Working Together for Trees: A New Standard for Individual Tree Data Collection

The need for an individual tree data collection standard

“Collect once, use many times”

There has never been a more important or urgent time to collect data on urban trees. High quality data will help us harness the current wave of enthusiasm for tree planting, and to address the challenges to urban trees from pests, diseases, climate and development. However, the financial resources to support urban trees have declined rapidly in the past decade. As a result, there has been little or no investment in long-term data collection programmes. In the UK, urban tree data collection is undertaken by a variety of individuals from local authority tree officers, to volunteer tree wardens and citizen scientists. Each organisation/ data collector has different reasons for collecting data and uses for the data they collect. Some of the differences in data collection between organisations will be the result of these different needs, but many differences are simply the result of different practices that have developed over time. The result is that data which exist within different organisations are not comparable or transferable. There is no standardised database of urban trees and no consistent approach to data collection. This makes it difficult for organisations to work together on joint initiatives, to share resources, or to compare their assets in meaningful ways. Unfortunately, this lack of resources and the lack of a standardised approach has hampered urban tree management and research in the UK.

In producing this document, we hope to establish common-practise principles for data collection that underpin the way that data on urban trees are collected. Our aim is to establish a standard for urban tree data collection that facilitates the use and sharing of tree data across the sector and makes the most of the data that are collected. This is encapsulated in the phrase: *Collect once, use many times*. While ‘standards’ generally are used to ensure and signal a degree of quality assurance, a main objective of this standard is to allow data of different qualities to be used together.

The following use cases describe situations where establishing a standard would add significant value to individual tree data collection.

Use Case 1: Supporting Existing Databases

The tree officer from Local authority X has identified the need to update their entire tree database of over 70,000 trees on public land. However, currently they lack the resources to undertake this comprehensively. There is an active local conservation NGO with an interest in trees that could support the local authority with data collection. The tree officer from local authority X uses training resources created by another NGO to train participants from the local NGO to collect targeted data

for them to an agreed specification. Volunteers use an established data collection app to update the existing database.

Use Case 2: Opening-Up Opportunities

Contractor A is a micro business specialising in tree works. They wish to pitch for work from a local authority for monitoring and maintenance of trees focused in one urban area. So far, they have been unable to win the work as they are unable to invest in systems that integrate with the local authority's database. Using a data collection app set up by tree officers at other local authorities, Contractor A is able to provide the local authority with high degree of confidence in their ability to capture robust, standardised data.

Use Case 3: Improving Services to Customers

Company Z develops databases for organisations which have large numbers of tree assets. A major constraint on providing services to many of these organisations is the mundane but often extensive issue of data structure and consistency, constraining the market and leaving customers tied-in to their current provider. As the sector adopts a standard for data collection, Company Z is more easily able to acquire new business and focus on adding value to existing customers.

Use Case 4: Working Together to Raise Public Awareness of the Benefits of Urban Trees

Three NGOs are interested in collaborating on an initiative to increase public awareness of urban trees. All have some background in work on urban trees and existing small databases. They are able to share existing training resources they have developed to support their volunteers. They are also easily able to share their existing data to generate a new project database as the basis for their new project, and the data they collect collaboratively feeds back into each organisation's data.

Use Case 5: Data for Urban Planners and Decision-Makers

A government department wishes to rapidly assess tree stocks between urban areas in order to model costs and benefits for strategic planning and budget forecasting as part of an initiative to support green infrastructure and urban greening. The department requests data from the relevant local authorities and is rapidly able to collate them and generate the necessary outputs.

Use Case 6: Data for Scientific Research

A group of university researchers want to launch a programme of research that will investigate how a new tree pest that is only found in Plane trees might spread through the UK. The researchers are able to aggregate data from local authorities and other tree data holders to produce ecological models that predict the rate of spread of the pest from one city to the next, identify urban areas that are particularly at risk, and show where investing efforts in stopping the spread of the pest would have the greatest effect.

