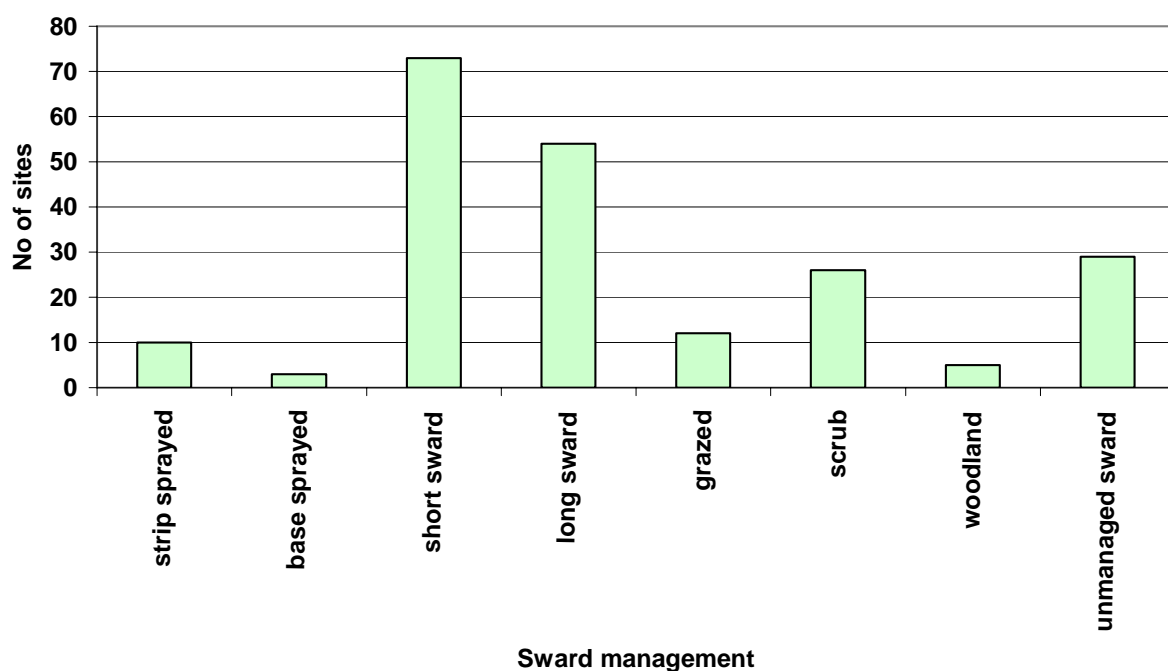
**As expected, intensive commercial orchards had the least diverse sward:**

- **Herbicide was used under the trees in 71.74% of intensive orchards**
- **A short mown grass sward was maintained in 86.96% of intensive orchards**

Sward management in traditional orchards was observed to be less intensive, resulting in a much more diverse structure in field and shrub layers:

- Evidence of herbicide use occurred in only 9.56% of traditional orchards
- Short grass was maintained in 53.68% of traditional sites
- Evidence of grazing occurred in 8.82% of traditional orchards. However, two thirds of the grazed sites had evidence of horses or ponies as the grazing animal. This must be interpreted as a threat to the orchards concerned, as horses invariably debark apple trees.
- Areas of long grass occurred in 39.71% of traditional orchards
- 19.12% of traditional orchards contained at least some scrub, even if only bramble and elder.
- Succession to woodland had begun on 3.68% of traditional orchard sites

**Fig. 23 Sward management - traditional orchards**



- **21.32% of traditional orchards had areas of unmanaged sward (scrub and/or woodland succession)**

