



Tree/Shrub of the month:

Japanese maples — fabulous autumn colour, interesting leaf shape with most cultivars being slow growing small trees. They need a sheltered position and ideally slightly acidic well drained soil with plenty of organic matter.



Ash die-back, pests and diseases and climate change:

In East Devon we are lucky that ash die-back has not yet reached us—sadly, I was walking in Lynmouth, North Devon, in September and saw evidence of it up there.



Chalara/ash die-back / *Hymenoscyphus fraxineus* causes leaf loss, crown die-back and bark lesions in affected trees. Forest Research UK says that they don't yet know what the full impact will be as older trees can survive infection— a process of die-back and re-growth. They are working on finding genetically resistant trees to repopulate the countryside. It is thought that it is spread by wind or through movement of plants - even the possibility of movement of logs or unsawn wood from infected trees may be a problem. The Living Ash Project is one of several research projects and is aiming to find tolerant native ash trees from which to breed healthy trees. In areas of ash die-back, members of the public are encouraged to get a special aluminium tag to fix to an ash tree and submit basic details online together with a photo. More information can be found at www.livingashproject.org.uk. It was members of the public

that drew attention to the emerald ash borer and Asian long-horn beetle in the USA. Both these pests could wreak havoc with our trees here, if they gain entry to the UK. Sightings should be reported to "Tree Alert" at www.forestry.gov.uk. Scientists in the USA are introducing parasites from Asia to combat the emerald ash borer in the hope that this will help reduce the populations to manageable levels. In the meantime millions of trees have been destroyed and economic and ecological consequences are severe as the trees decay relatively quickly and losing a substantial number of mature trees dramatically alters the appearance of towns and villages with an increase of stormwater run-off and reduction of shade. In south east Michigan municipalities, water use soared as a result of widespread ash mortality, resulting in surcharges levied by the regional water authority. Habitat change is inevitable with the composition of herbaceous plants and habitat available for birds, mammals and insects affected. More on this at <http://www.americanforests.org/magazine/article/will-we-kiss-our-ash-goodbye/>.

Climate change has been researched for a long time by the Forestry Commission scientists. England has warmed by 1 degree Celsius since 1970 and is predicted to warm a further degree in the next five years. Measures to combat the expected consequences include an increase in the diversity of species planted, as historically only five conifer species make up 88% of softwood forests and five broadleaf species make up over 72% of the hardwood species and are often grown as a monoculture. Forest Research estimates that around four million tonnes of carbon from the atmosphere is removed by forests in the UK, on the downside however, around 550 million tonnes is being released every year mainly due to the combustion of fossil fuels. More trees need to be planted!

Trees in the urban environment are important to human health creating a reduction in wind extremes; shade in summer; dissipate water in extreme rain events; reduce pollution, both air

and noise; providing screening and wildlife habitats. Lastly, studies have shown that not only do people get better quicker in hospital when they have a view of trees and green space but people living in leafy streets are generally in wealthier areas.

There is competition for space and funding for trees and as a result there have been various attempts to assess the economic benefits of trees to towns and cities, including i-Tree Eco, developed in the USA. This has been used in Sidmouth (initiated by the Sidmouth Arboretum) by Kenton Rogers and a group of volunteers. The economic benefits included air quality improvement worth an estimated £720,000, carbon dioxide reduction worth £150,000 and an unspecified amount for storm water control by helping to reduce run off by 215,000 cubic metres a year. The report highlighted the high proportion of ash and larch in the area, both of which are threatened by diseases—ash with ash die-back and potentially emerald ash borer and larch by *Phytophthora ramorum*. The survey shows how important species diversity is and will enable planners to make different choices when tree planting is taking place, however, the tree loss is likely to be substantial with Hugh Angus (former Head of Collections at Westonbirt) saying that the loss of these two species would see an overall reduction in tree composition of around 30%, reducing the overall tree cover from the current 23.2% to around 16%. To see the summary report go to http://www.sidmoutharboretum.org.uk/documents/tree_survey_report_v6.pdf.

Where early mature and mature trees are felled replacement with standard nursery trees will not provide the equivalent ecological services for many years. As Joni Mitchell says - you don't know what you've got 'til its gone.

The Forestry Commission aims to protect what we already have, reduce deforestation, restore the world's forest cover, use wood for energy, replace other materials such as plastic and steel with wood, plan to adapt to our changing climate. They say that although climate change is inevitable in the next 30—40 years because of past greenhouse gas emissions beyond this depends on what we do now. Although we have had many cool wet summers the consensus is that it will become drier and hotter in the summer and wetter in the winter. Below is a table of the key facts from [http://www.forestry.gov.uk/pdf/eng-trees-and-climate-change.pdf](http://www.forestry.gov.uk/pdf/eng-trees-and-climate-change.pdf/$FILE/eng-trees-and-climate-change.pdf)

Climate change in England - key facts

- Climate change is happening, and a further increase in temperature of at least 2°C globally by 2100 is now inevitable due to past emissions.
- We can expect a further rise in temperature of 2°C (above the 1961 to 1990 baseline) by 2100 even if we decrease our carbon dioxide emissions dramatically.
- If no action is taken now, the rise in temperature could be as high as 7°C by 2100.
- The growing season has lengthened and trees are coming into leaf up to three weeks earlier than in the 1950s (the study of phenology).

- Winters in the UK are likely to become wetter (by up to 30%) and summers drier. Areas of southern England are likely to become subject to more frequent and severe summer drought.
- Rainfall events are likely to become more intense.
- Sea level rise of between 1-10cm will occur around the UK coast per decade over the next 100 years leading to a decrease in land area.

It goes on to describe what it will mean for our trees: Stressed trees are more susceptible to insect pests and diseases. More pests will be able to survive over winter and summer activity is likely to increase leading to increased tree disease and damage. Due to the likelihood of drier hotter summers, trees will be stressed because of drought. This will mean that they will be using up their defence reserves to combat lack of water, and in the winter, waterlogging may become a problem for trees with aerobic conditions causing root death. Because the tree is already stressed pests and diseases will find it easier to invade. On the up-side climate change may give a longer growing season which in turn will increase the sequestration of carbon and new species that are not hardy at the present in the UK may be planted in the future.

Next issue: - something cheerier.

Photos below from Les Jardins de Marqueyssac