The development of the individual tree data standard

This draft standard is the culmination of an extensive programme of consultation (workshops and questionnaires) with numerous individuals from across the tree sector, led by Forest Research, the Open University, TreeWork Environmental Practice and Natural Apptitude and funded by the Geospatial Commission. The first workshop (Establishing a Standard for Urban Tree Data Collection) was held on the 10th May 2019 and covered the following topics:

- Motivations and aspirations for individual tree data collection
- Current practice in data collection
- Development of a roadmap for the production and implementation of a standard.

These data were used to inform the development of a questionnaire to feed into the drafting of a data standard.

A second workshop was held on the 9th July 2019 and was used to further refine the detail of the data standard. The workshop objectives were:

- To identify and characterise different potential user groups.
- To establish a set or sets of data fields that would form the basis of a draft individual tree data standard.

Your response to the draft standard

Each element of the draft Individual Tree Data Standard is presented below followed by text boxes in which you can enter your response to the inclusion and justification of each data field, you do not need to comment on every data field. Once you have finished please hit the 'Submit' button at the bottom of the page. Please note there is no option to draft your response and then return to it later, in which case we'd recommend drafting your responses in a separate document and then copying them across once you're ready to submit. The consultation period will close at **5pm on the 14th of February 2020**.

Confidentiality and data protection

- A summary of responses to this consultation will be published on the Forest Research and Treezilla websites and will be disseminated via social media. An annex to the consultation summary will list all organisations that responded but will not include personal names, addresses or other contact details.
- We may publish the content of your responses to this consultation to make it available to the public without your personal name and private contact details (e.g. address, email address, etc).
- There may be occasions when we (the Open University, Forest Research, TreeWork Environmental Practice and Natural Apptitude) will share the information you provide in response to the consultation, including any personal data with external analysts. This is for the purposes of consultation response analysis and provision of a report of the summary of responses only.
- If you have any comments or complaints about the consultation process, please address them to: treezilla@open.ac.uk

Please select the following in order to demonstrate acceptance of the conditions outlined above and to take part in the consultation:

- I understand the purpose of this study as explained here and in the information sheet and how data from this survey will be used ☐
- I voluntarily agree to participate in this study ☐
- I agree to my quotes/ opinions from this survey being used (anonymously) to inform the development of the data standard ☐

Participating in this consultation is your choice and voluntary. You are free to withdraw from the project and request the destruction of information you have provided (no later than the 17th of February 2020). To withdraw your information, please contact treezilla@open.ac.uk.

About You

Your Name:

Email Address:

Organisation and Job Title (If you're replying as an individual, please type 'Individual'):

I would like to be contacted with future updates on the data standard. You may unsubscribe at any time from receiving updates by emailing treezilla@open.ac.uk ☐

The Individual Tree Data Standard

Summary Table

The table below provides a summary of all the variables that have been included in the Individual Tree Data Standard. A tick (✓) followed by 'M' or 'R' indicates that the variable is the Minimum or Recommended data required by either all surveys or surveys with a specific monitoring objective (i.e. survey of tree age, health, crown dimensions, site-specific characteristics). For more information about the variables, and a justification for their inclusion/ formatting please see the 'Standards Outline' below.

				Where information is needed on:			
Data type	*Variable*	*Description*	*All surveys*	*Tree Age*	*Crown Dimensions*	*Health*	*Site-specific characteristics*
Section One: Survey Basics	Owner ID	A unique identifier that describes the organisation or individual.	✓ (M)				
	Data Collection Date	Date the survey was carried out.	✓ (M)				
Section Two: Location	Tree Location	The location of the tree given as xy coordinates to the nearest metre (i.e. to 5 decimal places).	✓ (M)				
	Description of Tree Location	A free text field that can be used to	✓ (M)				

