A comparison of the health of non-woodland trees in England in 2005 and 2006

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Summary

Reports of pests, diseases and disorders of trees received in 2005 and 2006 are reviewed. The data were collated from two sources; from advisory queries processed at the Forestry Commission's two research centres in Surrey and Midlothian, and records received through the Condition Survey of Non-Woodland Amenity Trees. This survey, funded by the Forestry Commission (2005) and Tree Advice Trust (2006) provides a quantitative basis for monitoring year on year changes in tree condition. Notable occurrences were the continued expansion of the range of the horse chestnut leaf miner in 2005 and the discovery of oak processionary moth in London in 2006.

Introduction

The Condition Survey of Non-Woodland Trees has been operating since 1993 when it was initially supported by the Department of the Environment. Currently, support comes from the Forestry Commission and the Tree Advice Trust. Through the survey the aim is to promote people's awareness of the importance of trees in their environment, and also to monitor the changing condition of those trees. To do this, a team of volunteers survey trees across England on an annual basis during July and August.

The survey network consists of 100 plots. Each contains around 30 trees chosen from a range of common genera (see **Appendix 1** for tree list and **Appendix 2** for an example of the assessment form) and the same trees are assessed each year. These trees may be found in public parks and gardens, along road-sides and in the grounds of country estates, many owned by the National Trust. Volunteers look for signs of specific pests and diseases, as well as overall indicators of health such as crown density. In most cases a simple scoring system is used to quantify the presence of symptoms. This runs from 0, indicating no symptoms, to 3, presence of severe symptoms. **Appendix 3** contains data summaries for 2005/6. Some types of damage, which usually require specialist diagnosis, are not included in the assessments by volunteers, but are recorded in data collated by Forest Research, an

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Agency of the Forestry Commission. Detailed surveys of beech and oak crown condition conducted in previous years were no longer undertaken as part of the 2005/6 survey.

This note is a summary of the reports from 2005 and 2006, derived from the returns sent in from the volunteer assessors of 56 and 58 plots respectively. It has been augmented by information from sources including the Disease Diagnosis and Advisory Service (DDAS[2]) within Forest Research. The latter draws upon advisory casebook data from woodland as well as non-woodland trees. The report also includes comparative data from a number of years to demonstrate trends where apparent. Some of the tree problems covered in these reports have been described in Tree Damage Alerts and these are listed at the end of this Note.

Weather Overview

2005

The start of the year was notable for the heavy flooding in Carlisle, and frequent snowfall in eastern Britain resulting in school closures in Kent and Sussex. Unusually high temperatures were recorded in Wales (21.4°C) and Guernsey (20.6°C) in March. April was wet in many areas and warmer than average. During May tornadoes were recorded in Ely, the north Norfolk and Somerset coasts and Hoghton in Lancashire, the latter damaging 30 houses. Heavy rain caused flooding in the centre of Leeds. In London the temperature reached 31.7°C at the end of the month, the highest recorded temperature in 50 years.

June was warm overall with smog warnings in many parts of England. Thunderstorms caused flooding in parts of Yorkshire. July was generally hot and dry. On 28th July tornadoes occurred in Birmingham and Peterborough, the former causing considerable damage and injuring 20 people with winds estimated at 130mph. August brought some notable thunderstorms and 10p piece-size hailstone to Crowthorne (Berks). A record was set in Birmingham on 4th September with a day time temperature of 28°C, whilst at 18.5°C London had its warmest night in 50 years.

October was much warmer than average, with a record at Gravesend towards the end of the month (21.3°C), and it was generally wet. November brought gales to the south west of England and south Wales, and heavy snow as far south as Cornwall, with many impassable roads in Gloucestershire. The year ended sunny and generally dry, with cold weather in the south but warmer conditions further north.

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2006

This year began relatively dry and cool across England. March was cold with heavy snowfall in the north of England. April was a sunny month although a cold front early in the month brought a small tornado and satsuma-sized hailstones to Manchester, and another tornado caused damage to a housing estate in Cannock. May was slightly warmer than average, and overall a very wet month, although drought orders were imposed by Sutton and East Surrey Water.

June was very warm, with 32.4°C recorded in central London and an overnight minimum of 21°C. This was followed by heavy thunderstorms and flooding in East London and Yorkshire. July was the hottest and sunniest on record in many areas. Residents of York were left without water after a series of mains burst, and rail lines buckled from the heat in the Midlands. Following the record August temperatures in 2003 (38.5°C in Brogdale) a new record of 36.5°C was set for July at Wisley, Surrey. Local records were broken in many other places and Severn Trent water reported 20 million additional litres of water were being used per day! In contrast, August was very dull and very wet in eastern England. Tornadoes were reported in Cambridgeshire and Lincolnshire, one lifting a Portacabin into the air, dragging it 20m. Heavy rainfall closed one terminal at Manchester airport on 23rd August and caused flooding in parts of northern England. September was exceptionally warm. A maximum temperature of 30.2°C was recorded on 11th September at Heathrow, the highest local September temperature since 1949. Later in the month 29°C was recorded at Bedford and Herne Bay. Thundery weather across much of England caused near tropical downpours with over 26mm of rain falling in 1 hour in Maidenhead.

October was very warm and generally wet; thundery conditions brought local flooding and lightning strikes to many areas across the country. On the 16th gritting lorries in Padstow were used to clear the roads of hail! November formed a generally mild, wet and sunny end to an unusually warm autumn. High winds caused structural damage in Cheshire and problems for shipping in Scotland. In December a tornado in north west London caused structural damage, and the year closed on a mild, generally wet and windy note. Overall, 2006 was the warmest year on record in many areas of England

For further information visit http://www.bbc.co.uk/weather/ukweather/year_review/ and the Climatological Observers Link 2003; ISSN 1350-2158 http://www.met.rdg.ac.uk/~brugge/col.html).

Damage affecting many tree genera

Phytophthora ramorum* and *P. kernoviae

Once again *Phytophthora* pathogens have had a high profile. *P. ramorum* (the organism responsible for death of many oaks (*Quercus* spp.) and tanoaks (*Lithocarpus* spp.) in their native range in California and Oregon in the western United States), and also the newly identified species, *P. kernoviae* have been most active in the West country. Forest Research and Central Science Laboratory have been jointly monitoring the extent of infections in the UK, and have been conducting field and laboratory based investigations since 2002. In 2005 *P. ramorum* was discovered on 125 non-nursery sites, with infection mainly confined to large, mature rhododendrons. In addition to findings in two nurseries, *P. kernoviae* was found on rhododendrons in several woodlands in Cornwall and five locations in South Wales.

