

April 5, 2005

April Blossoms

Almost without our knowing it, the flowers of many of our most common trees are gradually transforming the drab April landscape. The lengthening days and relative warmth of early spring are stirring flower buds that have lain dormant through the long winter months. Although these blossoms are small and somewhat inconspicuous, they give the crowns of early-flowering trees a hazy appearance that is another sign of spring's progress.

Like the annuals and perennials in our gardens, all trees produce flowers. In a strict biological sense, flowers are simply reproductive organs whose role it is to produce seed in order to assure future generations. Trees, like all flowering plants, reproduce sexually, meaning the seeds inherit genes from two parents and therefore carry characteristics of both. This allows for genetic diversity. The mixing of the gene pool usually creates some individuals who are more resistant to disease and better able to adapt to changes in their environment than others of the same species.

Depending on the species, a tree's flowers may be all male and only bear stamens (staminate flowers) or all female and only bear pistils (pistillate flowers). Willows fall into this category. In other species like the red maple, the same tree may have both male and female flowers but on different branches. Still other trees like cherries have "perfect" flowers, meaning the same flower has both stamens and pistils. For sexual reproduction to occur, male sex cells (pollen) must be transferred from the stamen, or male part of the flower, to the pistil, or female part of the flower. This process is called pollination. In order to receive new genetic material, however, the pollen must originate from a flower on a different plant, albeit of the same species.

Pollination is usually achieved with the help of wind or insects. Because insect activity is so unpredictable during the often cool days of April, most early-flowering trees depend on the wind to spread their genes. Wind-pollinated flowers are small and tend not to be showy. The wind doesn't care what they look like! On the other hand, flowers pollinated by insects usually have brightly-coloured petals, an alluring fragrance and special glands that secrete nectar. This, of course, is all in the quest of attracting insects to the flowers so that they will inadvertently deposit pollen from another flower on the pistils. The pollen collects on the insects feet and body as it brushes up against the stamens while gathering nectar. With some species such as bees, the insect is gathering the pollen itself. However, should the insect come into contact with the sticky surface of the stigma (the top of the pistil), the pollen will easily adhere to it and fertilize the eggs in the base of the pistil. Flowers that are pollinated by insects usually bloom later in the spring when insect activity is more certain.

Plants have ingenious adaptations to avoid being pollinated with pollen from their own flowers. In some cases, the stamens and pistils on the same plant mature at different times. In other species such as evening primrose, the pistil will actually recognize the pollen grain as being too familiar and therefore block fertilization. However, self-pollination does occur in many species and can serve as a backup plan in case cross-pollination fails.

Well before the leaves appear, the flowers of red and silver maples, aspens and poplars, willows, alders and elms will have already released copious amounts of pollen to the spring winds. The first tree off the mark is the silver maple whose flowers usually appear in March. Its fat, bright clusters of red flower buds produce either male flowers with dainty yellow stamens or pistillate flowers with reddish pistils. When the male flowers are ripe with pollen, the whole twig looks yellow. Twigs with female flowers appear all red when the pistils appear.

Shortly after the silver maple begins to bloom, red maples join the floral parade. The

profusion of tiny, red flowers against the tree's smooth gray bark is a beautiful sight. The flowers, which actually have small, red petals, hang in tassels. The petals, along with nectar in the flowers, attract insects on warm days which help with pollination. The red maple wears its name proudly, because almost all of the tree's interesting features are indeed red: the winter twigs and buds, the spring flowers, the leafstalk and the fall foliage. In the Kawarthas, red maples are primarily a Shield species. Another member of the maple clan to flower in April is the Manitoba maple, a somewhat aberrant member of the genus. Not only does it have ash-like, compound leaves, but the seed flowers and pollen flowers appear on completely separate trees. This is a very common species of urban areas, taking root in some of the most inhospitable sites imaginable.

Elm flowers, looking like raindrops hanging from the branches, add delicate shades of brown to early spring's palette. The small, wind-pollinated flowers are clustered in loose tassels and consist of both male and female parts. The seeds will mature and fall away even before the leaves reach their full size. A magnificent American elm can be seen on the banks of the Otonabee River, adjacent to the rear parking lot of the athletics building at Trent University.

A large number of early-flowering trees produce their flowers in long, caterpillar-like structures called catkins. These contain dozens of individual flowers. This is the case for willows, poplars, aspens and alders. The easily jostled catkins are a superb adaptation to wind pollination. The catkins of the speckled alder are one of the most engaging signs of spring in local wetlands. In the warm April sunshine, they swell into 8 cm long purple, red and yellow garlands, releasing their pollen in golden puffs when disturbed. The female flowers are nestled in small, erect catkins that become cone-like in appearance when the seeds are ripe.

As for poplars and aspens, the pollen and seed catkins are located on separate trees. Therefore, female trees can only produce seeds if there is a male nearby. This adaptation assures the production of seeds with more genetic variability but makes self-pollination impossible. Just to be safe, poplars and aspens hedge their bets by reproducing to a large extent by root suckering.

Willows, too, produce trees which are either male or female. They differ, however, in that both wind and insects play a role in pollination. The most famous of our willows is, of course, the pussy willow. In the early stages, the male and female pussy willow catkins look very similar but by mid-April, the differences become apparent. The male catkins are longer and covered in pollen when mature.

For most herbaceous plants, early spring temperatures are too cold for plant growth and for the survival of large, tender flowers. One species with adaptations to overcome this problem is the coltsfoot, a plant similar to the dandelion in appearance. Its flowers are borne on scaly stalks that have evolved to protect the plant from most occurrences of severe cold. Initially, the coltsfoot only produces stalks and flowers; only later in the spring will the leaves appear. This non-native species is common along roadsides in well-drained gravel. In Peterborough, the south side of Parkhill Road just east of Brealy Drive is usually a good location.

What to watch for this week:

If the weather cooperates and ushers in warm southerly winds, the first tree swallows should appear over Little Lake and the Otonabee River this week. By mid-month, there are often days when thousands of these swirling insect-eaters can be seen. The odd barn swallow is usually among them, as well. It will be interesting to see the numbers of both species that return this year, since the swallow population in general appears to be in serious decline.

Drew Monkman is a local naturalist, teacher and author of *Nature's Year in the Kawarthas*.