		provide further information on the tree’s location.					
	Site/ Secondary ID	A unique identifier that separates between different sites in a survey area.	✓ (M)				
Section Three: Tree - Basics	Tree ID	Unique ID code	✓ (M)				
	Species Name	Minimum of Genus name. For Full standard should include species, may include cultivar	✓ (M)				
	Comments	A free text field that can be used to detail any additional information about the tree that is not included in one of the data fields.	✓ (M)				
	Stem Diameter	Diameter of an individual stem at 1.5 metres from the ground.	✓ (M)				
	Tree Condition/ Status	A general description of the tree's condition and/or status. The	✓ (R)			✓ (M)	

		description applies to the whole tree, encompassing the crown, trunk and roots.					
	Total Tree Height	The distance (metres) from the ground to the tip of the crown.	✓ (R)				
Section Four: Tree Photos	Photograph of Tree	A clear image of the entire tree to aid with species ID validation and measurements	✓ (M - Citizen Science surveys; R - all other surveys)				
	Photograph of Leaf	A clear image of the tree's leaf to aid with species ID validation.	✓ (R)				
	Photograph of Stem	A clear image of the tree's stem to aid with species ID validation.	✓ (R)				
	Photograph of Fruit/ Flowers	A clear image of the tree's fruit/ flowers to aid with species ID validation.	✓ (R)				
Section Five: Tree Age	Age Class	A broad description of tree age using set categories.		✓ (R)			
	Planting	Year in which the		✓ (R)			

	Year	tree was planted.					
	Age at Planting	Age of the tree when planted.		✓ (R)			
Section Six: Crown Dimensions	Crown Length	Vertical distance between the lowest and highest foliage of the tree			✓ (M)		
	Crown Width One	Straight line distance from one side of the crown to the other.			✓ (M)		
	Crown Width Two	Same as Crown Width One but usually taken as the perpendicular distance to Crown Width One.			✓ (R)		
	Crown Shape	A selection of descriptions to choose from that describe the shape of the crown.			✓ (R)		
	Crown Condition	Percentage of the functional crown (i.e. crown not missing).			✓ (M)		
	Light Exposure	Number of sides of the tree with less			✓ (R)		

		than 50% shading.					
Section Seven: Tree Health	Symptoms	A list of symptoms present that further explain the tree's condition/ status.				✓ (R)	
	Known Pests and Diseases	Describes pests and diseases found to be affecting the tree.				✓ (R)	
Section Eight: Site-specific Characteristics	Landscape context	A broad description of the landscape in which the tree is growing.					✓ (R)
	Under canopy description	A broad description of the dominant groundcover under the tree.					✓ (R)
	Soil type	A broad description of the tree's soil type.					✓ (R)
	Planting regime	A broad description of the amount of soil available to the tree's roots.					✓ (R)
	Soil volume	The volume of soil (m^3) available to the tree's roots.					✓ (R)

Standard Outline - Data Fields

Section One - Survey Basics

Owner ID

Description

This is a unique identifier that describes the organisation or individual collecting the data. It is expected that this identifier will not change between surveys.

Justification

This data field is included in the MINIMUM data required when carrying out any tree survey as it allows a data user to easily identify who has been carrying out surveys of a particular tree. Furthermore, a combination of the Owner ID, Site ID (see below) & Tree ID (see below) will provide a unique identifier for each tree in the country.

Data Collection Date

Description

The date on which the data (e.g. tree measurements) were collected. The date can be given in any format (e.g. dd-mm-yy, mm-dd-yy) but the format must be specified.

Justification

This data field is included in the MINIMUM data required when carrying out any tree survey as it allows a data user to easily identify if the survey information is out of date, and to compare tree information with alternative data sources. The date format must be specified as it is not always obvious in which order day, month and year have been recorded.

