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LIVING

October's beacons

From winter's harsh whites, May's gentle pastels, mid-summer's kaleidoscope of greens, and late September's dazzling reds and oranges, every time of year has its signature colours.

Now, as we move into the second half of October, yellow takes over centre stage.

Once the red and sugar maples have shed their leaves, the main show belongs to the aspens and poplars. In mid-October, they advertise their presence like at no other time of year.

Only a matter of days ago, most aspens and poplars were simply part of the "green blur." But now, they stand out like yellow beacons on the landscape, especially when seen against a background of evergreens.

The trembling aspen is the most widely distributed tree in North America. The round, heart-shaped leaves change from pastel green in spring, to dark green in summer, to lemon yellow in fall. Not only are the leaves beautiful to look at, but they also produce their own soothing music. Because of the flattened leaf stem, they quiver at the slightest breeze. Why the aspen has evolved to have leaves that twist and bend so easily is still a matter of speculation. It may be to help protect the tree from strong winds by all allowing the wind's energy to pass through the canopy more or less uninterrupted. The twisting and turning may also allow more sunlight through to the leaves on the lower, more shaded branches. It is thought that this may enable the lower leaves to photosynthesize as efficiently as those higher up.

Although somewhat less common, the bigtooth aspen is an equally attractive tree. While most of the leaves do become bright yellow in the fall, some acquire deep, rich shades of orange. The leaves are larger than those of trembling aspen and have big, curved teeth on the margins.

Balsam poplar, a tree of moist, low-lying habitats, also turns various hues of yellow in October. Almost as widespread as trembling aspen, balsam poplar has resinous, fragrant buds that perfume the spring air to such an extent that it is by far the most common and characteristic odour of spring in the Kawarthas. The buds are also said to possess medicinal qualities. In early spring, they can be boiled in lard to make a salve for sprained muscles.

Aspens and poplars multiply both by seeds and by suckering. Suckers are lateral off-shoots from roots which result in tree clones. Wherever a clone exists, all of the trees turn more or less the same shade of yellow at about the same time.

As far as our native trees are concerned, the display of yellow fall foliage concludes at month's end when tamaracks — also called American larch — reach their colour zenith. Lime green in early spring, darker green in the summer and smoky gold by late October, tamaracks are one of our most beautiful and interesting trees. It

Aspens, poplars, tamaracks and Norway maples provide the last colour of fall



Tamaracks on a misty, late October morning.

Terry Carpenter, special to The Examiner

is the only conifer to lose all its leaves in the fall. Our other conifers, such as pines, shed only a portion of their leaves each autumn. That is why you always see yellow needles mixed in with the green ones on pines at this time of year. Although tamaracks grow in boggy or swampy areas in the wild, they also do well in well-drained soils and make a wonderful addition to your yard.

When tamaracks shed their feathery leaves, they lose valuable nutrients to the soil. In an effort to make up for these losses, these trees have evolved a special relationship with fungi. The fungi collect nutrients from the ground and pass them on to the tree. In turn, the tamarack supplies the fungi with some of the carbohydrates it manufactures through photosynthesis. You can often find mushrooms, the fruiting bodies of these fungi, sprouting below tamarack

trees. If the tree's needles have begun to fall, the mushrooms are usually "dusted with tamarack gold," a lovely image used by Aldo Leopold in *A Sand County Almanac*.

Colour change and the shedding of leaves are manifestations of a plant's preparation for winter. It is a co-ordinated undertaking on the part of the entire organism. Since winter is a time of drought in which water is locked up in the form of ice, trees are no longer able to take up water through their roots. Because leaves are continually releasing water vapour — think of the high humidity of a greenhouse — trees must get rid of their leaves in order to minimize water loss and death through desiccation.

However, leaves are full of important, but scarce, minerals, and it is to the tree's advantage to salvage these nutrients first. It is

these same minerals that are used to produce chlorophyll, the green pigment that captures the sun's energy and uses it in combination with water and carbon dioxide to produce the sugar-based substances that make up all of the tree's tissues — wood, bark, leaves, flowers, and fruit. As the amount of daylight decreases in late summer and fall, trees stop producing chlorophyll and actually begin to remove the minerals from the leaves and store them in the woody tissues until next spring. This same response occurs in response to drought, as we have already seen this year.

As the chlorophyll disappears, colour change becomes apparent. Without green chlorophyll there to mask the other colour pigments in the leaves — most of which have been there all along — these pigments gradually become visible. A common example of this phe-

nomenon is how the grass on your lawn yellows within a few days of being covered with a board or tent.

The yellows and oranges come from carotene pigments, while anthocyanins give us the beautiful reds. The red pigments are created from excess sugars and seem to be brightest when there is lots of fall sunshine accompanied by cool nights.

The actual shedding of the leaves is achieved by the formation of a corky layer of cells at the base of each leaf stalk. Eventually, the leaf's connection with the twig is broken, and it falls off in the wind, rain or simply from the warming effect of the morning sun. You have probably noticed how squirrel nests, made up largely of leaf-bearing twigs nipped off the tree during spring and summer, will hold the leaves for years at a time. This is because the cork layer never had the time to form.

The story of October's yellows would not be complete without mentioning our non-native trees. Norway maple, a species native to Scandinavia and the Caucasus mountains of Europe, has become one of our most common trees in built-up areas. Its purple-leaved cultivar is especially popular. Of all the maples, the Norway is the last to change color in the fall; the trees remain green until mid to late October and then usually turn a bright yellow. Some trees usually still have leaves on Remembrance Day.

In late October through early November, you can really get a sense of just how ubiquitous Norway maples are. Along with other non-native trees like weeping willow, Siberian elm, and European buckthorn, they stand out conspicuously at a time when all of the native trees and shrubs have lost their leaves. Although some people may feel that they allow us to hang on to the remnants of summer just a little bit longer, many would say that these trees stick out like sore thumbs in late fall and, not really belonging here, take away from our sense of place.

Today Norway maple is a frequent invader of urban and suburban forests. Because it is very tolerant of shade, it has been able to become established in suburban woodlots, even beneath an intact canopy. When woodlots are invaded by Norway maple, there is a loss in the diversity of native wildflowers and shrubs. This is because Norway maples cast exceptionally heavy shade and the shallow roots often out-compete other vegetation for water and minerals.

However you may feel about the presence of non-native trees, their leaves, too, will soon be shed. By mid-November, the only autumn foliage that will remain will be scattered clumps of brown oak leaves, hanging on tenaciously as the late-fall winds usher in winter.

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