With one exception, infected trees have all been located in Cornwall, and between 2004-2006 a total of 63 trees were found infected with *P. ramorum* and 65 with *P. kernoviae*, of which 47 were beech trees (*Fagus sylvatica*). Symptoms included blackening of foliage or bleeding cankers on the main trunk and major branches. The latter symptoms can be confused with the widespread, but local decline and mortality of oaks, and although certain *Phytophthora* spp. have been implicated in this so-called 'oak decline,' *P. ramorum* and *P. kernoviae* are not involved.

Worryingly, although *P. ramorum* seemed more aggressive in laboratory tests, *P. kernoviae* appears to be very well adapted to field conditions in the south west of England, and has been found causing bleeding cankers on beech, English oak (*Q. robur*) and a tulip tree (*Liriodendron tulipifera*). Under laboratory conditions the bark and trunk of red oak (*Q. rubra*) is highly susceptible to both pathogens followed by beech, rhododendron and southern beech (Nothofagus). Leaves of holm oak (*Q. ilex*) are also susceptible to infection by both pathogens and these foliar infections produce abundant spores, unlike the bark and trunk infections. However, rhododendron remains the primary host species for driving both disease epidemics in the UK: it is the most susceptible and relatively large quantities of inoculum are formed on infected leaves.

Despite the current limited distribution of *P. ramorum* and *P. kernoviae* these pathogens have caused major concern in the UK. As a consequence, they formed the basis of 34% (out of a total of 703) of queries received by DDAS in 2004. Most of these queries related to bleeding cankers on trees, but in no case was the causal agent found to be either of the two exotic *Phytophthora* spp. - current advice is that unless an affected tree is in the vicinity of rhododendrons showing signs of foliage blackening and wilting, **it is highly unlikely** that the tree has been infected by *P. ramorum* or *P. kernoviae*. However, it is important to remain vigilant. The following web sites contain further information:
http://www.forestry.gov.uk/pramorum
http://www.defra.gov.uk/planth/pramorum.htm
http://www.defra.gov.uk/planth/pestnote/newram.pdf

Insects

Gypsy moth (*Lymantria dispar*) is native to central and southern parts of continental Europe, where it is a serious defoliator of oaks and other broad-leaved trees in woodland and urban areas. In 1995 a small population of gypsy moth was found established in north east London, and this population has persisted. In 2005 large numbers of adults were trapped in Aylesbury, Buckinghamshire, and the population increased in 2006. The original outbreak of gypsy moth in London was thought to have originated from moths or egg batches transported into the country on vehicles or goods from the continent. However, the more recent outbreaks appear to have been associated with the direct import of sapling trees (2-8m tall) from the continent for amenity landscape projects. The egg masses and caterpillars can cause health problems as they are coated with hairs that can be irritating to the skin and eyes.

Oaks have been troubled by a number of other defoliating moth species in the 'winter moth complex' over the past few years (e.g. *Operophtera brumata* and the tortrix moth *Tortrix viridana*). The lackey moth (*Malacosoma neustria*) also affected many tree species. These caterpillars can cause severe defoliation of many broadleaf tree species, although most affected trees recover by mid-summer. Heavy or severe attacks by the winter moth and mottled umber moth (*Erannis defoliaria*) were also reported from 29% of oak plots within the Forest Condition Survey in 2005, compared with 15% of plots in 2004 (see Figure 1).

Browntail moth (*Euproctis chrysorrhoea*) infestations occur across most of Europe, but this species is predominantly found on the south coast in Britain where it has been relatively

common over the past few years. Adult females lay eggs on the stems of oak, blackthorn (*Prunus spinosa*), thorn (*Crataegus spp.*) and fruit trees. The emerging caterpillars have two distinct orange/red dots on the back towards the tail and are covered in tufts of brown hairs. Caterpillars live in distinctive webs formed on branches and the hairs, which accumulate in the webs, can cause health problems in some people through skin irritation and breathing difficulties. Feeding damage can result in significant defoliation mainly in the period from May to July.

a b

Figure 1: Caterpillars of **a**. mottled umber moth and **b**. browntail moth

Mammals

Environment and Human Sciences Division within Forest Research receives many queries each year relating to mammals. In 2005 and 2006 there were 317 and 287 requests for information, mostly from public and private forestry organisations (42%) and Local Authorities and education/press (20%). Queries predominantly related to herbivore damage to trees, particularly deer and grey squirrel damage, but also rabbits and voles.

Abiotic agents

Cases of abiotic damage included some plant losses due to glyphosate as a result of poor practice, with many trees suffering sub-lethal effects such as leaf distortion and chlorosis. Cultural problems affecting recently planted trees, including a combination of factors such as poor quality of nursery stock and poor planting methods, led to losses approaching 50% in some instances. There were also a number of cases of lightning strikes linked to the frontal thunderstorms in May 2005.