## 7. TRADITIONAL ORCHARDS AND THEIR SURROUNDINGS

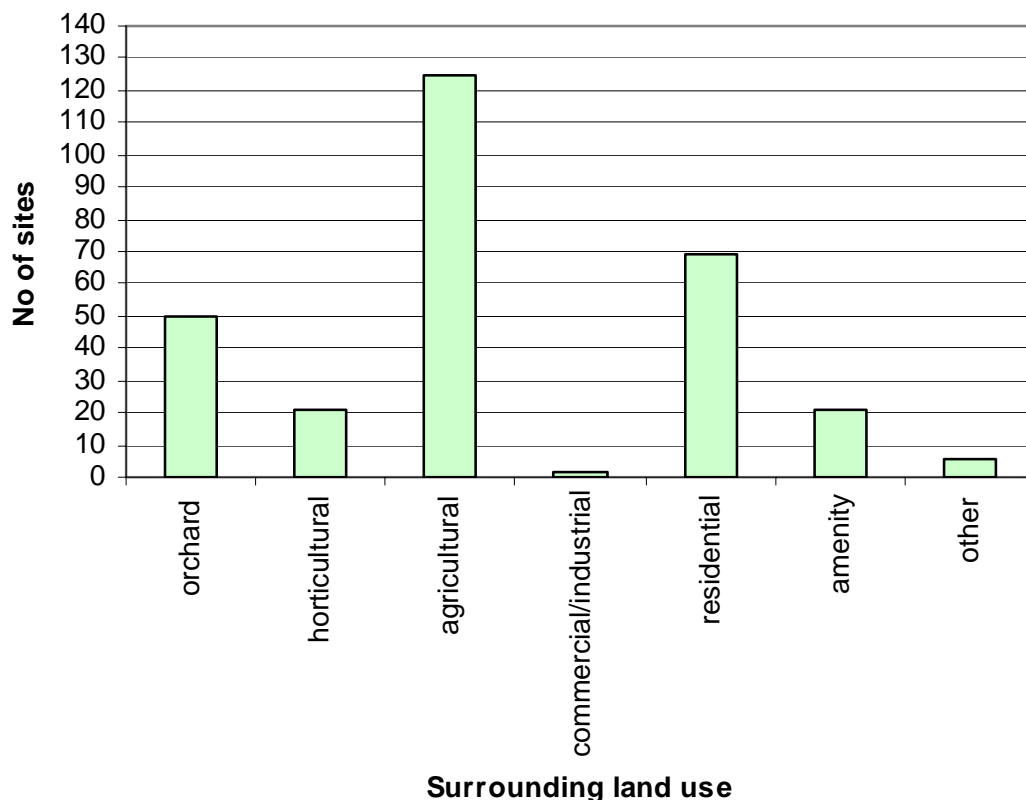
The survey set each orchard in the context of its surroundings. The following points were recorded:

- The land use in the immediate neighbourhood of the orchard
- The orchard's proximity to other orchards or related habitats

### 7.1 SURROUNDING LAND USE

The majority of traditional orchards are adjacent to agricultural land. However, traditional orchards often occur on village edges, which makes them particularly susceptible to loss through residential development or other development, or to conversion to grass paddocks for ponies or other amenity use.

