Final Report on the Condition Survey of Non-Woodland Amenity Trees

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25 August 2006

Executive Summary

This survey was initiated to collect and process information on the dynamic nature of the condition of amenity trees in England. Additional benefits of the scheme were to raise the profile of tree health issues within a dedicated band of volunteers and the general public, and to increase the perceived value of trees in the local environment.

The survey went through a number of different phases over its twelve years, starting in 1993. In the first instance the survey was seen as an extremely valuable means of collecting information on the condition of as many tree species as possible, and as such, was a relatively qualitative exercise. This became more focussed over the years, and the most recent phase, initiated in 1999, involved the collection of more quantitative data, concentrating purely on sixteen of the most common tree species in amenity plantings within England.

The collected data have enabled us to identify, assess and publicise problems relating to pests, pathogens and other factors affecting the condition of non-woodland trees. Some of the key findings and benefits of the project are outlined below:

Interpretation of the data has enabled us to:

- highlight annual variation in the prevalence of diseases such as anthracnose on plane trees, and to examine variation in levels of non-specific insect feeding damage and crown discoloration and premature leaf fall on many tree species. Observed trends can be related to climatic variation from year to year, and the ability to identify and analyse such patterns will become increasingly significant, given the predicted changes in global climate.

- track geographic variation in the extent of diseases such as *Guignardia aesculi* on horse chestnuts. Initially much more prevalent in the southern parts of England, it has been moving northwards year after year.

- follow the expansion of the exotic insect pest, *Cameraria ohridella* from its first sighting in London. The survey also allows us to inform volunteers and other interested parties about threats from potential new exotics such as Asian long-horned beetle and Emerald ash borer.

- monitor the increasing profile of disorders such as oak decline, ash dieback and, most recently, bleeding canker on horse chestnut.

In terms of social benefits, involvement with the survey has enabled and encouraged:

- volunteers to recognise the significance of a range of tree disorders.

- those already working in the arboricultural arena to educate their peers.

- a definite feeling of achievement amongst the volunteers which translates into a sense of ownership of the local environment and a definite pride in the condition of their own 'patch.'

It must be stressed that optimising the quality of the data depends upon achieving good coverage of the country, having a cadre of enthusiastic, well trained volunteers, and obtaining as close to 100% data return as possible. Data continuity is vital, and to be able to pick up trends it is important to obtain data over as long a time period as possible.

Having delivered a package of work it is always possible to see where improvements or modifications can be made. A number of issues were highlighted during the last phase of this survey:

Outputs – it is important that outputs are delivered promptly as volunteers understandably want to see how their data are being used. Dissemination of annual reports was delegated to an external organisation and constant delays in publication (>12 months in some cases) have led some volunteers to feel disaffection with the survey.

Recruitment avenues – it proved difficult to recruit and maintain dedicated volunteers for reasons outlined in greater detail in the main report.

Tie-ins with other 'green-space' initiatives and engagement of further community support - substantial social benefits can be achieved by involving communities in amenity space development projects. Residents' involvement in such schemes is seen by many as the best investment for sustainable regeneration as it develops a strong sense of ownership.

Increasing opportunities for feedback – although volunteers are encouraged to report interesting or problematic issues to the survey manager (Forest Research) there are often very

weak, if any links between the volunteer assessor and “owner” of the plot. This means that some significant problems could effectively go unreported to the people ‘on the ground.’

Greater investment in outreach – the seminars proved very popular with volunteers and paying members of the arboriculture community, but in a competitive market place, with speakers needing substantial payment for their services, free places for volunteers have necessarily been rather limited.

This report summarises the scientific background to the work, the methodologies employed, results obtained, and conclusions and recommendations for future study

1. Introduction

For over a decade numerous volunteers have been involved in a government-funded survey led by Forest Research (FR), The Forestry Commission Research Agency. This survey has enabled us to monitor the condition of amenity trees in parks, city streets and the grounds of stately homes across England. The concept behind the project grew from the 'Forest Condition Survey' - a pan-European annual survey of forest condition which has been carried out across the UK since 1987 (Hendry, 2005). Whilst the Forest Condition Survey concentrates on forest trees throughout the UK, the Condition Survey of Non-woodland Trees focuses on 16 genera of amenity trees commonly found in urban and rural environments within England. The aim has been to identify, assess and publicise problems relating to pests, pathogens and other factors affecting the condition of non-woodland trees. In addition, participation in the survey has been shown to encourage a greater awareness of the health and landscape value of amenity trees, while enabling the volunteer assessors to feel a greater ownership of the trees within their own environs. This report summarises the scientific background to the work, the methodologies employed, the results obtained and conclusions and recommendations for future study.

1.1 Background to the survey

The Condition Survey of Non-woodland Trees has run in a number of slightly different forms over the years and has been supported by various government departments since its inception in 1993-4. The first generation 'Non-woodland Amenity Tree Health Monitoring Scheme' was funded by the Department of the Environment. It grew from the government's growing awareness of the importance of trees within the urban environment, and also increasing public concern following the Dutch elm disease epidemic, recent drought problems and the Waldsterben (acid rain) debate in Germany. Prior to this, the collection of data on tree health relied upon people contacting diagnostic services, such as the Disease, Diagnosis and Advisory Service (DDAS) of FR, and the advisory services of the Royal Horticultural Society at Wisley. Consequently, the data tended to be patchy, occasionally unreliable and not very comprehensive. In an attempt to collect data on the health of amenity trees in a more systematic and rigorous way, plots were set up to monitor tree condition in 1993. This was the first national scheme in the UK to attempt to monitor the health of non-woodland amenity trees, and also the first government sponsored tree health monitoring exercise to involve volunteer observers.

1.2 ‘Old’ survey structure

Tree plots containing pre-existing, mature trees were set up in both ‘rural’ and ‘urban’ situations. In some cases they mirrored those which had been used in the initial ‘Trees in Towns Survey,’ (DOE & LUC, 1993) and the ‘Countryside Survey’ (DOE, ITE & IFE, 1993). Many rural plots were set up in the grounds of National Trust properties. Overall, a network of 106 plots was established. These first plots followed a fairly loose prescription, including between 100-200 trees, encompassing at least 12 genera, with as wide a range of species as possible. This gave the opportunity to study problems in species that would otherwise receive little attention. The emphasis at that time was on ‘variety,’ and some plots encompassed almost as many species as trees! In addition to recording any unusual or striking symptoms, the basic information collected included; tree species, estimated height and girth, foliar and shoot characteristics and crown density. Assessments were conducted twice yearly in June and September by volunteer observers.

The volunteers came from a wide range of backgrounds, and included professional arboriculturists, local authority Tree Officers and Parish Tree Wardens, as well as interested amateurs. The very general nature of this first generation of the survey meant that the data collected provided a valuable, but rather qualitative picture of tree condition. In combination with the growing casebook of advisory data, such information formed the backbone of the reference textbook ‘Diagnosis of ill health in trees’ (Strouts & Winter 2000). A copy of this text is now made available to volunteers to aid identification of tree disorders and to reward participation in the survey.

2. The Current Survey – the Condition Survey of Non-woodland Amenity trees

Following a governmental reorganisation, the Department of the Environment, Transport and the Regions (DETR) established a programme of research concerning pests, pathogens and other problems affecting the condition of non-woodland amenity trees. This led to a review of the non-woodland tree survey, and in 1998 the DETR initiated Phase 3 under the revised name of the ‘Condition Survey of Non-woodland Amenity Trees,’ - the name change reflected the more holistic approach to the overall condition of trees. The re-design allowed for a greater emphasis on quantitative data collection, and a greater awareness of the potential social benefits of participation. (Phase 2 of the programme was conducted during 1997-1999

as an earlier contract with Forest Research under the title “Health Monitoring in Non-Woodland trees”).

Some of the main aims of the survey are detailed below:

- identify significant tree problems and promote awareness amongst tree managers
- identify trends in tree health and factors that may cause changes in them
- highlight issues that warrant further detailed investigation and reporting
- publish information notes and annual reports to assist tree managers
- organise seminars for the personal development of volunteer observers and of all those involved in the management of amenity trees.

2.2 ‘New’ survey structure

The new survey design was streamlined to achieve replication and focus. A restriction was placed on the number of different tree genera; only the sixteen genera most commonly found in the existing plots (see Table 1) were chosen for inclusion within the new survey. Each new plot had to contain at least five representatives of six of these genera, resulting in plots of around 30 trees. The plots were not necessarily contiguous areas, but could be made up of two or more separate areas. Many of the old plots proved suitable for inclusion within the new survey, but a number of new plots had to be set up in other locations to maintain a total of around 100 active plots across England. Some volunteers have been happy to set up new plots on their own, but in many cases new plots have had to be set up by FR staff. Approaches were made to landowners, managers or local authorities where appropriate, to identify new sites and observers.

Table 1 Genera of trees included in the current survey.