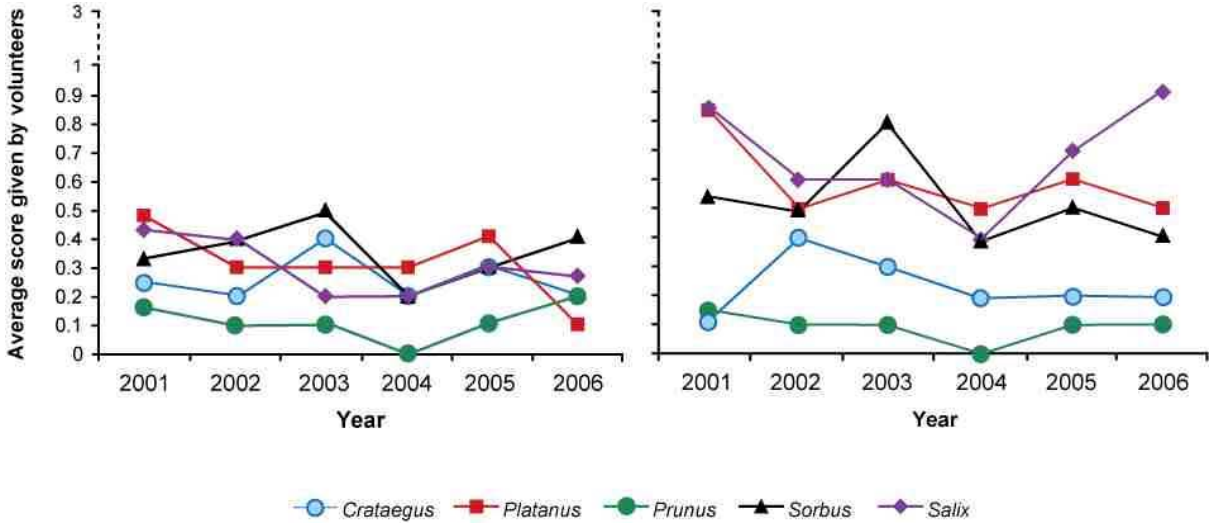
In both years, records of ground disturbance were far higher in volunteers' plots lying within the heavily populated regions corresponding to Greater London, the eastern home counties and Essex and the Thames Gateway. For example 97% of trees were affected by disturbance to some degree in the Essex/ Thames Gateway region in 2006. Whether this reflects the crowded nature and conflicting demands for land use within this area is not known, but 80% of trees in the latter area also had noticeable patches of exposed wood on their trunks in 2006. It is not known whether this was due to disease e.g. canker, or vandalism, or less actively injurious 'wear and tear.'

General crown condition

Information on crown condition in 2005/2006 came from the survey conducted by the volunteers on a range of species, and the Forest Condition Survey. The latter survey is carried out by Forest Research personnel, and forms part of a larger European project on commercial forestry crops.

The volunteers' plots – In 2005/6 37 and 35% of trees had thinning crowns. The worst affected species were hawthorn and willow (*Salix*), as in 2004, but also rowan/whitebeam (*Sorbus*), and ash (*Fraxinus*), all having mean scores between 0.8-0.9. Some of the observed changes in crown condition (thinness, crown colour, premature leaf fall) were probably due to stresses imposed by climatic conditions such as drought, and it is obvious that some species are more sensitive to climatic extremes than others (see Figure 2). 2006 was the warmest year on record in many areas of England. In addition, the period from November 2004 to July 2006 was the driest equivalent period since November 1932 to July 1934, and long-term drought effects due to the cumulative effects of prolonged rainfall deficits are becoming increasingly evident. (At the time of writing we have just experienced one of the wettest summers on record, and it will be interesting to see if this, in particular the widespread and prolonged flooding might affect tree condition in 2007-8.)

The prevalence of different diseases from year to year also influences crown condition. In 2005 there were relatively high levels of anthracnose (*Apiognomonia veneta*) on plane (*Platanus*) visible as crown browning on 38% of trees (score 0.4). This was not repeated however, in the slightly drier spring of 2006 when only 8% of trees exhibited browning (score 0.1). The premature leaf drop seen in many willows in 2006 may be due to infection with *Pollacia saliciperda* which causes black leaf spots and lesions on shoots. Dead, shrivelled leaves characteristically remain hanging on the tree.



a b

Figure 2: Trends in scores for **a.** crown browning and **b.** premature leaf fall from 2001 – 2006.

The Forest Condition Survey - Trends in condition of trees in 2006 have not yet been collated. However, in 2005 the condition of 8460 trees was assessed. In addition to three coniferous species, oak and beech are examined annually for changes in crown density and discolouration. Alterations in condition compared to 2004 were minor for all of the surveyed species except beech. However, although beech crown density increased during 2005 there is no long-term trend for deterioration or improvement. Crown density in beech is generally greatest when fruiting is light or absent, whilst poor crown condition is often associated with heavy mast production. Masting was heavy in 2004, but absent or scarce on 97% of the trees assessed in 2005. (Less mast production has only been recorded on one previous occasion in the last 16 years).

Crown deterioration has been significant in oak over the duration of the survey (1987 – present), particularly across northern Britain, with overall reductions in crown density of 0.4% per annum. Although condition improved slightly in 2005, and has done over the past three years, it is currently the same as in 1999 due to the large deterioration in condition of oak in 2002.

Problems affecting individual genera or species

***Acer* – Sycamore and Norway maple**

Tar spot (*Rhytisma acerinum*) remained very common on sycamore (*A. pseudoplatanus*) in 2005 and 2006 (score 0.5), affecting 37% and 43% of all trees. However, this is lower than previous years when nearly 70% of all sycamore assessed exhibited signs of this disease. It is never as common on Norway maple (*A. platanoides*) and, although 10% of trees were affected in 2005, no tar spot was seen on this species in 2006. Although an obvious and easily diagnosed disorder, it has no significant impact on tree health.

Observations of horse chestnut or Pulvinaria scale (*Pulvinaria regalis*) were, as usual, lower on sycamore compared with Norway maple in 2005, and also lower in comparison with previous years (see Figure 3). It was only seen on 6% of trees in 2005 (score 0.1), compared with 62% of Norway maples where infestation levels were much higher than normal (mean score 0.7). In 2006 there was a marked decline in sightings on Norway maple, however it was relatively more common on sycamore (score 0.2 in both cases). The reasons for such annual variation are not clear, but may relate to fluctuations in temperature, or interactions with other organisms such as the sycamore aphid (*Drepanosiphum platanoidis*)

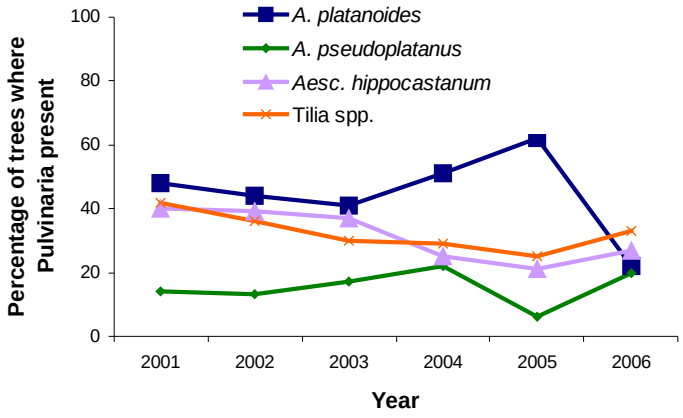


Figure 3: Fluctuations in records of horse chestnut / Pulvinaria scale on four tree species between 2001 and 2006