**Fig. 24** Surrounding Land use – traditional orchards



- **50.74% of traditional orchards are close to residential areas**

## 7.2 SURROUNDING HABITATS

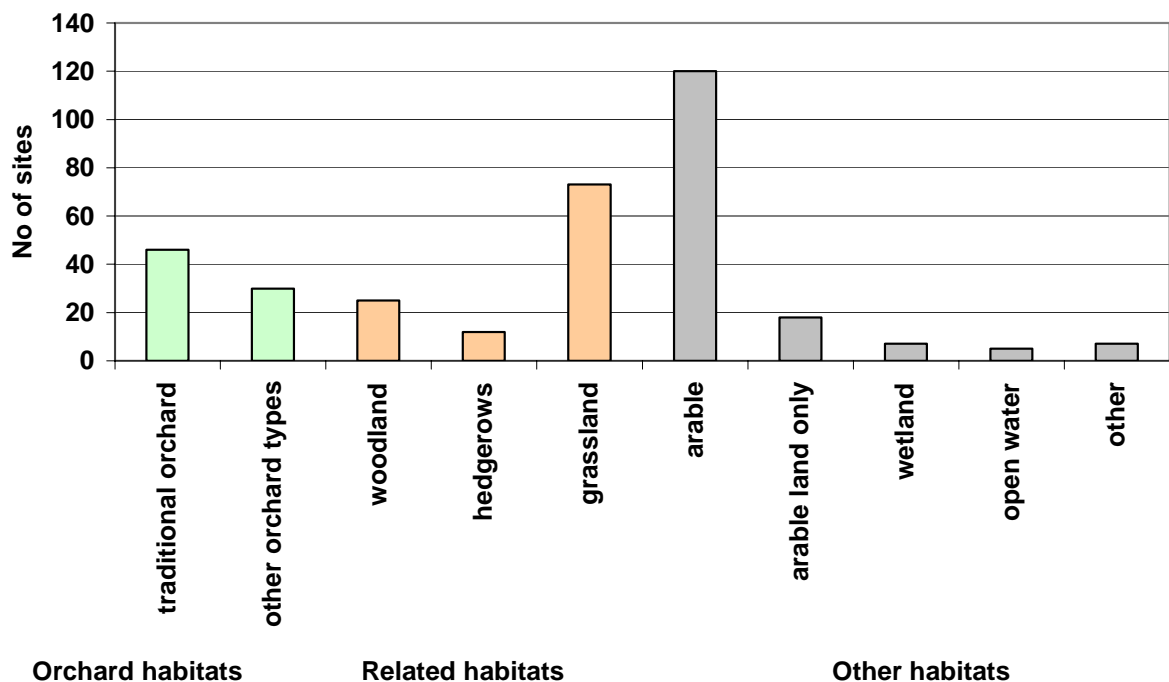
In much of the county, traditional orchards exist in close proximity to other related habitat forms (woodland, grassland and hedgerows) and approximately 1 in 3 are close to other parcels of traditional orchard habitat.

Significant orchard clusters occur in Marshland, where other tree and hedge cover is relatively sparse. In several parishes, orchards are the dominant form of woodland habitat and contribute considerably to the landscape and biodiversity in those areas.

In a few cases, traditional orchards have been isolated in a predominantly arable landscape. Most of these cases also occur in Marshland. Several of these sites provide the only remaining woodland habitat in their vicinity, and some have been left purposely to provide game cover or sites for other nesting birds.

See Fig. 25 below

**Fig. 25** Surrounding habitat types – traditional orchards



- **80.95% of traditional orchards are close to related habitats (eg: orchards, woodland, hedges, trees, grassland)**