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

The numbers of active plots within the survey has always fluctuated from year to year, and whilst Appendix 1 lists 107 plot names, not all plots are active in all years as, for example, some become vacant as volunteers change jobs and move on. Active plots in 2005 are illustrated in Figure 1.

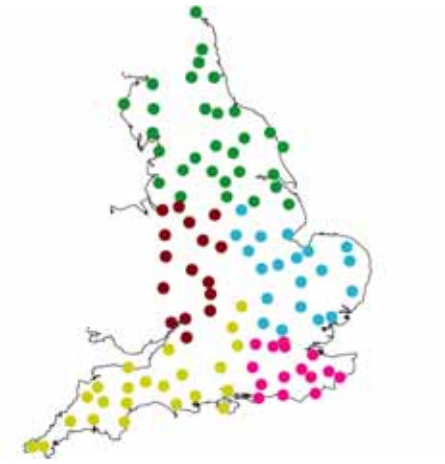

Figure 1 Distribution of amenity tree plots across England in 2005. (The different colours illustrate how the survey is divided into distinct 'management areas' for easier administration.)

Just as before, the trees in the new style survey plots were assessed by unpaid volunteers, but rather than ask for two assessments, just one a year was carried out in mid-summer, as even some of the most dedicated volunteers had found it difficult to commit to more. Although the number of trees within the plots was reduced in the new survey, volunteers were now asked to perform a much more detailed and systematic examination of each tree. The incidence and severity of a range of pests and diseases was recorded and, as tree condition in quite a broad sense was of interest, the new system also allowed the recording of abiotic disorders and even anthropogenic damage. An example of the assessment form used in the survey is illustrated below (Figure 2), and the guidance issued to volunteers annually is attached in Appendix 2.

2.2.1 The amenity tree assessment form

The front face of each form is split into sections, the first containing basic information such as the tree identification number and its diameter at breast height (1.3m). This allows easy identification of the trees in future years, and allows the monitoring of ongoing changes in condition. In the main section of the form, volunteers are asked to submit information on the condition of the wood and bark, the condition of the crown, and the state of individual leaves.

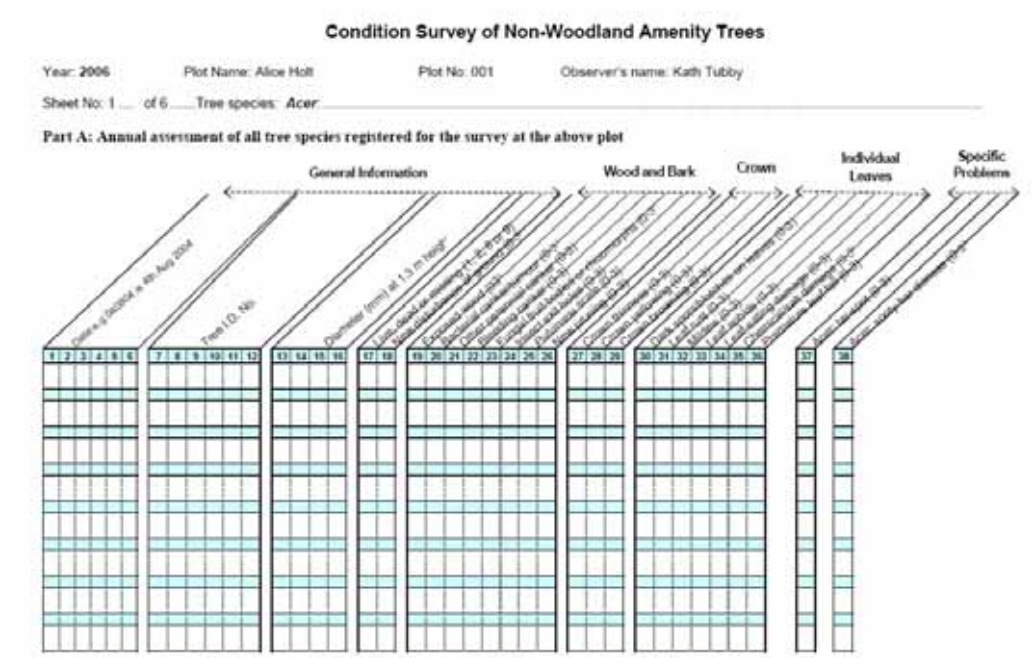

Figure 2 An example of an assessment form used by volunteers to record the condition of *Acer* species. (There is an additional section on the reverse of each form where volunteers can make further notes.)

For certain genera volunteers are also asked to look out for specific pests and diseases of interest. These tend to be relatively easily identifiable disorders which are specific to just one genus within the survey, and which may vary between years, perhaps in relation to local climatic conditions. For example, volunteers assessing *Acer* species look for signs of tar spot and sooty bark disease caused respectively by the fungi *Rhytizma acerinum* and *Cryptostroma corticale*. Both can cause striking symptoms (see Figure 3), and although the former is only really of aesthetic significance, the latter can occasionally be the cause of tree death following periods of very hot dry weather. In most cases volunteers are asked to judge the severity of any symptoms present using a very simple scale running from 0 (no symptoms) through to 3 (severe symptoms). Given the wide variation in the volunteers' experience of tree assessments, this simple system was chosen because it was practical and easy to use, whilst

still yielding reliable data. Assistance is usually offered to volunteers by FR staff in the early stages to alleviate any major discrepancies in the scoring of symptoms. A more complex system would require further training on the part of the volunteers, and this could deter some people from taking part.

Figure 3 a) Tar spot and b) sooty bark disease on Sycamore – two of the diseases volunteers are asked to look out for.

Assessment forms were updated from time to time to take into account the changing behaviour of some organisms affecting tree health. One particular example is bleeding canker on horse chestnut. Over the past five years reports of bleeding cankers on *Aesculus* species have risen sharply, and researchers are especially keen to collect as much data on this disorder as possible, particularly as the cause is not yet conclusively identified. An additional column was added to the form in 2004, specifically requesting information on presence and severity of such cankers on all tree species in the survey.

Wherever volunteers were unsure of the cause of ill-health in their trees they were given the opportunity of following this up with Advisory staff within FR by phoning in with descriptions of damage, or by sending in samples for diagnosis. During 2005 Advisory staff were involved in confirming a diagnosis of *Cameraria ohridella* on horse chestnut in the Norwich area (via emailed photographs), and trying to establish the cause of large scale tree mortality in Dulwich Park, south London. In the latter case a site visit indicated that at least some of the observed mortality could have been due to prior flooding episodes. However, fewer volunteers than expected took advantage of this service.

2.2.2 Training and education

There was great variation in the experience and background knowledge of people joining this survey. Whilst some people, for example the arboriculturists and Tree Officers, were already able to identify major pests and diseases as part of their work, it was recognised that others might need more assistance. Therefore, on beginning the survey all volunteers were offered the opportunity of one-on-one assistance to get them started. Initially one of the main aims of such site visits was for Quality Control purposes whereby FR personnel would visit 20% of established volunteers each year specifically to ensure the quality of data captured. However, in reality, most volunteers who were already confident in their own abilities, did not want such visits, and the majority of site visits were conducted specifically to map new plots and ensure new volunteers were happy with the assessment protocols. The group training events laid down in the original contract were definitely not popular with volunteers, and only two were held – one at Himley Hall, and one at Alice Holt. In the early years of the new survey FR personnel conducted 21 (2000) and 18 (2001) individual visits, but this number dropped as volunteers became more confident with the new style of plots and assessments. In 2002, 2003 and 2004 only 11, 12 and 11 visits were requested and carried out respectively.

2.2.3 Dissemination of Information

Such assistance and training is seen as one of the benefits of taking part in this survey. In addition the volunteers also receive annual reports based on the data they have collected combined with advisory casebook data for that particular year (e.g. Thorpe *et al*., 2006 a, b). The Arboriculture Advisory and Information Service (AAIS) is entrusted with publication of outputs from the survey and sends out the reports in the form of Arboricultural Research Information Notes (ARIN's). Due to a delay in publication of some early reports, data for 1999 and 2000, and 2001 and 2002 respectively were combined into two, rather than four reports (see References). FR has experienced continuing delays in publishing further annual reports due to backlogs within AAIS.

Topical information leaflets called Tree Damage Alerts (TDA) are also published periodically by AAIS and they flag up certain pests or diseases prevalent at the time. The original contract specified a minimum of 40 TDA's to be written by FR staff within the life of the survey. This proved a hard target to achieve as, ultimately, both staff from AAIS and FR prepared information notes relating to pests and disease and it was important to ensure that the notes remained topical, and that there was no replication. A list of annual reports and TDA's published within the life time of this project is found in Appendix 3. 23 TDA's were prepared with input from FR staff.