***Aesculus* – Horse Chestnut**

Some of the most dramatic symptoms seen on horse chestnut varieties recently have been due to the mining activities of *Cameraria ohridella*, the horse chestnut leaf miner. This micro-moth continues to spread north, west and especially east from London (see Figure 4). Further information and up-to-date maps showing the distribution of *C. ohridella* throughout the UK can be found at http://www.forestresearch.gov.uk/leafminer

a b

Figure 4a. Leaf mines created by larvae of *C. ohridella* on horse chestnut leaves; **b**. distribution of the insect at the beginning of 2006

Bleeding canker of horse chestnut again featured strongly during 2005-6. It is now believed that the vast majority of cases are due to the bacterium *Pseudomonas syringae* pv *aesculi*. At present, if readers are aware of bleeding canker on horse chestnuts in their vicinity Forest Research would be grateful for this information which can be submitted via the dedicated web pages or email. Please refer to: http://www.forestresearch.gov.uk/bleedingcanker and bleedingcanker.survey@forestry.gsi.gov.uk)

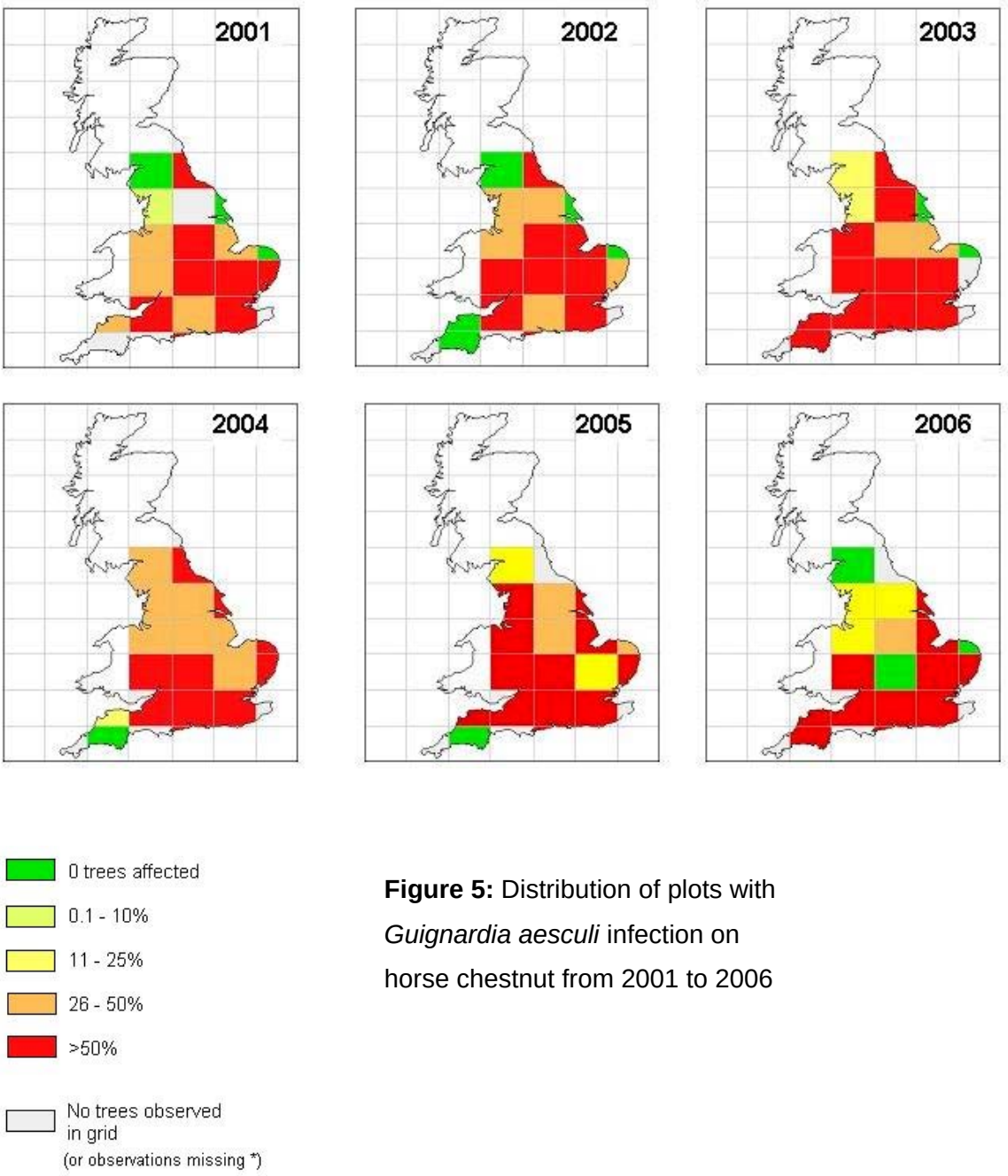


Figure 5: Distribution of plots with *Guignardia aesculi* infection on horse chestnut from 2001 to 2006

Guignardia leaf blotch remains fairly common from year to year although, as illustrated in Figure 5, it was markedly less common in northern counties in 2006. Mildew on horse chestnut (*Erysiphe flexuosa*) remained at low levels affecting 11.6% of trees in 2005, but only 2.7% in 2006, and so it appears that this relatively new host - pathogen combination is not yet widespread.

One third of horse chestnuts exhibited crown thinning in both years and volunteers reported dark spots on the leaves of over two thirds of trees. This can be at least partially attributed to *C. ohridella* and *G. aesculi*.

***Crataegus* - Thorns**

DDAS received reports of the rust *Gymnosporangium confusum*, on hawthorn (*Crataegus*) at three sites in 2006, the first record of this fungus for over 12 years. Although the trees in our volunteers' plots were not affected in this year, reports of rust were relatively high the previous year, when 19% of trees were affected. Around 10% of trees were also affected by fireblight (*Erwinia amylovora*) in both years which, although not a particularly high figure, is still an increase on the previous year (see Figure 6). Although fireblight can cause bark peeling and necrosis in affected parts of the crown (Strouts, 2000), the levels of infection seen do not entirely account for the high numbers of reports of damaged bark on hawthorns, with 44 and 50% (score 0.9) of trees affected.