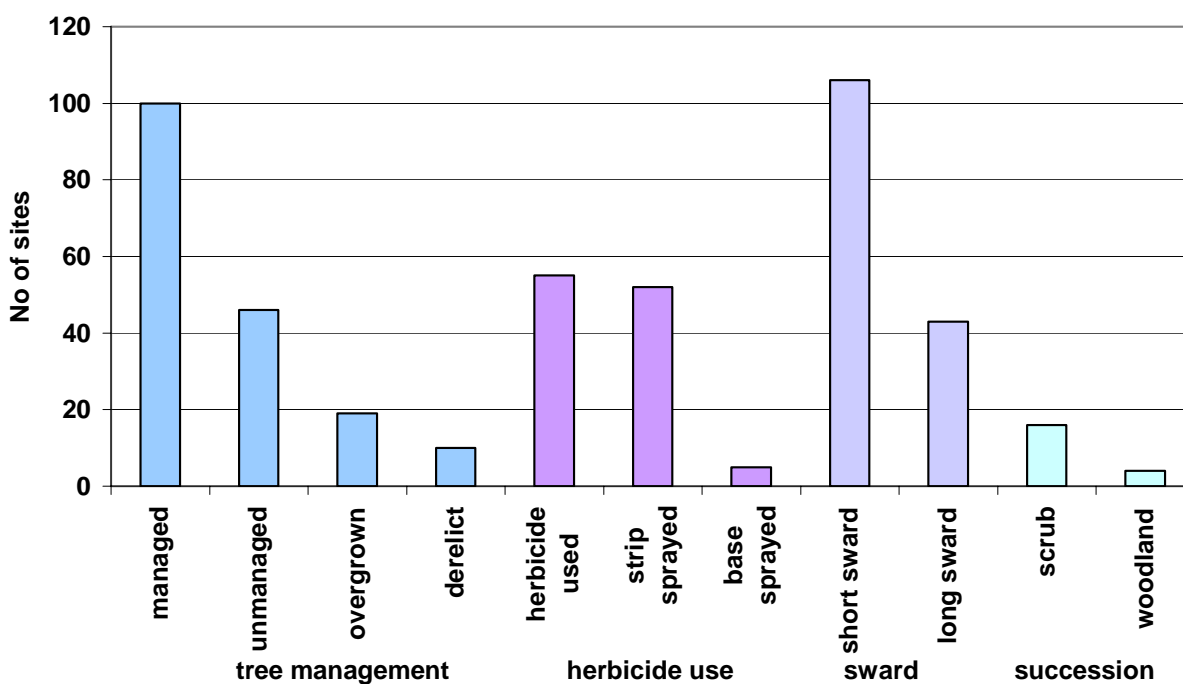
## **8 HALF-STANDARD ORCHARDS**

Norfolk presently has a good number of half-standard orchards, 154 sites surveyed had half-standards present. 100 of these sites showed active signs of tree management.

### **8.1 ORCHARD MANAGEMENT - SITES WITH HALF-STANDARDS**

- There was evidence of herbicide use under the trees on 35.71% of the sites
- 68.83% of the sites had a short-mown grass sward
- 27.92% of the sites had a long sward
- 29.87% of the sites showed no signs of tree management.

**Fig. 26 Half-standard orchards – site management**



- **Active tree management occurred on 64.94% of the sites with half-standards**

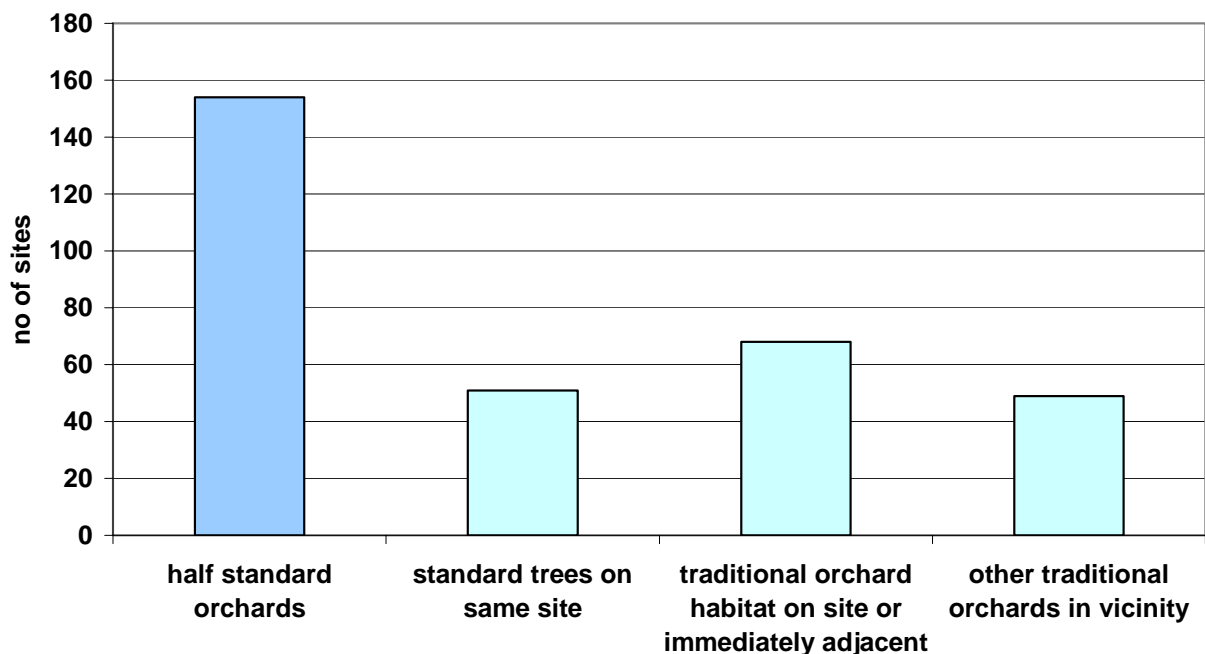
## **8.2 LINKS WITH TRADITIONAL ORCHARD HABITAT**

There has been a long tradition of half-standard orchards in Norfolk, some dating back to the beginning of the 20<sup>th</sup> century. However, many of the remaining half-standard orchards were planted in the post WWII period. Half-standard planting was generally continued until the 1970s, when spindle form became more popular with commercial growers. Many of these half-standard orchards are now developing into mature orchard habitat and show features similar to traditional orchards (eg: standing and fallen deadwood, hollows, rot sites, fungi, bryophytes, etc). A significant number of half-standard sites are close to traditional orchards.