To increase public access to information web pages dedicated to the project were set up, and assessment forms made available for downloading (http://www.forestresearch.gov.uk/amenitytreesurvey). Free or discounted places were also made available at regular seminars to augment the professional development of volunteers (see Appendix 4). In many cases the volunteers (and other delegates) could gain Continuous Professional Development points from such events. Imbuing participation in the survey itself with CPD points may be just the incentive some volunteers need to get involved and stay committed to the project and could be considered if the survey were to continue. All together, the educational literature, the web information and the seminars do help to educate and enthuse volunteers whose backgrounds may not have previously involved tree management at any level.

2.2.4 Administration of the survey

From 1999 the survey was centrally co-ordinated through a project leader based at the Surrey research station of FR at Alice Holt Lodge (initially Dr David Lonsdale and from 2002 Dr Katherine Tubby). Some administrative elements were devolved to three or four trained FR personnel (Liaison Officers) based in offices located within the sub-regions of the survey area. They offered regular contact with volunteers whenever needed, and were available to help set up plots, identify tree species, pests and diseases, and to answer any queries relating to the running of the survey.

Most volunteers entered their data manually onto the assessment sheets, although a few submitted their results electronically via email. The data were then typed into an Access database by staff working within Biometrics Division at FR. Information concerning the location and ownership of the tree plots, and contact information and overall ‘status’ (current, retired, absent) of the volunteers was also held within the database (see Figure 4).

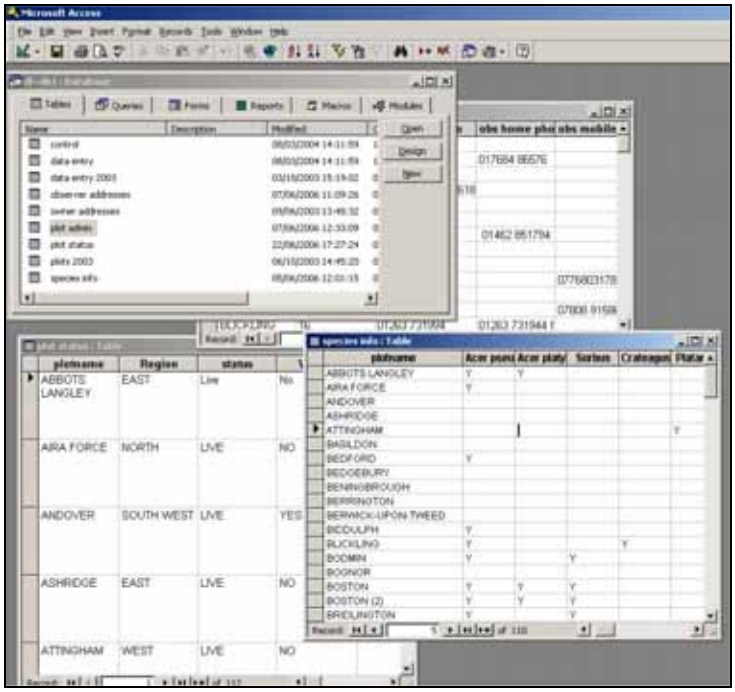

Figure 4 Management of data relating to the survey using a database created using Microsoft Access.

3. Survey results and trends

As the survey relies on the commitment of unpaid volunteers, the number of plots for which data are collected each year does vary. Data returns are illustrated within Table 2 and this equates to approximately 68% data return per annum.

Table 2 Number of plots from which data have been collected throughout the 'new' survey's history.

YEAR	Reports received	No. plots active
1999	74	N/A
2000	61	N/A
2001	66	100
2002	71	100
2003	68	95
2004	80	100
2005	53	100

Although when the survey was re-designed one of the main aims was to achieve a level of replication, in terms of numbers of trees within each chosen species, not all species are represented equally, as illustrated in Figure 5. There is a heavy emphasis on horse chestnut (*Aesculus* spp.), oak (*Quercus* spp.) and lime (*Tilia* spp.), but far fewer Lawson cypress (*Chamaecyparis lawsoniana*) and thorn (*Crataegus*). This imbalance is probably a reflection of the species choices in many amenity plantings, combined perhaps with difficulties in identifying species or exotic varieties of *Crataegus* for example, or it may simply reflect volunteers' preferences when setting up their plots! Data are collected on around 2200 - 2500 trees in the course of each assessment season.

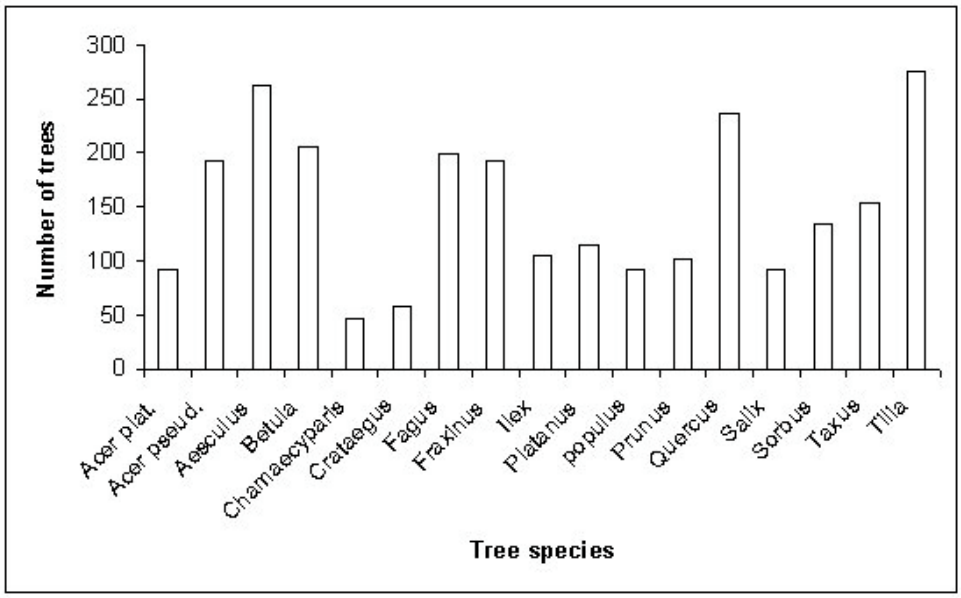

Figure 5 Variation in the frequency of tree species chosen by volunteers for inclusion within their plots.

The survey in its present format allows the data to be analysed and presented more quantitatively, and provides a solid framework for monitoring ongoing changes in the health of amenity trees. Although the new survey has only been fully operational since 2000, year to year changes in the overall incidence of certain factors, for example crown browning and premature leaf fall are becoming apparent as more data are collected (see Figure 6).

In some cases crown discoloration can be attributed to the presence of a specific disease or insect. The browning apparent in the crowns of nearly half of all plane trees assessed in 2001 reflected high levels of anthracnose. The causal agent, the fungus *Apiognomonia veneta*, was particularly common in the springs of 1999, 2000 and 2001 due to a series of prolonged mild wet springs producing conditions conducive to the spread of this pathogen (Strouts, 1991). In the spring, buds may fail to flush as a result of infections from the previous year. The developing infection can also develop into twig blight, and later in the summer a leaf blight stage occurs, starting with killing of the veins and surrounding leaf tissue. If the fungus spreads down the petiole into the twig, the affected leaves fall early. In 2001 this disorder was reflected in the volunteers' data as 71% of all plane trees were recorded as suffering premature defoliation. It is now relatively common in these common, largely urban trees, and it is possible that the observed rise in incidence is related to decreasing levels of sulphurous pollution in our cities.

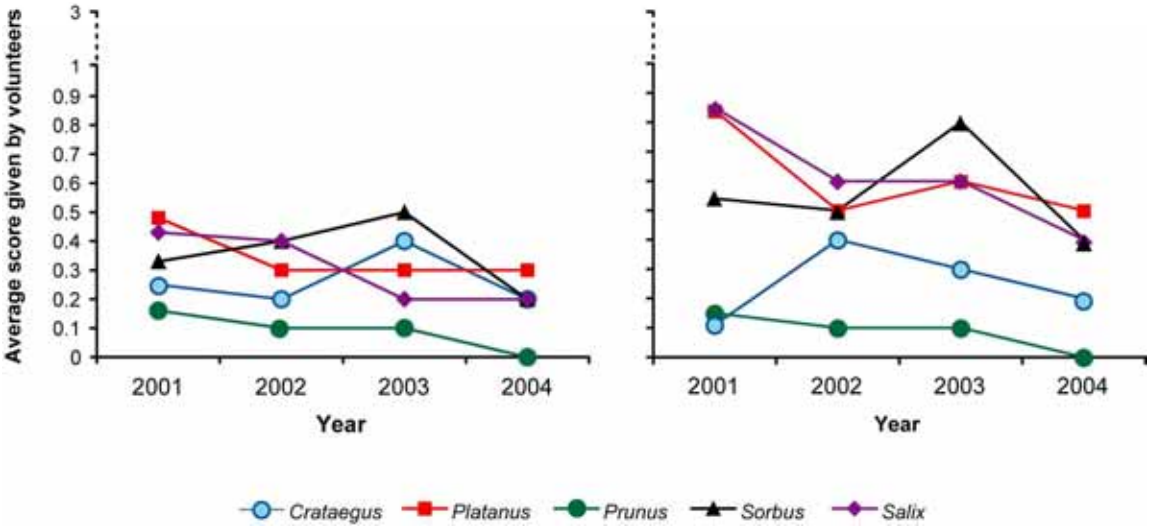

Figure 6 Examples of results obtained from five species of tree: (a) the appearance of crown browning; (b) the degree of premature leaf fall. (Scale: 0 - no symptoms through to 3 - severe symptoms.)