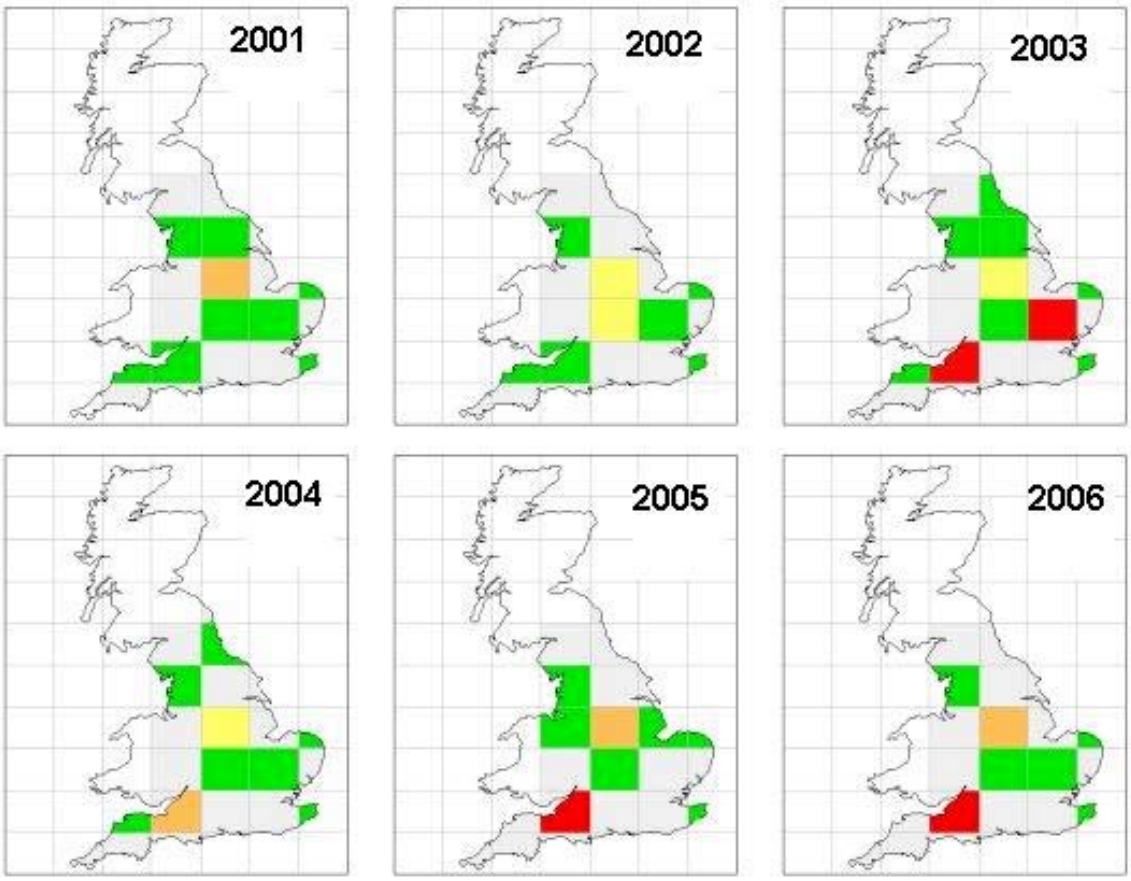


Figure 6: Changes in the presence and distribution of fireblight on hawthorn from 2001 to 2006

***Fagus* - Beech**

Observers carrying out the Forest Condition Survey reported that the beech leaf miner (*Rhynchaenus fagi*) was more widespread and severe in 2005 than at any time since 1994, being common or abundant on 27% of the assessed trees. Although trees which are attacked by *R. fagi* are not defoliated, their leaves suffer from conspicuous holes and discolouration. This was reflected in an increase in the proportion of beech with browned leaves from 29% in 2004 to 39% in the 2005 Forest Condition Survey. Interestingly, a similar trend was not apparent in trees assessed in the Amenity Tree Survey, and browning scores have remained relatively stable over the past few years at between 15 and 18% with scores of 0.2 since 2003.

Beech scale (*Cryptococcus fagisuga*) was found on more trees than usual in 2005 (29%) but was usually only present in low numbers, and in 2006 levels had fallen, with only 10% of trees affected.

DDAS had a number of cases of *Meripilus giganteus* on beech, and fruiting of this fungus was much in evidence in 2006.

***Fraxinus* - Ash**

There were few reports of ill-health on ash during both years of the survey, although crown condition remains relatively poor in some areas, with 52% of trees exhibiting thinning in 2006 (score 0.8). This is similar to results gathered in previous years. However, it is important to remain vigilant as reports from Scandinavia, Poland and more recently Austria, suggest that a new disease is affecting many ash trees, particularly young trees between 4 – 10m tall.

Problems first became apparent in Denmark in 2003, and in 2006 the fungus *Chalara fraxinea* was isolated from trees exhibiting wilting and crown dieback (Kowalski, 2006). Closer inspection reveals that one and two year old shoots die either before flushing or during dry periods in the summer. Although there is no evidence that this disease is yet present in the UK, if people suspect trees in their area might be affected please contact DDAS. **Note:** this new disorder should not be confused with the relatively common syndrome known as ash dieback. This causes twig and branch death, especially in dry eastern parts of England, and may be related to disturbance such as ploughing, as it is often found in hedgerows bordering agricultural land (Hull & Gibbs, 1991).

***Ilex* - Holly**

Although there was a slight reduction in sightings in 2005 (52% of trees) the holly leaf miner was once again very common in 2006 with 79% of trees affected, giving a score of 0.9. DDAS received two cases of Nectria canker on holly in 2006, and one case of partial defoliation due to *Phytophthora ilicis*. Reports of the latter were however, very much lower than in previous years.

***Platanus* x *hispanica* - London plane**

In 2005 and 2006, 60 and 50% of trees respectively, showed signs of dark spots or blotches on their leaves. In 2005 this was significant enough to register as overall crown browning (38% of trees, score 0.4) although this was much less apparent the following year 2006 (8%, score 0.1). This discolouration is likely to be caused by anthracnose, and would have resulted in the relatively poor crown condition discussed earlier.

Planes also had the highest scores for perennial cankers in 2005 with almost 20% of trees affected, although this dropped to 10% in 2006. As the name suggests, perennial cankers form long-lived radiating scars on the bark of infected trees, and for them to be present in large numbers one year and not the next probably indicates uncertainty on the part of the recorder. It can be difficult to distinguish perennial cankers from normal bark irregularities, particularly on species with frequent burrs and epicormic shoots such as plane and horse chestnut. Only a few organisms cause perennating cankers on plane, as discussed in the 2004 report. At present neither *Phellinus punctatus* nor *Ceratocystis fimbriata* are thought to be present in the UK, and the other potential candidate, *Inonotus hispidus*, more normally forms fruitbodies on the main stem rather than cankers.