Section Two - Location

Tree Location

Description

Tree Location should be recorded as xy coordinates to the nearest metre with the coordinate reference system specified. Common systems used are:

- British National Grid (BNG), where a full grid reference requires a two-letter alphabetic code and a 10-figure numerical grid reference for metre level precision. BNG coordinates are usually plotted with the OSGB36 datum.
- Eastings and Northings. This usually refers to coordinates plotted on the British National Grid but represented by a fully numerical grid reference, with the two-letter alphabetic code of the BNG being replaced by two numbers. Hence metre precision is given by a 12-figure numerical grid reference for metre level precision. Eastings and Northings are sometimes plotted with the OSGB36 Datum, and sometimes with the WGS84 datum.
- Latitude and Longitude. These coordinates are represented as either, degrees-minutes-seconds (DMS), degrees-decimal minutes (where 1 second = 1/60th of a minute = 0.01667 minutes) or decimal degrees (where 1 minute = 1/60th of a degree = 0.01667 degrees). Latitude and Longitude are usually plotted with the WGS84 datum. One metre precision in the UK is equivalent to approximately 5 decimal places if recording decimal degrees, or one thirtieth of a second if recording DMS.

Justification

Tree Location represents the MINIMUM data required for any tree research and/or monitoring purpose and should be recorded when carrying out any tree survey. Recording Tree Location in this format enables trees to be plotted on maps. Recording to the nearest metre allows the tree to be easily located for maintenance work or for a follow-up survey.

Description of Tree Location

Description

This is a free text field that should be used to provide further information on the precise location of the tree (e.g. Third *Quercus robur* in the street (from the left) on the north side; postcode; outside house number 76; road name; tree tag number).

Justification

Additional information on tree location can help to relocate a specific tree when re-surveying and so is the MINIMUM data needed as part of any tree survey.

Site/ Secondary ID

Description

This is a unique identifier that separates between the different sites/ regions in the survey, for example ‘Park’ or ‘Road’.

Justification

A combination of the Owner ID (see above), Site ID & Tree ID (see below) will provide a unique identifier for each tree in the country. Furthermore, Site ID can further help to locate a tree from a previous survey and is therefore the MINIMUM data required as part of any tree survey.

Section Three - Tree Basics

Tree ID

Description

This is a unique identifier assigned to each tree in the survey. The identifier belongs to the tree and should not be changed between surveys. Mobile or digital systems may automatically assign an ID to each new tree record as it is being collected.

Justification

A combination of the Owner ID (see above), Site ID (see above) & Tree ID will provide a unique identifier for each tree in the country. This field allows the user to easily identify who has been carrying out surveys of a particular tree and so is the MINIMUM data required as part of any tree survey.

Species Name: Genus/Species/Subspecies/Cultivar/Variety

Description

The tree identified at genus, species, cultivar or variety level. All name entries should be recognised by the Botanical Society of Britain and Ireland (BSBI). Trees that cannot be identified at the genus level or are not recognised by the BSBI should be recorded as "Unknown".

Justification

Species name is another means to verify survey data collected at a particular location, and is crucial for research on ecosystem services and tree health. It is therefore the MINIMUM data

required as part of any tree survey. We propose to adopt the Botanical Society of the British Isles species list as our standard reference species list. This will allow urban tree data collection to better align with the wider biological recording community in the UK. We propose to build a resource over time that translates scientific names between the major sources of tree species information in the UK.

Comments

Description

This is a free text field that can be used to capture any additional information about the tree.

Justification

This provides data collectors the opportunity to capture any additional information they deem useful but not included in other data fields and is therefore part of the MINIMUM data required as part of any tree survey.

Stem Diameter

Description

Stem diameter refers to the diameter of a tree stem at 1.5 metres from ground-level. For trees with multiple stems, each stem should be measured individually starting with the largest first and working down in size order. Where there are more than six stems, only the six largest stems need to be measured, though it is anticipated that all stems above 1 metre will be recorded. If the tree is being re-surveyed, then all stems should be re-measured. Where tools and experience allow, measurements should be rounded down to the nearest whole number. While the preference is for stem diameter to be measured, we recognise that for many individuals it is quicker and easier to estimate diameter. Ideally estimates should only be undertaken by experienced individuals and estimates should be regularly validated. Where stem diameter has been estimated it should be estimated within the following ranges: 0 - <5cm; 6 - <10cm; 10 - <15cm; 15 - <20cm; 20 - <30cm; 30 - <40cm; 40 - <50cm; 50 - <60cm; 60 - <80cm; 80 - <100cm; +100cm. It is important to specify whether stem diameter has been measured or estimated.