EEOOP and the Norfolk Biodiversity Partnership recognise the importance of half-standard orchards as a way of carrying traditional orchard habitat into the future. The proximity of half-standard orchards to existing traditional orchard habitat is therefore an important consideration.

See Fig. 27 below

**Fig. 27 Half-standard orchards**



- **44.16% of orchards with half-standard trees have traditional orchard habitat on the same site, or immediately adjacent**

## **9. OBSERVATIONS**

Traditional orchards play an important role, providing mature woodland habitat and maintaining structural diversity, long after their value as a crop has diminished. In some of the less wooded parts of Norfolk, orchards have a particularly significant impact on the landscape and local biodiversity.

The importance of traditional orchards to the biodiversity of Norfolk was recognised by the creation of a LHAP in 1999 and the current proposal for a national BAP indicates the growing awareness of the contribution that orchards make to biodiversity throughout the nation.

### **9.1 ORCHARD MANAGEMENT**

The traditional “open centre” tree form creates an inherent weakness in the tree structure and veteran fruit trees are particularly susceptible to splitting down the trunk if branches are left unpruned for too long. Lack of any sward management can also have an adverse impact on the trees. Plums are especially vulnerable to dereliction if the sward is unmanaged, as suckers arising from the rootstocks grow prolifically and the grafted varieties decline.

Mechanised pruning is growing in popularity in half-standard orchards as a means of reducing labour costs, and this is particularly prevalent in the Marshland parishes. Many of the most intensively planted orchards outside the Marshland area were fully fenced, presumably to deter damage to the trees from deer, rabbit, hare etc.

Quite a number of the county’s remaining orchards showed a lack of management, varying from neglect to dereliction, as well as being used for pony grazing, garden/amenity use and and for development for housing. A surprisingly high percentage of Norfolk’s commercial orchards were showing signs of neglect. However, the majority of the unmamanged and derelict sites proved to be the older traditional orchards.

Derelict orchards have considerable wildlife value in their own right. However, it is not desirable to have all traditional orchards become derelict. It would be beneficial to biodiversity if owners of traditional orchards were encouraged to manage their sites in an appropriate manner.

Lack of management in traditional orchards would appear to stem from several causes

- Traditional orchards are not perceived to be economically viable in terms of fruit production.
- In a number of cases, owners are no longer physically able to look after their orchards themselves, even if they have the skills required.. This is particularly the case with orchards belonging to retired growers.
- Many orchards no longer belong to fruit growers. They have been often been purchased as an adjunct to a residential property or with other uses in mind.

- Some owners would like to see their orchards managed, but lack the funding needed to undertake major restoration. Even where funding is available, owners are finding it difficult to find contractors willing to undertake restoration work.
- In some cases, owners would like to manage their orchards themselves, but lack the skills and confidence to undertake the task.

## **9.2 ORCHARD LOSSES**

The survey discovered that orchard loss is indeed continuing across the county at an alarming rate. MAFF/Defra June Agricultural Census returns show that orchards in Norfolk declined by almost a third between 2000 and 2004.

Although a considerable number of orchards have been lost on account of conversion to arable land, recent changes in agricultural policy and economics mean that this is unlikely to continue as the major threat to traditional orchard habitat.

A tradition of smallholdings, especially in the west of the county, has undoubtedly allowed many traditional orchards to survive long after they have ceased to be economically viable. However, many remaining traditional orchards are small parcels of land on village edges, and thus very vulnerable to residential development and conversion to grassland, particularly to pony paddocks, continues to be a significant threat.