One further non-native pathogen poses a potential threat to planes in the UK. An ascomycete fungus *Splanchnonema platani* (anamorph: *Macrodiplodiopsis desmazieresii*) has been found causing branch dieback of *Platanus* × *hispanica* in Germany. It is normally a weak parasite and is found in warmer Mediterranean climates and the southern U.S. However, during the hot, dry summer of 2003 it was found attacking mature trees causing branch death and rapid decay. As many affected trees have been street trees, this pathogen can pose a risk to public safety, and dead wood has had to be removed before it posed an unacceptable hazard. In accordance with the still popular former genus name of the fungus, the term "Massaria disease of Plane" has been proposed. If readers are concerned about any plane trees in their locality please contact DDAS.

***Populus* - Poplar**

Dieback and death of Manchester poplar, (a male clone of *Populus nigra betulifolia*) due to poplar scab, *Pollaccia elegans*, has continued to be a serious problem, and the first case of this disease on an apparently non-clonal native black poplar was reported from Doncaster in July 2006. It is worth remembering that this fungus can attack poplars in the Aegiros group (black poplars), but is usually found on hybrid black poplar (*P. nigra* x *P. deltoides*) clones where it usually causes leaf and shoot death and decline, rather than tree death.

***Prunus* – Cherry**

Blumeriella leaf spot (*Blumeriella jaapii*) has increased again over the past few years with only 3% of trees affected in 2004, 7% in 2005 and 19% in 2006. This pathogen does not significantly affect tree condition in the long term, but the dark red spotting of leaves can leave a heavily infected crown looking disfigured, and cause significant premature defoliation. In contrast to 2004 when spring conditions were extremely conducive to infection, there were very few reports of cherry wilt and spur blight (*Monilinia laxa*) and cherry leaf scorch *Apiognomonia erythrostoma* in both 2005 and 2006.

Cankers, probably caused by *Pseudomonas syringae* var *morsprunorum*, were recorded on 17% and 19% of trees although infections appear, from the average scores of 0.2 in both years, not to be severe. Infection with this bacterium can lead to extensive resinosis or gumming from affected branches and the main stem and this probably resulted in the relatively high scores for bleeding canker (33 and 21% of trees affected in 2005/6, with scores of 0.4 and 0.3). Affected leaves develop brown spots which eventually drop out, leaving small ‘shot-holes.’

***Quercus* – Oak**

Oak mildew, *Microsphaera alphitoides*, was prolific in both years (score 0.5), and DDAS noted some damage to shoots and buds during the winter of 2005.

Many oaks continue to show signs of decline across the country, and although numbers of affected trees have not increased significantly in the past few years, losses amongst mature trees are causing concern to woodland and parkland owners. Such weakened trees have, in some cases, been colonised by the pinhole borer, *Platypus cylindrus* (see Figure 7a). This insect has been increasing in numbers since the 1987 gales, and is spreading throughout

the south and south east of England. It can be a very destructive beetle and is a major concern to sawmills specialising in oak. However, *P. cylindrus* holes can be difficult to see, especially the first entry holes. Few of the surveyed trees seem to have been colonised, as scores for insect exit holes were still relatively low on oak (0.1 in 2005 and 2006, with 7-8% of trees affected).

Breeding colonies of the oak processionary moth (*Thaumetopoea processionea*) [OPM] were discovered in parts of west London in 2006 (see Figure 7b). This species is a major defoliator of oak in Europe and the caterpillars feed on the foliage of many species of oaks, including English, sessile (*Q.petraea*) and Turkey oaks (*Q.cerris*). Hornbeam (*Carpinus betulus*), hazel (*Corylus avellana*), beech, sweet chestnut and birch (Betula spp.) are also reported to be attacked, although mainly when growing next to severely defoliated oaks. OPM is native to central and southern Europe, where it is widely distributed, but its range has been expanding northwards, presumably in response to climate change. It is now firmly established in northern France and the Netherlands, and has been reported from southern Sweden.

The caterpillars pose a risk to human health. They are clothed in numerous long white silky hairs, but much less evident is the covering of many thousands of much smaller irritant hairs that contain a toxin. Contact with these small hairs, or their inhalation can result in severe skin irritation and other allergic reactions. These problems are similar but probably more severe than those caused by brown tail moth (see earlier##). However, OPM is a more significant problem because once established it tends to be more abundant on urban trees, along forest edges and in amenity woodlands, where there is a high probability of it coming into contact with people. If you see signs of oak processionary moth please contact Forest Research (Tel: 01420 22255, Fax: 01420 23653 or Email: research.info@forestry.gsi.gov.uk)

a

b

Figure 7a. Oak sawlog containing holes created by the wood borer *Platypus cylindrus*; **b**. oak processionary moth larvae

In 2006, many people reported large numbers of oak apple galls. The characteristic whitish-green galls become apparent from May onwards and are formed around the eggs of a cynipid wasp, *Biorhiza pallida*. They cause no significant damage to the trees. (See TDA 110 'An apple a day').

***Salix* - Willow**

Half of all willows in the survey exhibited crown thinning in 2005 with associated crown yellowing, browning and premature leaf fall. This rose to 62% in 2006 (score 0.9). As discussed earlier, such symptoms are likely to be associated with scab caused by *Pollacia saliciperda* or perhaps anthracnose (*Marssonina salicicola*), the latter only on weeping willows (*S. 'Chryscoma'*). Either pathogen would add to the high scores for dark spots on leaves in 2005 (0.7, 62%) and 2006 (0.8, 69%). Rust (*Melampsora* spp.) was much less prevalent (11 and 14%) probably due to less conducive climatic conditions.

***Sorbus* – Whitebeam and Rowan**

As noted earlier, crown condition was poor in 2005/6, and the highest records of crown thinning were seen on *Sorbus* species (53 and 58% of trees; scores 0.8 and 0.9). There was also pronounced crown discolouration in both years. Such symptoms can be caused by long term drought, or alternatively infection with scab fungi (e.g. *Venturia inaequalis*). Fireblight is also sometimes implicated, although that was not specifically recorded in either year.