In contrast, crown discoloration in a species such as yew is much more difficult to attribute to a specific cause. The older needles go through a normal process of senescence at about the time when the trees are due to be surveyed, making it difficult to distinguish the perfectly normal change in overall crown colour from, for example, the browning caused by Phytophthora root rot.

Trees differ in their ability to withstand stress, and it was interesting to see how this was reflected in the data obtained during the summer of 2003. Southern parts of England in particular experienced some of the highest temperatures recorded in the UK and the 100^{o}F 'barrier' was breached east of London with 38.5^{o}C or 101.3^{o}F recorded at Brogdale near Faversham. There were many reports of limb shedding by large trees, and the high temperatures in late July/August caused some trees to lose their leaves early. Others suffered crown browning and leaf curling. The survey indicated that different species varied in their susceptibility: *Platanus*, *Sorbus* and *Salix* suffered the highest levels of premature leaf drop and (excepting the evergreen species in the study) *Prunus* the lowest. The crown condition of beech also varies markedly from year to year and, although long term drought is known to have affected the condition of some trees (Cannell & Sparks, 1999), heavy masting also has a significant deleterious effect on the crown in following years. Surprisingly perhaps, there were fewer reports of drought-related damage than expected and the dry sunny conditions also reduced the incidence of many leaf and shoot problems. It is important to state that this is certainly one of the areas where continued, long-term monitoring would give an invaluable insight into whether certain trees adapt or succumb as our climate changes.

Some pests and diseases vary on an annual basis for as yet unknown reasons. This is illustrated in the data collected by volunteers on presence of knopper galls, caused by the insect *Andricus quercuscalicis* on oak species (see Figures 7 and 8). The data show considerable annual variation, and although perhaps picked up more by volunteers in central and southern plots, the insect is known to be spreading northwards into Scotland from an initial locus in Northamptonshire in 1961. This insect is not a serious pest, although it can reduce acorn yields in seed orchards. Nonetheless the importance of monitoring such infestations, and educating and informing volunteers was emphasised one year when a volunteer rang into report that a local arboricultural practitioner had recommended the removal of locally affected trees on the grounds of health and safety.

Figure 7 A knopper gall caused by the insect *Andricus quercuscalicis* on oak acorns.

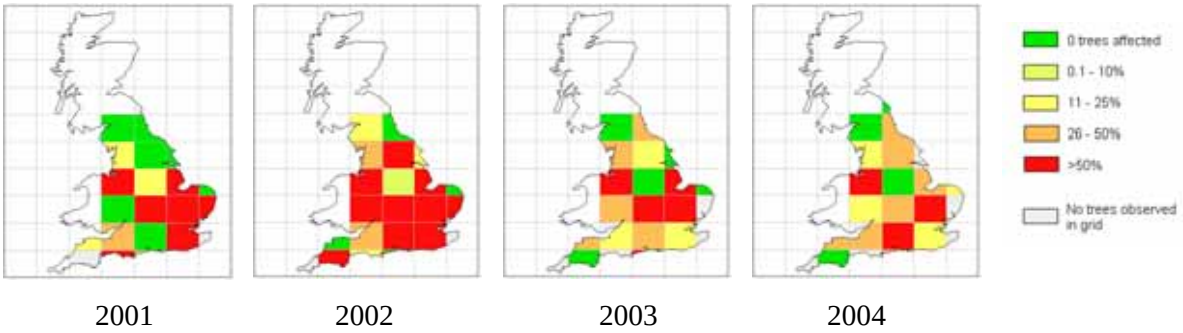

Figure 8 Variation in the recorded presence of oak knopper galls in different areas of England in the years 2001-2004.

In addition to annual variation in the patterns of some pests and diseases, the data also illustrate certain geographic trends. Horse chestnut leaf blotch, caused by the fungus *Guignardia aesculi* has been present in the UK since around 1935 following a probable introduction from the United States. The disease is recognisable by the reddish or dull brown, irregular blotches that are often concentrated at the tips and margins of infected leaflets. The blotches are usually outlined by a conspicuous yellow band (see Figure 9). Since the

beginning of the new survey it has consistently been recorded on at least 50% of all the horse chestnuts assessed. However, it remains markedly more common in southern areas of the country (see Figure 10). It is not yet certain whether this pattern will persist given the predicted changes in climate.

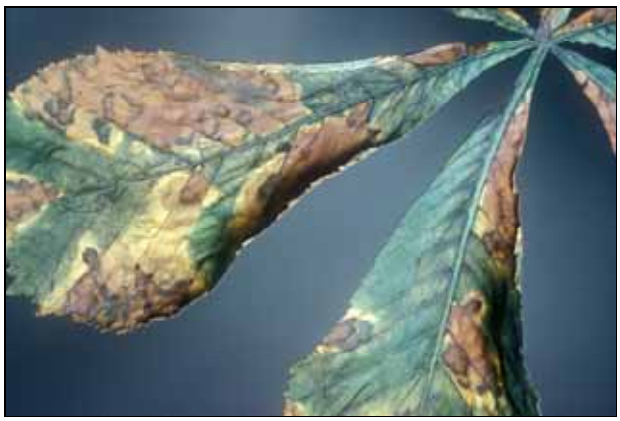

Figure 9 Horse chestnut leaf blotch caused by the fungus *Guignardia aesculi*, showing the distinctive yellow band around a central brown blotch.

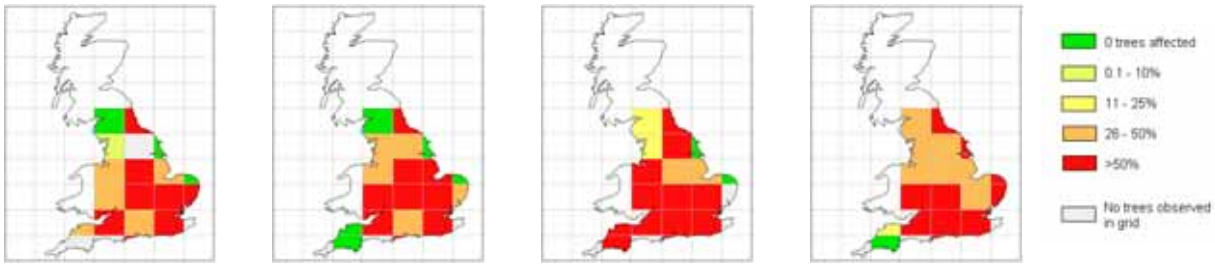

Figure 10 Variation in the recorded presence of horse chestnut leaf blotch (*Guignardia aesculi*) across England in the years 2001-2004.

There is also potential for the survey to act as an early-warning system with respect to new or exotic organisms. Periodically, short articles called Exotic Pest Alerts are drafted by FR staff in the course of their other duties. These are sent out to volunteers and the wider public to illustrate new threats such as the emerald ash borer (*Agrilus planipennis*) and the Asian long horn beetle (*Anoplophora glabripennis*). Fortunately there have as yet been no recorded sightings of these organisms, although the latter is occasionally discovered in packing material arriving at UK ports from other countries. At present, neither beetle is thought to have established in the UK.

At the start of the new survey the horse chestnut leaf miner, *Cameraria ohridella* had not been found in the UK, although it had spread from an initial locus in Macedonia to much of Europe. However, in 2002 *C. ohridella* was found in the London borough of Wimbledon and

has since spread to many parts of South-East England (Straw & Bellet-Travers, 2004). Volunteers involved in the survey have reported it in plots as widely spaced as south London and Norwich (see Figure 11a, b and Figure 12).