Orchards are particularly poorly protected under current legislation. No permission for change of use is required to turn an orchard into a paddock. No felling licence is needed to grub an orchard.

TPOs have been used to protect fruit trees. However, the TPO mechanism is not a particularly effective means of preserving orchards in its present form. Much of the biodiversity value of traditional orchards lies in the fact that the trees have hollows, rot sites, deadwood and other features of veteran trees, which has made it difficult to apply TPOs.

It is essential that planners are made aware of the value and vulnerability of traditional orchards and it would be highly desirable for orchard protection to be built into the Local Development Framework process.

### **9.3 HABITAT CREATION AND DEVELOPMENT**

Modern commercial orchards are not particularly good vehicles for the expansion of traditional orchard habitat. They are usually high-density plantations of short-lived dwarf trees. They often lack varietal diversity and may have high levels of chemical input. However, they do have biodiversity benefits. Surveyors observed that windfall fruit in intensive orchards provided valuable winter food for birds.

The creation of “new” traditional orchards is essential if the habitat is to be carried into the future. Norfolk is particularly fortunate in that local apple varieties have been available for a number of years and Norfolk County Council have grant aided planting schemes on farms, schools and various other sites. In addition, the Norfolk Biodiversity Partnership has provided funding to support the propagation of a wide range of local top fruit varieties.

The current Environmental Stewardship Higher Level Scheme makes funding available for orchard restoration. The Marshland parishes fall within the Fens Joint Characteristic Area, where traditional orchards are considered to be a priority habitat. This means that HLS funding is currently available for the restoration and maintenance of old orchards and the creation of new orchards in the traditional style throughout that area.

Unfortunately, Norfolk orchards outside the Fens JCA are less highly rated in the current HLS guidelines. This means that funding for orchard restoration in the remainder of the county is still not available, unless the orchard happens to be part of a broader HLS application.

Landowners throughout the county should be encouraged to make use of any available streams of funding, as they occur. Other projects, such as community orchards, should also be encouraged.

Biodiversity is likely to be affected by the fruit species and cultivars present in an orchard. Fruit growers have long been aware of the “resistance” or “susceptibility” that some cultivars have to certain fungi and invertebrates, and recent survey work suggests that some fruit varieties may support more bryophytes than others. Traditional orchards tend to contain a wide mix of varieties, and new plantings should reflect this. Varieties of local provenance and varieties that were traditionally grown in the locality should be included in orchard habitat creation schemes. (*See Appendices V and VI*)

Many of the species associated with traditional orchard habitat are dependent on the presence of mature and veteran trees. It may be as long as 50 years since the last traditional orchards were planted, so a problem that needs to be addressed is how such habitat may be preserved until new plantings mature.

There are still a number of half-standard orchards in the county – mostly planted in the 1960s and 70s and grown on semi-vigorous rootstocks such as MM106. Many of these orchards are still in commercial cultivation. These sites offer good potential for the development of many aspects of traditional orchard habitat, and every effort should be made to encourage landowners to retain these orchards and manage them sensitively.

## **10. RECOMMENDATIONS**

This survey has highlighted a need in Norfolk for an integrated approach to halt the continuing decline of the county's traditional orchards.

Grid references of the traditional orchards/remnants surveyed have been identified and the next step is to identify the orchard owners, with a view to the following. (*See Appendix VII*)

- Raise awareness amongst landowners of the importance of their sites in terms of biodiversity, heritage and landscape value.
- Ensure that planning departments are made aware of the value and vulnerability of traditional orchards and the options for their protection using current legislation.
- Provide training in orchard skills, to enable orchard owners to manage their sites more effectively.
- Encourage landowners/managers to enter eligible orchards into agri-environment schemes.
- Encourage the creation of new traditional orchards using locally appropriate varieties.

The methodology used in this survey means that there will be many small traditional orchards that have not been recorded. A secondary survey of parishes that were known to have contained traditional orchards in the recent past will be undertaken in April/May 2007. The results will be appended to this report.

**The area of orchard in Norfolk has been reduced to approximately 14% of its 1950 level. In order to prevent further erosion of the habitat, it is essential that this survey is used as a tool, rather than be considered as an end in itself.**

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