Note – Birch (*Betula*), Lawson cypress (*Chamaecyparis lawsoniana*), lime (*Tilia*) and yew (*Taxus*) were also included in the survey, and appeared to be in good condition over the two years covered in this report.

Watch out for……

- *Platanus* (plane): Massaria canker. Watch out for dark lesions on the upper sides of branches, and risk of branch drop

- *Fraxinus* (ash): *Chalara fraxinea*. Watch out for recent infection with lesions causing wilting and dieback (distinct from the ash dieback syndrome)

- *Quercus* (oak): Keep vigilant for signs of oak processionary moth and browntail moth. Approach with caution and do not touch as hairs can cause irritation and allergic reactions.

If seen, report to Forest Research's Tree Health Division (Tel: 01420 22255/ Fax: 01420 23653) or the Forestry Commission Plant Health Service (Tel: 0131 314 6414).

Summary

Oak and lime were the most commonly assessed trees in 2005, and lime and horse chestnut in 2006. As in previous years a crude amalgamation of disease presence and score revealed that the evergreen species in the survey, Lawson cypress, yew and holly were the most, and horse chestnut and willow the least 'healthy' in both years.

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TREE DAMAGE ALERTS

The following Tree Damage Alerts (TDAs), which provide information on some of the problems detailed in this Note, were published by The Tree Advice Trust during the period of this report.

2005

TDA 100 Again remember birds, trees, hedges and the law? (31/03/05)

TDA 101 Spot the blighters? (05/07/05)

TDA 102 Orange trees (06/07/05)

TDA 103 A bolt from the blue! (15/07/05)

TDA 104 Black day for black poplar (21/07/05)

TDA 105 Don't worry (too much) honey? (05/10/05)

TDA 106 Good year or bad year for trees and for grey squirrels (11/11/05)

TDA 107 The Nora Batty syndrome (25/11/05)

2006

TDA 108 Trees, hedges and the law – they won't go away! (24/3/06)

TDA 109 The highs and lows of 2005 (24/3/06)

TDA 110 An apple a day! (30/6/06)

TDA 111 A sooty (bark) year? (25/07/06)

TDA 112 Spot them! (27/07/06)

TDA 113 Big is beautiful (23/10/06)

Appendix 1: Genera of trees included in the survey

Acer	*Platanus*
Aesculus	*Populus*
Betula	*Prunus*
Crataegus	*Quercus*
Chamaecyparis	*Salix*
Fagus	*Sorbus*
Fraxinus	*Taxus*
Ilex	*Tilia*

Appendix 2
Condition Survey of Non-Woodland Amenity Trees

Year: **2005** ..... Plot Name: Tonbridge Plot No: 163 Observer's name: Kath Tubby

Sheet No: 1..... of 6..... Tree species: ***Acer pseudoplatanus***:.....

Part A: Annual assessment of all tree species registered for the survey at the above plot

General Information																Wood and Bark							Crown			Individual Leaves										Specific Problems	
Date: e.g. [1][4] is 4th Aug.				Tree I.D. No.						Diameter (mm) at 1.3 m height				Live, dead or missing (1, 2, 8 or 9)	New disturbance of ground (0-3)	Exposed wood (03)	Bacterial canker/tumour (0-3)	Other perennial canker (0-3)	Fungal fruit bodies or rhizomorphs (0-3)	D-shaped insect exit holes (0-3)	Horse chestnut scale (0-3)	New pruning (0-3)	Crown thinness (0-3)	Crown yellowing (0-3)	Crown browning (0-3)	Dark spots/blotches on leaves (0-3)	Leaf rust (0-3)	Mildew (0-3)	Leaf aphids (0-3)	Leaf-eating damage (0-3)	Chemical/salt damage (0-3)	Premature leaf fall (0-3)	*Acer*: tar-spot	*Acer*: sooty bark-disease
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	0	0	7	0	0	0	0	0	1		2	6	0	1	1	0	0	0	0	0	2	1	1	0	0	1	0	0	1	1	0	0	1	0
1	0	0	7	0	0	0	0	0	2		2	2	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	1	0	0	1	0
1	0	0	7	0	0	0	0	0	3		3	2	0	1	0	0	0	0	0	0	2	0	0	0	0	1	0	0	2	1	0	0	1	0
1	0	0	7	0	0	0	0	0	4		2	6	5	1	1	0	0	0	0	0	1	0	0	0	0	1	0	0	2	1	0	0	1	0
1	0	0	7	0	0	0	0	0	5		3	1	5	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	1	0	0	1	0

Appendix 3: Data Summaries for 2005

3.1 The figures given in the following table show the mean scores for each category, for each tree species. For example, the crown thinness scores measured on *Tilia* in active plots across England were combined to form a mean score of 0.3 in 2005.

