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LIVING

Spring's softer side

Just seeing the fur-clad buds of the pussy willow seems to lessen the grip of the ice and snow

*The woodland willow stands
A lovely bush of nebulous silver,
There the spring goddess revealed.*

Anon

Although it's hard to believe with all the snow we still have, harbingers of spring are everywhere, at least for those willing to search them out. Possibly the best

known are the changes under way right now in pussy willows. Just seeing their soft, fur-clad buds seems to lessen the grip of the ice and snow.

The pussy willow (*Salix discolor*) is a native shrub or small tree, and one of about 15 different species of willows that can be found growing wild in



OUR CHANGING SEASONS

Drew Monkman

Peterborough County. Three of these, the crack, bay-leaved and basket willows, are introduced species, however. Most of our willows are shrub-size, but a few, such as the crack willow, become full-fledged trees. Poplars are also members of the willow family, and their buds, too, are starting to open now and can initially look quite similar to those of the pussy willow tree.

The fuzzy, soft, pussy willow bud is actually a cluster of tiny flowers densely covered with silky white hairs when immature. Unfortunately, the English language leads to confusion between "pussy willow" the tree species and "pussy willow" the fur-clad buds. We tend to use the same term for both meanings. It's important to note that all willow species have small, "furry" flower buds, but not all are the *Salix discolor* species.

In the wild, pussy willow trees usually grow along wetland margins and shorelines. They are multi-stemmed and can sometimes reach six metres in height. The twigs are stout, shiny and dark reddish-brown. Like all willows, the male and female flowers actually appear on different trees. In other words, some pussy willow trees are male and others are female. Male flowers are easy to identify at maturity because they become yellow when ready to release pollen.

Even in March, however, you can distinguish between the two sexes. The buds on the male pussy willow trees are showier, and it is the branches of the male trees that we seek for floral decorations. The buds on female trees open a little later in the spring and are not as flamboyant.

Botanists refer to clusters of single-sex flowers such as those found on willows and poplars as catkins, a Dutch word meaning "little kitten." This is obviously a reference to the flowers' soft, kitten-like appearance when still covered with hairs. You can think of a catkin as a cob of corn in which each flower is a like one of the kernels. Using this analogy, a furry pussy willow bud is essentially a dense "corn cob" of female or male flowers (stamens or pistils, as we'll



Drew Monkman, special to The Examiner

see later) with each individual flower sporting its own attending silvery hairs. Seen altogether, they form the attractive, fuzzy, pussy willow bud we all know.

The flowers in catkins do not have petals and usually hang down as they mature. On many trees, poplars and alders in particular, they can almost look like large, pendulous caterpillars.

Before we follow the story of pussy willow reproduction over the course of an entire spring, we should first of all review flower structure. Collectively, the female parts of a flower are known as the pistil. Each pistil consists of a stigma, style and ovary. The stigma receives the pollen from the male flower; the style is simply the supporting stalk leading from the stigma to the ovary; and the ovary is the site where the ovules (or eggs if we were talking about animals) are produced. When the ovules are fertilized by the pollen, seeds are produced.

As for the male flower, the collective term for the male parts is the stamen. Each stamen, of which there may be many, is made up of a filament or stalk that supports an anther. The anther produces pollen (more or less like sperm if we were talking about animals).

Although trees such as willows have their male and female flowers on separate plants, many tree species have both the male and female reproductive organs together in the same floral structure on the same tree. This is the case with apple trees, for example.

To get the pollen from the anther of a flower on one tree to the stig-

ma of a flower on another takes a bit of ingenuity. In many cases — the poplars for example — it is simply left up to the wind. When huge amounts of pollen are released onto the breeze, chances are that some of it will end up reaching the female flowers of the same species. As a general rule, trees that have catkins or other "non-attractive" flowers, as opposed to typical flowers with bright petals such as cherry or apple trees, are wind-pollinated.

Other trees have evolved to employ insects to deliver the pollen. In order for this approach to succeed, the plant needs to offer the insect something in return. The reward is usually nectar or some of the pollen itself. Surprisingly enough, willows are able to use this strategy, even though their flowers lack petals and are anything but showy. This makes them an exception to the rule in the plant kingdom.

Now, back to the pussy willow story. The bud scales — the brown sheath that covers the bud — open in late winter to reveal the furry coat covering the catkin. The coat serves to keep the reproductive structures warm by trapping heat from the sun within the insulating hairs. This allows the temperature in the middle of the catkin to actually climb above that of the often very cold surrounding air. In this way, the floral structures get a head start in their development. We should note here that the pussy willow's leaf buds do not open until early May.

As spring advances, the tiny staminate flowers of the male

catkins grow longer and begin to emerge through the surrounding hairs. The catkins are said to be fully "open" when the yellow pollen-bearing anthers stick out and the stigmas can be seen. On the female trees, the pistils, too, begin protruding. They are stubby looking and greenish in colour. The male flowers release their pollen just when the female flowers are prepared to receive it.

In order to get the pollen from the anthers of male flowers to the stigmas of female flowers, willows rely on strongly scented nectar, located in glands at the base of the flower, and on the pollen itself to attract pollinators. As bees and flies gather the nectar and pollen, they inadvertently become dusted with a certain amount of pollen on their body hairs. When these same insects visit a female flower, some of the pollen is transferred to the sticky surface of the stigma.

Early flowering confers a certain advantage to the willows. When willow flowers mature in April or early May and are ready for pollination, there is relatively little competition with other plants for pollinating insects. In this way, the willows have a good portion of the early bees and flies to themselves.

Once the pollen is on the stigma, a pollen tube forms and grows down into the ovule. This tube carries the male sex cells to the ovules and fertilization takes place. Seeds begin to form in "capsules" which swell and eventually split into halves. They eventually release myriad tiny seeds, each equipped with a tuft of white

hairs. Thanks to this tiny parachute, the seeds are easily dispersed by the wind and the life cycle starts over again.

To fully appreciate the pussy willow story, try to get out to observe and photograph the plants at each of the key stages of their reproductive cycle: right now, when furry flower buds are prominent; in April, when the catkins are ripe and spreading or receiving pollen; and then in May or early June, when the seeds are ripe and covering the tree and surrounding ground or water in willow snow.

You can also witness at least part of the story by bringing pussy willow stems inside and putting them in a vase near a window. Before long they will produce stamens tipped with the yellow-gold of pollen. It's interesting to note that the ancient Druids considered the sudden development of pollen as magical. It was also a powerful symbol for the alchemists.

Finally, the leaves of the goat willow — a closely related European species — were traditionally taken to Church on Palm Sunday. This was in remembrance of the palm branches spread before Jesus as he entered Jerusalem. In Latvia, Palm Sunday is actually called "Pussy Willow Sunday." Here, pussy willows symbolize new life and are distributed to the faithful.

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