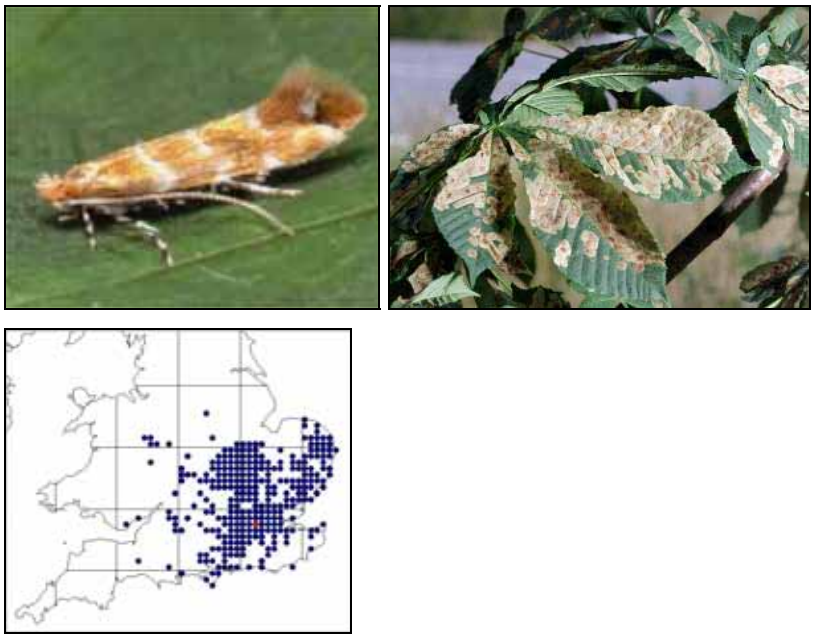

Figure 11 The horse chestnut leaf miner (*Cameraria ohridella*).a) Adult moth (© P Roose); b) larval leaf mines; c) Distribution of horse-chestnut leaf miner in October 2006 (the red dot indicates the first sighting in Wimbledon in 2002).

The new style survey allowed volunteers to record observations relating to anthropogenic damage. This is an important addition to the survey, as some instances of damage will help explain why some trees appear not to thrive, when there are no obvious pests or diseases evident. Figure 12 effectively illustrates two incidences of unsympathetic tree management, both of which could have serious implications for the health and stability of those street trees.

Figure 12 Examples of unsympathetic tree management: a) Tarmac laid right up to the bole of this tree has cracked and become unstable due to pressure exerted by underlying tree roots. In addition a cable has been laid very close to the trunk (right side) causing unknown damage to roots; b) This tree has clearly outgrown its location, and the lower part of the stem has been cut away to reduce encroachment onto the pavement. This damage could allow the entry of pathogenic fungi.

4. Limitations of the survey and opportunities for improvement and modification

Although many aspects of the survey have been altered following recommendations laid down in the first review of the project in 1998 (Gibbs, 1999), the survey does still have some recognised limitations. Although there are certainly some elements that could be improved, other perceived limitations are largely part and parcel of the fact that one of the main aims of the project is to involve volunteers, and engage support from the local community wherever possible. It is generally not easy to optimise data collection and yet also rely on volunteer participation. Some of the limitations are outlined in greater detail below along with recommendations where appropriate

4.1 Recruitment

It has always been the case that volunteers differ in their commitment to the project. Many move on without finding replacements, often taking equipment (books, tape measures) with them. Despite annual requests for plot maps, there are still gaps in the database held at Alice Holt, and when volunteers leave there is sometimes no way of identifying the correct trees. This results in a loss in data continuity even if a new volunteer is found, as a totally new plot has to be set up. Setting up a comprehensive database certainly helped to identify areas where there were gaps, but if a request for information is ignored by a volunteer there are no other avenues to pursue.

Because of the way many plots were identified, observers generally have some official connection with the plot. High proportions of participants are professional tree officers or arboriculturists and they do the surveys in the course of their normal work. Thus, many are not true volunteers but participate semi-officially. This means that observations clash with official duties, and understandably the survey can take second place. Local Authority and National Trust personnel especially are under severe pressure from resource cuts, and are extremely difficult to replace if they resign. An attempt was made to recruit volunteers in problem areas through the placement of adverts in local papers. This did not prove successful as the only two responses obtained were from individuals who requested payment for their services. If the survey were to continue it is recommended that more effort is made to engage Tree Wardens through the central Tree Warden 'administrator', as their dedication to tree care is undisputed. It is also often that case that these individuals are retired, and may have fewer day to day work pressures. Overall, the administrative burden of coercing reluctant volunteers and finding replacements for absentees remains considerable. Constant encouragement is required and there are no sanctions available to address deficiencies in participation.

4.2 Data Quality and Optimisation

Although it means the loss of some fine detail, the scoring system in this generation of the survey was made very simple to allow for the variation in background knowledge and experience of the volunteers. More complicated systems could have resulted in more problems recruiting volunteers. Fairly distinctive causal agents such as tar spot, knopper gall and horse chestnut leaf blotch were usually identified readily, as was evident from the numbers of positive data records. However, there seemed to be a fairly widespread failure to recognise rust symptoms (or to distinguish between rust and mildew), and cherry diseases such as leaf scorch (causal agent *Apiognomonia erythrostoma*) and Blumeriella leaf spot (*Blumeriella jaapii*) were also seldom seen. Bleeding canker on horse chestnut has become a

very significant problem since 2000-2001, and although the assessment forms were specifically altered in 2004 to allow volunteers to record presence of bleeding cankers, reports are still very scarce. Although no widespread systematic survey has yet been undertaken, Forest Research estimate some 35,000 to 50,000 trees are actually affected, and probably a few thousands have already been felled as a result of the disease. In conclusion, when contrasted to general advisory casebook data, it seems that some causes of poor tree condition go unreported.

Although in most cases tree assessments were carried out with few problems, the occasional missed or misdiagnosed disorders emphasises the importance of making training and feedback available to all volunteers starting the survey. The aim had been to visit each site once during the course of the study, but as certain sites had high personnel turn over they ended up being visited more than once (e.g. Southwark - Dulwich Park, Berwick-upon-Tweed; in another plot the volunteer failed to turn up for the scheduled meeting). As the number of days available for FR staff to undertake such visits was limited by the financial constraints of the project, this meant that some volunteers, usually the 'better' ones, were under-represented. Such occurrences underline the relevance of providing regular feedback via the annual reports and other topical information notes.

On completion of the survey most volunteers hand over their data to Forest Research where an overall picture of tree health is compiled. Information concerning individual trees is not generally utilised, although in some cases it could prove valuable. For instance, where problems are identified as needing attention, for example a fruit body of a significant decay-causing pathogen on a street tree, if there is only a loose association between volunteer and plot owner this information is not always passed on. To optimise utilisation of the data in future years of the study a standard 'tree problem report' form could be introduced to allow volunteers to report to owners when appropriate.

4.3 Data interpretation

One of the initial aims of the survey was to identify trends in pest and diseases occurrence, and this is certainly achievable (see above). However alongside this, the aim was to identify factors that may cause changes. Unfortunately, even with the survey re-design, it is not always easy to relate patterns in the data to causal agents, be they changes in the environment (climate, pollution) or management-related parameters, as the survey is not tied into any other (e.g. climatic) monitoring systems.

Although undoubtedly present, there have been no attempts to quantify or fully realise the social benefits arising from the survey. These could include broadening educational opportunities, and enhancing links with the current highly topical urban greening agenda. Were this survey to be continued, it is recommended that an attempt should be made to link it to one or more of the new urban greening initiatives (e.g. The Civic Trust's Green Flag scheme, CABE Space). A second option would be to forge links with a Continuous Professional Development scheme to realise fully the community benefits of this survey.

4.4 Outreach

The seminars proved very popular with volunteers and members of the arboriculture community. However, to be an attractive proposition to any sponsoring bodies, these had to be pay-to-attend events, and good speakers quite rightly demanded market rates. In a market with ever-increasing numbers of events, seminars and conferences smaller events proved easier to manage, and presented less of a 'risk' to organisers and sponsoring bodies alike. This effectively cut down on the numbers of free places which could be made available to volunteers, and despite the availability of free places being one of the supposed 'perks' of being involved with the survey, in reality only a few volunteers were able to take advantage of this. To encourage the participation of other like-minded bodies in organising such events, and to make more free places available, it is recommended that this part of the survey should be allocated dedicated funding.

5. Overall conclusions

Despite the limitations discussed above, the data collected by volunteers do serve to reveal a valuable picture of national tree health, which could not realistically be achieved by other means. Before this survey was initiated, unstructured monitoring of non-woodland trees by the Forestry Commission was the only significant source of information. Although such advisory casebook data are invaluable, diminishing resources have reduced the opportunities for such monitoring, and the survey has provided much needed information for the scientific community.

The survey can also be looked at in a wider context than simply a means of recording and monitoring tree condition. The scheme has generated an enormous enthusiasm and good will – even amongst those who do not get round to sending in their data every year! It seems to encourage a greater sense of ownership and gives participants the feeling of being in touch

with a national initiative on a subject about which they care deeply. The health of most of the trees under assessment remains relatively good, and it is probably not an exaggeration to say that, in many cases, this is because people like the volunteers are looking after those trees and making sure they thrive in their environment. Caring for these individual trees plays a part in preserving and optimising our green space, especially in urban areas. Given the current political climate in which there is a growing recognition of the vital role trees play in what has been called the 'social ecosystem' (Kuo 2003) these are all highly significant, if unquantifiable benefits of the scheme.