Justification

While many data collectors will be constrained in time and unable to measure stem diameter, it is the MINIMUM data required for many tools and methods and can greatly improve the accuracy of ecosystem service value estimates. Stem Diameter should therefore be recorded as part of any tree survey, whether it be measured or estimated.

Tree Condition/ Status

Description

This is a general description of the tree's condition and/or status and should be placed into one of the following categories: Good, Fair, Poor, Dead/ Dying, Removed. The description applies to the whole tree, encompassing the crown, trunk and roots. Status change should also track the tree's lifecycle. e.g. Good -> Stump -> Removed or Fair -> Poor -> Dying -> Removed. A description of the categories is taken from Trees in Towns 2, and takes account of health, vigour, local environment, vandalism, pathogenic attack, etc.:

- Good: no evidence of disease or damage. Full leaf, no die-back, good branch structure.
- Fair: minor evidence of disease/damage. Minor deadwood. Not life threatening.
- Poor: extensive evidence of disease or damage. Life threatening. Dieback in crown, poor callus growth on wounds.
- Dead/Dying: obviously moribund, severely diseased.
- Stump: main stem removed, only stump remains.
- Absent (Removed): tree has been felled and the stump ground out.

Justification:

By standardising the categories used for tree condition/ status it allows data collectors to monitor the change in tree status over time. If additional tree health data is collected (e.g. Known Pests and Diseases) then this data item is the MINIMUM data needed so the severity of any impact is known.

Total Tree Height

Description

This should be measured as the distance from the ground to the tip of the tree vertically. For trees without a clearly defined tip, measurement should be to a point that is vertically above the ground-level centre of the stem (i.e. vertically above the tree end of the baseline) and that equals the maximum height of the crown, as best can be judged; two such measurements should be taken from different positions, and the average taken, to even out the inevitable errors. Where tools and experience allow, total tree height should be measured in metres and recorded to 1 decimal place. Where total tree height cannot be measured, then it should be estimated in the following size ranges: 0 - <3 metres; 3 - <5 metres; 5 - <10 metres; 10 - <15 metres; 15 - <20 metres; 20 - <25 metres; 25 - <30 metres; 30 - <40 metres; 40 - <50 metres; +50 metres.

Justification

While many data collectors will be constrained in time and unable to measure total tree height, total tree height is necessary for improving the accuracy of ecosystem service value estimates and so it is RECOMMENDED that surveyors attempt to record this data item.

Section Four - Tree Photographs

Photograph of the Tree

Description

Where possible, this photograph should be a clear image of the whole tree, and an object of known size should be included to provide context as to the tree's size and location e.g. building, car, person.

Justification

The photograph of the whole tree is useful for locating the tree in future surveys and can help to validate information on tree measurements and species information. It is therefore the MINIMUM data required as part of any survey carried out by citizen scientists, and a RECOMMENDED data item for surveys carried out by all other individuals.

Photograph of the Leaf

Description

Where possible, this photograph should be a clear image of the whole leaf, and an object of known size should be included to provide context as to the leaf's size e.g. hand, person.

Justification

A photograph of the leaf can help to validate species identification (particularly where data has been collected by less-experienced data collectors) and so is a RECOMMENDED data item for recording as part of any tree survey.

Photograph of the Stem

Description

Where possible, this photograph should be a clear image of the tree's stem.

Justification

A Photograph of the Stem can help to validate species identification (particularly where data has been collected by less-experienced data collectors) and so is a RECOMMENDED data item for recording as part of any tree survey.

