



Autumn Colours

At the time of writing – mid October – most of the leaves on the trees are still green. Depending on the weather in the next few weeks, many will have changed colour and may have already fallen by the time you are reading this.

Why do leaves change colour in Autumn? To answer that, we need to look at why leaves are green. The main function of leaves is to use energy from sunlight to convert carbon dioxide and water into sugars (used for plant growth) and oxygen (a by-product for plants, but life sustaining for ourselves and other animals). This process is known as photosynthesis and is essential to our life on earth. Plants produce far more sugars than are needed for immediate use and store the excess in leaves, stems, roots, fruits and seeds, all of which form part of the human diet. Everything we eat is either part of a plant or is from an animal that has eaten a plant. Chlorophyll, the sunlight-absorbing molecule in leaves, absorbs mostly the blueish and reddish light wavelengths and reflects the intermediate greenish-yellow wavelengths. So that is why we see leaves as green.

Winter is a tough time for trees. Even if trees retained their leaves, there is little sunlight for photosynthesis. The ground may be frozen making it difficult for roots to take up water. A tree full of leaves would be much more susceptible to winter storms tearing off branches or blowing down a whole tree. Deciduous trees (those that lose their leaves) avoid this by basically ‘shutting down’ or going dormant until spring. As the year progresses, falling temperatures and shorter days trigger leaves to stop producing chlorophyll. As the green colour fades, yellow-orange pigments, that have been there all the time, are revealed. Loss of chlorophyll is variable, some leaves and some trees may be yellow while others are still green. A period of two or three cold nights (~3-4°C) hastens colour change. The bright red colours, seen in certain trees and certain years, are due to anthocyanin pigments formed when lots of sugars build up in the leaves after a dry and sunny autumn.

Alongside the colour change, but unseen to us, changes take place in the ‘abscission zone’ between the leaf stalk and the twig it is attached to. Cells in the separation layer expand and weaken, and, aided by autumn winds, eventually ‘push’ the leaf away from the twig. At the same time, cells on the twig accumulate waxy deposits, forming a waterproof and protective leaf scar. Some tree species produce ‘better’ autumn colours than others. An autumn walk through the beech woods up to Blackcap can be a joy, with yellow, gold and copper leaves on the trees and underfoot. Wild cherry and hornbeam can also produce spectacular autumn colours. Ash leaves on the other hand barely change colour and are often shed while still quite green. Oak leaves tend to be the latest to change colour, some were still green in early December last year. Sometimes, ‘autumn colour’ may be caused by pests or diseases. As mentioned in last month’s column, horse chestnut trees affected by the leaf miner moth have dry brown leaves as early as July. Why don’t evergreen trees lose their leaves? That’s a subject for another column!

Entries now open for the 2023 Photography Competition

Have you taken any photos of birds, butterflies, bluebells, bugs or other local wildlife that you are particularly proud of? We’d also love to see images of the different wildlife habitats – woodlands, hedgerows, unimproved calcareous grassland, marshy grassland, semi-improved grassland, ponds and streams - found in our parishes. Photos must have been taken in Plumpton or East Chiltington parishes. You may enter up to three images. Email your photos to plumptonwildlifephotos@gmail.com by 20th November. The winning entry will be announced at our AGM on Nov 28th.