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Appendix 1: Plots active during the history of the current survey

Plot name	Region	Plot name	Region
Abbots Langley	East	Bedgebury	South East
Ashridge *	East	Bognor	South East
Bedford	East	Brighton	South East
Blickling *	East	Dulwich	South East
Boston	East	Farnham	South East
Bury St. Edmunds	East	Godinton	South East
Colchester	East	Hastings	South East
Colchester2	East	Hythe	South East
Deene	East	Islington	South East
East Leake	East	Maidenhead	South East
Ely	East	Osterley *	South East
Framlingham	East	Petworth *	South East
Grantham	East	Rochester	South East
King's Lynn	East	Tonbridge	South East
Leicester	East	Wakehurst *	South East
Lincoln	East	Andover	South West
Louth	East	Basildon	South West
Lynford	East	Bodmin	South West
Norwich	East	Bristol	South West
Peckover *	East	Cotehele *	South West
Peterborough	East	Dorchester	South West
Saffron Walden	East	Exeter	South West
Silver End	East	Holsworthy	South West
Stevenage	East	Kingston Lacy *	South West
Aira Force *	North	Knighsthayes *	South West
Beningbrough *	North	Minehead	South West
Berwick-Upon-Tweed	North	Montacute *	South West
Bridlington	North	Mottistone *	South West
Brocklesby	North	Penzance	South West
Carlisle	North	Rosemoor	South West
Clumber *	North	Southampton	South West
Cockermouth	North	Stourhead *	South West
Cragside *	North	Taunton	South West
Darlington	North	Trevarno	South West
Fell Foot *	North	Westonbirt	South West
Gainsborough	North	Attingham *	West
Gawthorpe *	North	Berrington *	West
Hexham	North	Biddulph *	West
Hull	North	Calke *	West
Lancaster	North	Chatsworth	West
Leeds	North	Dudley	West
Nelson	North	Frodsham	West
Newcastle	North	Gloucester	West
Nostell *	North	Moreton-in-Marsh	West
Nunnington *	North	Oxford	West

Plot name	Region	Plot name	Region
Ormesby *	North	Packwood *	West
Raby	North	Rufford	West
Rotherham	North	Salford	West
Scarborough	North	Speech House	West
Selby	North	Stowe *	West
Skipton	North	Stratford	West
Studley Royal *	North	Tatton *	West
Wallington *	North	Uttoxeter	West
		Whitchurch	West

* National Trust Property

Appendix 2

The following documents are sent out to volunteers annually to aid them in their assessments. Any queries are handled by the Project Leader, Dr Kath Tubby, or one of the FR Liaison Officers.

A. General Information
B. Assessment form instructions
C. Amenity Tree Survey Photoguide
D. Risk Assessment

A. General information 2005

1. Any queries?

If you have a question about the survey please contact Katherine Tubby

Dr Katherine Tubby
Project Leader
Forest Research
Alice Holt Lodge
Wrecclesham
Farnham
Surrey GU10 4LH

Tel. 01420 222255 ext 2241
Fax 01420 23653
e-mail katherine.tubby@forestry.gsi.gov.uk

2. Filling in the tree assessment forms

Please aim to assess your plot in July or August.

If your plot was assessed last year you should get personalised forms, but if we don't yet have all your details you will need to fill in your name and the plot name and tell us exactly which species of tree you are assessing. E.g. small-leafed, or large-leafed lime.

3. Returning the Completed Forms

Please send all forms back to me at Alice Holt using the FREEPOST envelope provided. If it is easier, email me the results at: katherine.tubby@forestry.gsi.gov.uk
We can send you the forms in the form of a Word document if you wish.

4. Plot Design – A reminder

Your plot should include 5 (or more if you like!) trees each of 6 'allowed' species of tree - a total of 30 trees. New volunteers should have received a list of 'allowable species' to help them set up their plots.

5. Equipment

Please remember that your diameter tape has cm on one side and **DIAMETER** on the other. These are cm/∏, NOT INCHES! Please use this side to record diameter at breast height (1.3m).

If you leave the project we appreciate it if you can pass the equipment on to the next volunteer.

6. Risk Assessments

The risk of harming yourself whilst doing this survey is extremely low! However, we send you a risk assessment detailing the hazards, and we ask that you read and comply with the recommendations e.g. wearing a high visibility jacket if you will be working near a busy road. Please sign and return this form along with your results every year.

7. Finally…….Thank you!

We greatly appreciate the voluntary help that so many people give to this survey. If you find you have problems finding the time to do the survey at some point, please get in touch as soon as you can and we will try to make alternative arrangements until you can pick it up again, or until we can recruit another volunteer.

B. Assessment form instructions

Please assess your plots roughly the same time as last year – ideally July/ August.

Part A (more detailed instructions on following pages)

In Columns 01 to 36 fill in the items (e.g. diameter, crown thinning, premature leaf fall) that apply to all tree species.

Use species-specific assessment forms if you are assessing *Acer*, *Aesculus*, *Crataegus*, *Fagus*, *Ilex*, *Prunus*, *Quercus*, *Sorbus* or *Salix* as there are a number of specific diseases we ask you to look out for. These need to be scored in one or two additional right-hand columns. E.g. on *Acer* please look out for and mark down scores for *Acer* tar-spot and *Acer* sooty bark disease.

Part B

Use the top section to record any comments you have about any of the trees in Part A overleaf. Fill in the lower section if you see any exceptional or striking symptoms that you have observed on trees of any species anywhere in your locality. For example we would like to know if there are any outbreaks of Dutch elm disease and Phytophthora disease of alder in your area.

The Photo-guide is a short guide to illustrate all the specified diseases and insects to be scored in those extra columns; 34 to 44 of Part A. There are also photos of a few diseases which need scoring in columns 18 to 33. For example, scab on willow and leaf spot on birch are examples of 'dark spots or blotches on leaves' (column 27 on the form).

Further Notes on your assessment forms
(the numbers below refer to the numbered columns on the form)

Use 1 form per tree species - record the scores for each tree on a separate row.
Plot Name and Plot Number: We might have printed these for you, but otherwise please enter them on every form.

The columns should be completed as follows:

- **01-06 Date:** for example, 4th August 2005 should appear as follows: 040805

- **07-12 Tree I.D. No**. (if you can't remember which tree is which check last year's diameter!)

- **13-16 Diameter**: Measure diameter at breast height using the special tape provided. If your tree has multiple stems arising from near ground level, make a note of all the diameters of stems over 5cm individually in the left-hand margin
  (Note: use the side of the tape adjusted to read diameter; the 'wrong' side of the tape is an ordinary tape measure and shows girth not diameter!)

- **17 Live, dead or missing**: score as follows:
  1 alive (and therefore assessable).
  2 dead but present. Please leave columns 16 and above blank
  8 missing (i.e. fallen or removed and not replaced). Leave columns 16 and above blank.
  9 a replacement tree. Fill in the other columns if the replacement is the same species.

  (For all missing or replaced trees, please write information in the 'comments' section in Part B (e.g. reasons for loss of tree; species of replacement tree – by all means choose a replacement from elsewhere in your plot.)

- **18 New disturbance within the crown-spread**. Occurred since the last assessment or not been previously recorded. E.g. compaction (maybe a light mower, pedestrians etc.), change of soil level or excavation.

- **19 Exposed wood:** Only score wood exposed by the loss of bark from the main stem or buttress zone; Ignore sawn or broken surfaces such as pruning wounds. If most of the exposed wood is very decayed, please mention in the 'comments' section. As a guide:

0	No exposed wood
1	Very small areas of exposure; bark almost all intact
2	Easily noticed exposure, but less than as described for a score of 3
3	Either two-thirds of the circumference exposed at any one height, or an overall loss greater than one third

Information for scoring for disease, crown discoloration etc.

Use the 0-3 score in all following columns

0 nothing
1 slight (i.e. inconspicuous; you have to look quite hard for it)
2 moderate (i.e. either locally conspicuous somewhere on the tree, or present moderately over much of the crown or other relevant part of the tree)
3 severe (i.e. enough to affect the overall appearance of the crown or other relevant part of the tree, or extremely conspicuous over at least a third of the crown or other relevant part of the tree).

- **20 & 21 Bacterial or Other perennial cankers**

- **22 Bleeding canker:** This is a new category as there have been many cases of bleeding canker (black or brown oozing from trunks/branches) over the past couple of years, particularly on horse chestnut.

- **23 Fungal fruit bodies and rhizomorphs** ('bootlaces') score these if present on living parts of the main stem, major roots or major branches (e.g. not on dead stubs).

- **24 Insect exit holes:** score all holes caused by insects in the bark. Sometimes there may also be weeping patches or sinuous galleries exposed by the falling away of the bark.