Photograph of the Fruit/ Flower

Description

A clear photograph of the tree's fruit and/ or flower.

Justification

A Photograph of the Fruit/ Flower can help to validate species identification (particularly where data has been collected by less-experienced data collectors) and so is a RECOMMENDED data item for recording as part of any tree survey.

Section Five - Tree Age

Age Class

Description

Age Class can provide important information on the life-stage of the tree where data on 'Age at Planting' and 'Planting Year' might not be available (see below). The Age Class should be placed in one of the following categories: Young; Semi-Mature; Mature; Over-Mature; Ancient. A description of these options is as follows and has been taken from Trees in Towns 2:

Young: obviously planted within the last three years (unless as a heavy or extra-heavy standard).

Semi-mature: recently planted and yet to attain mature stature; up to 25% of attainable age.

Mature: full height, crown spread, seed bearing; over 50% of attainable age.

Over mature: full size, die-back, small leaf size, poor growth extension.

Ancient: a tree that has reached a great age in comparison with others of the same species (subset of over-mature)

Justification:

In the absence of 'Age at Planting' and 'Planting Year' data, age class can still provide some useful data that can be used for landscape-scale management and to estimate longevity and so is the MINIMUM data needed to make an assessment of tree age where 'Age at Planting' and 'Planting Year' aren't available.

Planting Year

Description

The year in which the tree was planted.

Justification

This data may be difficult to obtain unless captured at the time of planting. Where possible, it's RECOMMENDED that surveyors attempt to measure this data item along with 'Age at Planting' during any survey in which an accurate estimate of tree age or a quantitative estimate of growth rate is needed.

Age at Planting

Description

The age of the tree, in years, when planted.

Justification

This data may be difficult to obtain unless captured at the time of planting. Where possible, it's RECOMMENDED that surveyors attempt to measure this data item along with 'Planting Year' during any survey in which an accurate estimate of tree age or a quantitative estimate of growth rate is needed.

Section Six - Crown Dimensions

Crown Length

Description

The vertical distance between the lowest and the highest foliage in the tree. This data should only be collected during the growing season. Where tools and experience allow, total tree height should be measured in metres and recorded to 1 decimal place. Where Crown Length cannot be measured, then it should be estimated in the following size bands: 0 - <3m; 3 - <5m; 5 - <10m: 10 - <15m; 15 - <20m; 20 - <25m; 26 - <30m; 30 - <40m; +40 m.

Justification

This is the MINIMUM data needed for any survey that needs to produce an estimate of canopy size and/ or estimates of ecosystem service value (e.g. carbon sequestration, stormwater filtration).

Crown Width One

Description

This is the straight-line distance from the edge of the tree crown on one side of the tree to the opposite side. The distance may be measured multiple times and averaged. Ideally for accuracy, this data should be obtained by measurement in metres and to 1 decimal place, however, where the data collector lacks the tools and/or time to carry out an accurate measurement then crown length can be estimated and placed within one of the following width bands: 0 - <2m; 2 - <4m; 4 - <6m; 7 - <8m; 8 - <10m; 10 - <15m; 15 - <20m; +20m.

Justification

This is the MINIMUM data needed for any survey that needs to produce an estimate of canopy size and/ or estimates of ecosystem service value (e.g. carbon sequestration, stormwater filtration). At least one measurement of Crown Width is needed in order to describe the overall crown dimensions.

Crown Width Two

Description

This is measured in exactly the same way as Crown Width One but is often taken at a 90-degree angle to Crown Width One. Other practitioners recommend measuring the maximum and minimum crown widths or using cardinal points. It is important that the widths measured are representative of the tree's crown width.

Justification

Allowing the crown width to be captured as a single of as two variables (1) reflects common industry practice and (2) gives flexibility to users to collect the information if they feel it is useful. Having a second measure of the crown width can help to improve the accuracy of crown width measurements but isn't a necessary data item for the purpose of calculating overall crown dimensions.