	Disturbance	Exposed wood	Bacterial canker	Perennial canker	Bleeding Canker	Fruit bodies	Insect exit holes	*Pulvinaria* (HC scale)	New pruning	Crown thinness	Crown yellowing	Crown browning	Dark spots	Rust	Mildew	Aphids	Leaf eating damage	Chemical/salt damage	Premature leaf fall
Tree Species																			
Acer platanoides	0	0.1	0	0	0	0	0	0.7	0	0.5	0.2	0.3	0.7	0	0	0.5	1.0	0	0.3
Acer pseudoplatanus	0.1	0.2	0	0	0	0	0	0.1	0	0.3	0.1	0.2	0.7	0.1	0	0.8	0.8	0	0.1
Aesculus	0.4	0.5	0.3	0.1	0.3	0.1	0.1	0.2	0.1	0.4	0.3	0.3	0.8	0.1	0.2	0.4	1.0	0	0.3
Betula	0.2	0.2	0.1	0	0	0	0.1	0	0	0.5	0.3	0.1	0.5	0	0	0.4	0.8	0	0.2
Chamaecyparis	0.2	0.2	0	0.2	0	0	0.1	0	0.1	0.3	0.1	0.1	0	0	0	0	0	0	0
Crataegus	0.4	0.9	0	0	0	0	0.2	0.1	0.1	0.8	0.4	0.3	0.4	0.2	0	0.3	0.5	0	0.2
Fagus	0.2	0.5	0.1	0.1	0	0.1	0.1	0	0.2	0.5	0.3	0.2	0.4	0.1	0	0.4	0.8	0	0.2
Fraxinus	0.3	0.4	0	0.1	0	0	0.1	0	0	0.6	0.1	0	0.3	0	0	0.4	0.7	0	0.1
Ilex	0.2	0.4	0	0.1	0	0	0	0	0.1	0.6	0.1	0.2	0.2	0	0	0.2	0.4	0	0.1
Platanus	0.3	0.2	0	0.2	0	0	0	0	0.1	0.4	0	0.4	0.6	0	0	0.2	0.5	0	0.6
Populus	0.3	0.5	0.2	0.1	0.1	0	0.1	0	0.1	0.4	0.2	0.1	0.6	0.1	0	0.5	1.2	0	0.3
Prunus	0	0.3	0.2	0	0.4	0.1	0.2	0	0.2	0.5	0.2	0.1	0.1	0	0	0.4	1.2	0	0.1
Quercus	0.2	0.3	0.1	0.1	0	0.1	0.1	0	0.1	0.5	0.2	0.1	0.5	0.1	0.5	0.5	0.9	0	0.1
Salix	0.5	0.4	0.1	0.2	0.1	0.1	0	0	0.3	0.7	0.4	0.3	0.7	0.1	0	0.4	0.8	0	0.7
Sorbus	0.2	0.5	0	0.1	0	0	0.1	0	0.1	0.8	0.5	0.3	0.7	0.1	0	0.3	0.8	0	0.5
Taxus	0.2	0.3	0	0	0	0	0.1	0	0.3	0.6	0.4	0.3	0.1	0	0	0	0	0	0.3
Tilia	0.2	0.2	0.1	0	0	0	0.1	0.3	0.2	0.3	0.3	0.1	0.6	0.1	0.2	0.7	1.0	0	0.2
Average Score	**0.2**	**0.3**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.5**	**0.2**	**0.2**	**0.5**	**0.1**	**01**	**0.4**	**0.7**	**0**	**0.2**

3.2 Data Summaries for 2006

	Disturbance	Exposed wood	Bacterial canker	Perennial canker	Bleeding Canker	Fruit bodies	Insect exit holes	*Pulvinaria* (HC scale)	New pruning	Crown thinness	Crown yellowing	Crown browning	Dark spots	Rust	Mildew	Aphids	Leaf eating damage	Chemical/salt damage	Premature leaf fall
Tree Species																			
Acer platanoides	0.2	0.3	0.1	0	0	0	0	0.2	0	0.3	0.2	0.3	0.4	0	0	0.4	0.5	0.1	0.2
Acer pseudoplatanus	0.2	0.2	0	0	0	0	0	0.2	0.1	0.4	0.2	0.1	0.4	0	0	0.6	0.6	0	0.1
Aesculus	0.3	0.6	0.3	0.2	0.3	0.1	0.1	0.3	0.1	0.4	0.4	0.5	1.0	0.2	0	0.4	0.9	0	0.4
Betula	0.4	0.2	0.2	0.1	0	0	0	0	0	0.5	0.3	0.1	0.5	0	0	0.4	0.8	0	0.2
Chamaecyparis	0.2	0.1	0	0.1	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0
Crataegus	0.4	0.9	0	0	0	0.1	0.1	0.2	0.1	0.7	0.3	0.2	0.4	0	0.1	0.4	0.4	0	0.2
Fagus	0.2	0.4	0.1	0.2	0.1	0.1	0.1	0	0.1	0.4	0.2	0.2	0.5	0.1	0	0.4	0.7	0	0.2
Fraxinus	0.3	0.4	0	0	0	0	0.1	0	0.2	0.8	0.2	0.1	0.4	0	0	0.2	0.7	0	0.1
Ilex	0.3	0.2	0.1	0	0	0	0	0	0.3	0.4	0.1	0.1	0.3	0	0	0.3	0.4	0	0.1
Platanus	0.5	0.3	0.3	0.1	0	0	0	0	0.2	0.4	0.1	0.1	0.5	0	0	0.2	0.4	0	0.5
Populus	0.3	0.5	0	0	0	0.1	0.1	0	0.2	0.3	0.2	0.1	0.6	0.3	0	0.3	0.8	0	0.3
Prunus	0.4	0.3	0.2	0	0.3	0.1	0.1	0	0.1	0.4	0.3	0.2	0.3	0	0	0.2	1	0	0.1
Quercus	0.2	0.4	0.1	0.1	0	0.1	0.1	0	0	0.5	0.2	0.2	0.6	0.2	0.5	0.5	0.8	0	0.1
Salix	0.7	0.4	0.1	0.2	0.2	0.1	0.1	0	0.2	0.9	0.5	0.3	0.8	0.1	0.1	0.2	0.9	0	0.9
Sorbus	0.2	0.4	0	0	0	0	0	0	0	0.9	0.3	0.5	0.8	0	0	0.3	0.6	0	0.4
Taxus	0.3	0.3	0	0	0.1	0	0	0	0.3	0.5	0.2	0.2	0.1	0	0	0	0	0	0.1
Tilia	0.3	0.2	0.1	0.1	0	0	0.1	0.4	0.2	0.2	0.5	0.2	0.6	0.2	0.1	0.6	0.9	0	0.1
Average Score	**0.3**	**0.4**	**0.1**	**0.1**	**0.1**	**0**	**0.1**	**0.1**	0.1	**0.5**	**0.3**	**0.2**	**0.5**	**0.1**	**0.1**	**0.4**	**0.7**	**0**	**0.2**

3.3 Mean scores (0-3) for specific tree problems on 'targeted genera,' in 2005 and 2006 (where no specific name is given, a number of species are assessed in the survey)

TREE SPECIES	**DISEASE/ INSECT PEST**	**MEAN SCORE 2005**	**MEAN SCORE 2006**
Acer platanoides	Tar spot	0.2	0
	Sooty bark disease	0	0
Acer pseudoplatanus	Tar spot	0.5	0.5
	Sooty bark disease	0	0
Aesculus	Leaf blotch	0.9	1.0
Crataegus	Fireblight	0.2	0.1
Sorbus	Fireblight	0	0
Fagus	Beech scale	0.4	0.1
Ilex	Leaf miner	0.6	0.9
Prunus	Cherry leaf scorch	0	0
	Cherry leaf spot	0.1	0.3
Quercus	Knopper gall	0.6	0.5
	D-shaped holes	0	0.1
Salix	Giant willow aphid	0	0