- **25 Pulvinaria scale:** (previously called horse chestnut scale. Please see the photo guide. This can occur on many species!

- **26 New pruning:** score this **only** for pruning wounds that you know are no more than a year old.

- **27 Crown thinness:** where foliage has withered, fallen or grown only sparsely where it should fill the available space. Do not score for gaps due to a naturally open growth habit or any known removal or breakage of twigs and branches.

- **28 & 29 Crown yellowing & browning:** score if it affects the general colour of the crown through uniform discoloration of the foliage or the frequent presence of yellow or brown spots or blotches on otherwise green foliage. Score any dark spots or blotches additionally in column 27.

- **30 Dark spots/blotches:** See the photo-guide and Diagnosis of ill-health in trees. Do not score dark blotches caused by insect feeding (e.g. mining or skeletonising). If the darkening is enough to affect the general appearance of foliage, score it also under crown browning or yellowing.

- **31, 32, 33 Leaf rust, Mildew and Aphids:** see the photo guide, but please be careful scoring rust; if it differs much from the relevant picture, it probably isn't rust.

- **34 Leaf-feeding damage:** include both holes and skeletonising damage.

- **35 Chemical/salt damage:** yellowing, whitening, dwarfing or distortion of leaves and young shoots is often due to damage by herbicides or salt. Score only if disease and nutrient deficiency have been ruled out.

- **36 Premature leaf fall:** score if some or all of the leaves/ needles have fallen before the usual time i.e. before autumn for deciduous species. Remember that evergreens like yew may normally shed foliage during the assessment season. Premature leaf fall may be obvious from leaves lying on the ground.

- **37-46 Specific problems:** these need to be recorded only for the specified insects and diseases which are printed in the headings above these columns. Please score 0,1,2 or 3 for the disease or insect named above each special column.

C. Amenity Tree Photoguide

The figures below illustrate a number of common tree pests and diseases. Some of the photographs show a condition specific to one of the tree species included in the survey. Others show more general problems which can occur on many tree species. Most of the conditions will also be illustrated and fully described in the 'Diagnosis of Ill-Health in Trees' book by R. G. Strouts and T. G. Winter. All volunteers are issued with a copy of this prior to beginning the survey. To help you look up further information in many cases I will refer you to the relevant page numbers (used in the 2nd edition of S & W).

When you fill in the assessment form **please enter a score in every column**. The score is generally between 0 (no symptoms) and 3 (severe symptoms)

1. Sooty Bark Disease

Sooty bark disease of sycamore (and rarely other maples) caused by *Cryptostroma corticale*. Look for dead bark bearing a dark brown or blackish spore layer under the peeling paper-thin outer layer.

2. Tar Spot of Sycamore and other maples

Tar spot caused by *Rhytisma acerinum*. (S & W Fig. 209)

3. Knopper Gall on Oak

Oak knopper gall caused by the insect *Andricus quercuscalicis.* (S & W Fig. 193)

4. Giant Willow Aphid (*Tuberolachnus*) on Willow

Giant Willow aphid on *Salix* spp. *Tuberolachnus salignus*;
Recognisable by its large size (bodies up to 5mm long) and stem-feeding habit.

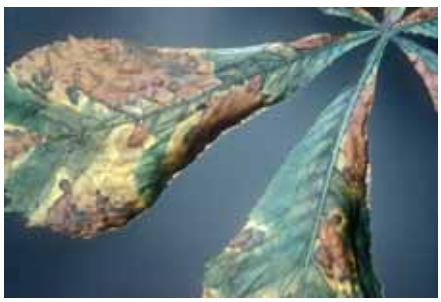
5. Cherry Leaf Scorch (*Apiognomonia*) on *Prunus*

Leaf scorch on some types of cherry caused by *Apiognomonia erythrostoma*. NB. The diseased brown leaves fail to fall in the Autumn. (S & W Fig. 216)

6. ***Blumeriella* leaf spot on *Prunus***

A leaf spot on cherry caused by *Blumeriella jaapii*. NB. The spots are dark purple turning to reddish brown and sometimes fall out to leave shot-holes. The diseased leaves either fall in the Autumn, or discolour and fall prematurely. (S & W Fig. 217)

7. Leaf blotch on *Aesculus* (*Guignardia*)



Leaf blotch of horse chestnut caused by *Guignardia aesculi*. Blotches with yellow 'haloes' may extend to the leaf edges but discoloration only at the edges, with no yellow halo, indicates a different disease (marginal leaf scorch).
(S & W Fig 174)

8. Beech scale insect

Beech scale insects, *Cryptococcus fagisuga*, form felt-like white spots on the bark.
(S & W Fig 129)

9. Holly leaf miner (*Phytomyza*)

Eggs are laid by adult *Phytomyza* in the midribs of the leaves, from where the larvae tunnel out and feed within the leaf lamina.
(S & W Fig 177)

10. Cankers

Bacterial canker caused by *Pseudomonas syringae* spp. *savastonoi* pv/ *fraxini*.
Most bacterial cankers are irregular rough and tumour-like
(S & W Fig. 28)

Perennating canker caused by a fungus, in this case *Nectria galligena.* Apart from the rough dead bark around their edges perennating fungal cankers are usually less rough than those caused by bacteria. Many show target-like concentric rings of dead callus.
(S & W Fig. 259)

11. Bleeding canker

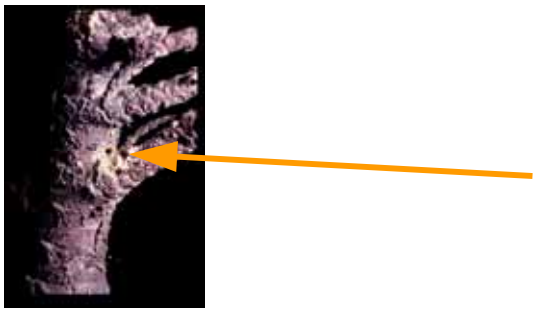
Black or brown tarry liquid oozing from the trunk or branches indicates bleeding canker, and is often caused by *Phytophthora* species (S & W Fig. 290)

12. Fruit bodies

An example of a fungal fruit body (*Ganoderma adspersum*) on the stem of a mature *Eucalyptus* tree

13. Insect Exit Holes

Insect exit holes can vary in size and shape depending on the species of borer. E.g. D-shaped exit holes are caused by Buprestid beetles such as *Agrilus* spp.



This hole is caused by the bark beetle *Phloeosinus thujae* on *Cupressus lawsoniana*. Note the frass (insect faeces) around the edges of the hole.

14. *Pulvinaria* leaf scale

Pulvinaria leaf scale can be found on many hosts including *Acer*, *Aesculus*, *Tilia* etc.
(S & W Fig. 187)

15. Mildew

Powdery mildew (in this case *Microsphaera alphitoides*) on oak forming a white powdery coating of fungal hyphae and spores on the leaf

16. Leaf Rust

Melampsora rust on Poplar. Look for small yellow spots on one side of the leaf and masses of (usually) yellow or orange spores on the other. Tiny blackish spots succeed the spore masses before or after leaf-fall which is often premature. (S & W Fig. 353 & 354)

17. Fireblight on *Sorbus*

Fireblight is seen on hawthorn whitebeam and pome fruits etc. (NB not cherries or other *Prunus* spp.) It is caused by *Erwinia amylovora*. Look for dead, scorched-looking flowers, shoots or branches with signs of bark death. S & W Fig 136.

Do not confuse with scattered twig death due to *Nectria* canker (this would result in distinct girdling cankers at the base of

18. *Cameraria* leaf miner on *Aesculus*

Cameraria ohridella is mainly restricted to the south east but is spreading northwards. The larvae of this tiny moth form mines within the leaves. Heavy infestations result in leaf browning and drying, and can result in complete defoliation.

Do not confuse with the fungus *Guignardia aesculi* as brown Guignardia blotches are surrounded by a distinctive yellow border and do not appear translucent when held up to the light.

D. Risk Assessment

Job: Assessment of tree condition by voluntary observers	**Location: Up to 150 parks or urban pavements**

Brief description of the job: Volunteer observer assesses condition of 30 or more trees visually once a year; may need to tag trees in first year

HAZARD	Who could be harmed?	Level of Risk	CONTROLS	IMPLEMENTING / MONITORING
1. Site hazards e.g. injury from falling over or into obstacles, falling branches, eye injury from hanging twigs and prickly foliage.	Observers	Low	Avoid walking backwards when viewing tree crowns Look out for obstacles when moving around near trees. Take care when scaling fences and try to find alternative ways of entry. Be able to recognise hazardous trees (refer to D. Lonsdale Principles of tree hazard assessment and management) Avoid staying for prolonged periods within potential area of fall of hazardous stems or branches. Avoid assessing trees under adverse weather conditions (e.g. high wind). Look out for low twigs and foliage when moving around near trees. Other hazards (e.g. old quarries or cliffs) should be notified to Katherine Tubby as Project Manager	• Training course by FR personnel or subcontractor before beginning assessment • Reminder by project manager of safety controls before each year's assessment • Five-yearly visit from FR officer • Any observer who is working at a site where he/she is not already familiar with the hazards (e.g. as an employee of the site occupier), should obtain details of any site-specific hazards from the occupier and should comply with any controls laid down by or agreed with the occupier. • Leaflets on Lyme's disease and avoiding confrontation given to volunteers annually
2. Lone Working	Observers	Low	Put in place a lone-working protocol – ensure that someone knows where you are at all times, in case of an accident. Arrange to ring them at a specified time and have a protocol in place for them to find you if you do not make contact as agreed. Carry a basic first aid pack with you.	