Crown Shape

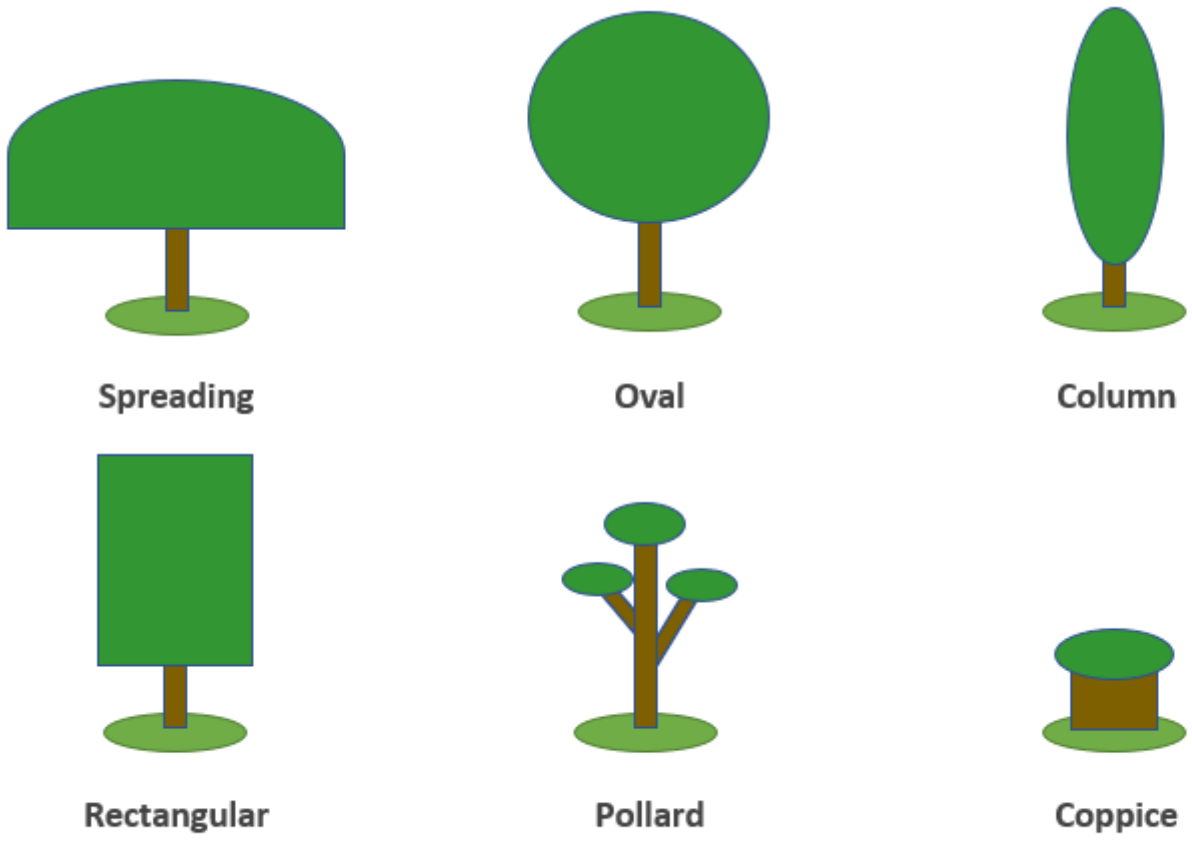
Description

This is a simple description of the volumetric shape of the tree crown and must be recorded as one of the following options: Spreading; Oval; Column; Cone; Rectangular, Pollard, Coppice.

Justification

Trees of the same species can grow in different forms depending on their growing conditions and management; this affects the volume of canopy. Recording 'shape' is RECOMMENDED because

it makes estimating canopy volume from measures of height and width more accurate and therefore improves the accuracy of ecosystem service estimates.



Crown Condition

Description

Is the percentage of the functional crown. The amount of the crown that is missing (for whatever reason, including management interventions) and the amount of crown that is diseased should be subtracted from 100%. The percentage of the functional crown should be expressed in one of the following percentage bands: 0-<10%; 10-<20%; 20-<30%; 30-<40%; 40-<50%; 50-<60%; 60-<70%; 70-<80%; 80-<90%; 90-100%.

Justification

Crown Condition is the MINIMUM data required for producing an accurate estimate of canopy volume and therefore producing accurate assessments of ecosystem service value.

Light Exposure

Description

Light Exposure demonstrates the number of sides of the crown that have less than 50% shading by objects such as buildings and other trees. Four of the sides correspond to the cardinal points, the fifth side represents the top of the crown. Responses range from 0 to 5.

Justification

Some trees are shade tolerant, and some are strongly light-demanding. If a tree has a poor health score, knowing its species and the extent of shading may be a very useful diagnostic indication of what’s affecting its health and therefore its RECOMMENDED that surveyors attempt to record this item during surveys of tree health.

Section Seven - Tree Health

Symptoms

Description

This describes the list of symptoms that are present and further explains the Tree Condition/ Status. Further detail about this data field is still in discussion. However, if you'd like to provide comments in the meantime, please do so below.

Known Pests and Diseases

Description

This describes verified/ suspected pests and diseases that are found affecting the tree. Further detail about this data field is still in discussion. However, if you'd like to provide comments in the meantime, please do so below.

Section Eight - Site-specific Characteristics

Landscape Context

Description

Landscape Context provides a broad description of the landscape in which the tree is growing and should be placed into one of the following categories: Street Tree; Highways/Transport Corridor; Public Amenity; Private Amenity; Private Gardens; Commercial; Agricultural (including golf course).

Justification

It's RECOMMENDED that surveyors attempt to record Landscape Context in any situation where access, factors affecting ecosystem services, and/ or other landscape-scale factors could affect the tree.

Under Canopy Description

Description

Under Canopy Description provides a broad description of the planting situation (i.e. the dominant groundcover) under the crown and should be assigned to one of the following categories: Concrete; Paving; Tarmac; Grass; Soil; Pavoirs (e.g. interlocking bricks); Flexible surfacing; Raised planting bed; Shrubs / scrub.

Justification

It's RECOMMENDED that surveyors attempt to record Under Canopy Description in any situation where there are potential issues with permeability, competition with other vegetation, compaction and likelihood of damage.

Soil Type

Description

Soil Type provides a broad description of the tree's soil type and should be assigned to one of the following categories: Sand, Loam, Clay, Organic-Rich, Made-Earth.

Justification

It's RECOMMENDED that surveyors capture this data field during any survey in which information on Soil Type is needed.

Planting Regime

Description

Planting Regime describes the amount of soil available for the roots of the tree and should be assigned to one of the following categories: Unrestricted, Restricted, Highly-Restricted, Unknown. Open-growth trees should be assigned to Unrestricted, soil pits with too little soil for the tree to Highly-Restricted, and normal/ well-planned soil pits should be assigned to Restricted.

Justification

The amount of soil available to the tree is crucial for stability, and to ensure there is an adequate storage of water around the tree's roots. If the exact volume is unknown then this variable provides an indicator as to the amount of soil available. It's RECOMMENDED that surveyors capture this data field during any survey in which information on tree stability is needed.

Soil Volume

Description

Soil Volume is the amount of soil available for the tree roots expressed as cubic metres (m^3). This variable should only be filled in for trees that are in soil pits and where the volume of the soil pit is known.

Justification

The amount of soil available to the tree is crucial for stability, and to ensure there is an adequate storage of water around the tree's roots. Increasingly tree pits are being designed for a specific tree and so the volume is a known quantity. It's RECOMMENDED that surveyors capture this data field during any survey in which information on tree stability is needed.