3. Injury from hammers	Observers	V. low	If tagging trees, place the tagging nail carefully before hammering and hammer in gently. Wear eye protection.	
4. Injury from attack by dangerous animals, insects (e.g. bees) or aggressive members of the public	Observers	Low	When dangerous animals or overtly aggressive members of the public are close to trees, avoid confrontation and delay assessment until danger has passed. Report any incidences to the project leader. If you are unlucky enough to encounter a bees' nest leave this tree out of the survey until the following season.	
5. Lyme disease	Observers	Low	Follow attached guidance regarding clothing to deter and show up ticks and the need to inspect skin (and correctly remove any ticks if necessary) after work. Seek medical advice if bulls-eye rash or other symptoms develop.	
6. Injury from road traffic (only at roadside plots)	Observer or other road user	Medium	Avoid standing in or very close to carriageway when viewing tree crowns; cross with care; wear high visibility clothing when working near traffic.	

Appendix 3: Arboriculture Research and Information Notes published during the course of the survey

1. Lonsdale, D., MacAskill, G. A., Rose, D. R., Tilbury, C. & Thorpe, K. V. (2003) The Health of Non-Woodland Amenity Trees in England during 1999 and 2000. *Arboriculture and Research Information Note*. The Tree Advice Trust.

2. Thorpe, K. V., Rose, D. R., Rose J. R. and Tilbury, C (2005). The Health of Non-Woodland Trees in England in 2001 & 2002. *Arboriculture Research and Information Note No. 153.* The Tree Advice Trust.

3. Thorpe, K. V., Poole, J, Rose, D. R., Rose J. R. , Straw, N. and Tilbury, C (2006). The Health of Non-Woodland Trees in England in 2003. *Arboriculture Research and Information Note No. 154.* The Tree Advice Trust.

4. Thorpe, K. V. , J. Poole, D. R. Rose, J. Rose, N. Straw & C. Tilbury (2006). The Health of Non-Woodland Trees in England in 2004. *Arboriculture and Research Information Note*. In Press. The Tree Advice Trust.

Tree Damage Alerts published during the course of the survey

TDA's are the topical information notes written and published regularly by the Arboriculture Advisory and Information Service (AAIS). Those marked with * were written with involvement from FR staff.

1999			
TDA No.	**Title**	**Date**	**Authors**
54*	Global warming: a threat to trees?	March	Lonsdale
55*	Christmas trees under siege	May	Tilbury
56*	Brown leaves due to slugworm damage	July	Tilbury and Lonsdale
57*	Are you getting rust(y) on your poplars ?	August	Lonsdale
58*	The gentle pitter-patter of spores on willow	September	Lonsdale
59*	A circular tale	October	Patch and Evans
60	Will there be kisses at Christmas?	December	Patch

2000			
TDA No.	**Title**	**Date**	**Authors**
61	Grey squirrels again	May	Pepper
62	Mr McGregor's gate	December	Pepper
63	The Big One	February	Greig
64*	The weakest link?	March	Lonsdale
65	Water, water everywhere!	March	Greig and Patch

2001			
TDA No.	**Title**	**Date**	**Authors**
66*	Disfiguring, damaging or deadly	March	Lonsdale
67	Leylandii – Love ‘em or Loath ‘em	April	Greig
68	Stripping Squirrels	July	Pepper
69	Fell Before Fall	July	Patch
70	We Told Yew	December	Patch

2002			
TDA No.	**Title**	**Date**	**Authors**
71	Cosy Toes	February	Patch and Greig
72	Look What the Cat Brought In	February	Pepper
73	A Prickly Problem	June	Prior and Henricot
74	Spruce but Sickly	June	Strouts
75	Leylandii – Are they Dying?	July	Greig and Patch
76	The Autumn Clean	October	Patch
77*	Fo(u)r Ever-Green(s)	December	Patch and Thorpe

2003			
TDA No.	**Title**	**Date**	**Authors**
78	Cherry Leaf Scorch	February	Strouts and Greig
79	Birds, trees, hedges and the law	March	Pepper
80	A blackthorn winter?	April	Patch
81	Trees should be for life!	May	Patch
82	Moth-eaten trees in womble land	May	Pepper
83	It’s London plane’s turn!	June	Holding and Patch
84	A pox on Box?	July	Prior and Henricot
85*	Things you wanted to know about Dutch Elm Disease?	July	Webber
86*	What’s wrong with our willows?	August	Rose, Webber and Denman
87	Can you inform an act of God?	September	Patch
88*	Are you seeing red?	September	Brown and Thorpe
89	Where have all the toadstools gone?	October	Patch and Greig
90*	Yule have your pick of the trees!	December	Orton and Thorpe

2004			
TDA No.	**Title**	**Date**	**Authors**
91*	Water Relief!	February	Greig and Tilbury
92*	Horse chestnut bleeding canker	March	Webber and Thorpe
93	Remember Birds, Trees, Hedges and the Law?	March	Pepper
94	Who is taking the Pith?	April	Pepper
95*	Oh *** it, another disease!	May	Webber and Thorpe
96*	Wilting in the Wet.	June	David Rose
97	A Nasty Rotter	July	Forbes Laird, Patch and Greig
98	Don't ignore Them!	September	Patch
99*	Small is not always beautiful	October	Thorpe and Patch

2005			
TDA No.	**Title**	**Date**	**Authors**
100	Again Remember Birds, Trees, Hedges and the Law?	March	Pepper
101*	Spot the Blighters!	July	Webber, Rose and Thorpe
102*	Orange Trees	June	Rose
103*	A Bolt From The Blue!	July	Webber and Rose
104*	Black Day for Black Poplar?	July	Thorpe and Blandford
105	Don't Worry (too much) Honey?	October	Greig
106	Good year or bad year for trees and for Grey squirrels?	November	Pepper
107	The Nora Batty Syndrome.	November	Pepper

2006			
TDA No.	**Title**	**Date**	**Authors**
108	Trees, Hedges and the Law – they won't go away!	March	Pepper
109	The Highs and Lows of 2005	March	Greig
110*	An Apple a Day!	June	Tilbury

Appendix 4: Seminars and Workshops

Four events were held in the course of this project for which volunteers could qualify for free places. Ten places were offered at the second and third events, and five at the fourth as it was a smaller event. (An additional unsupported event was run in 2006 for which 3 places were made available for volunteers).

1. Tree Health Day

7 November 2000, Himley Hall, Dudley in association with the UK&I ISA
Speakers: David Rose, David Lonsdale, David Evans, Alan Reeves, John Gibbs

2. Global Warming and the Health of our Trees

7 November 2002, The Mansion, Roundhay Park, Leeds, in association with the Arboricultural Association (Northern Branch)

Chair: Caroline Davis, Chairman of Tree Council
Speakers: Ted Green, Alan Simson, Mark Broadmeadow, David Rose, Nigel Straw, Derek Patch

This one-day event comprised talks by a variety of experts in their field predicting the potential impact of changing climate on tree condition.

3. Strategic Tree Risk Management

27 - 28 Oct 2004,Chateau Impney Hotel, Droitwich Spa

This was the annual International Society of Arboriculture conference involving around 150 delegates with numerous speakers and an afternoon practical session using tree risk assessment protocols devised by some of the speakers. In exchange for assistance with promoting the event we were offered 10 free places for volunteers

4. Pests and Diseases of Amenity Trees

8 June 2005, The Cricket Pavilion, Milton Keynes Parks Trust, in association with the ISA

Chair: Kath Tubby
Speakers: Nigel Straw and David Rose

This one-day workshop consisted of morning presentations by the two speakers, followed by an afternoon session in the field identifying pests and diseases in the Park.

(5. Pests and Diseases of Amenity Trees)

20 September 2006, The Great Oak Hall, Westonbirt Arboretum, in association with Friends of Westonbirt and ISA

Chair: Kath Tubby
Speakers: Simon Toomer, Nigel Straw and David Rose

This one-day workshop consisted of morning presentations by the two speakers, followed by an afternoon session in the field identifying pests and diseases in the Park. Although the condition survey was not funded this year 3 free places were made available to volunteers.