

Willow (*Salix spp.*): The Aspirin Tree

by Gary Carlin

The Willow tree is found in moist and wet areas generally near streams, rivers, ponds, and lakes. Their aggressive, widely-spreading roots are critical in preventing the erosion of soil along the banks of waterways. But perhaps one of the greatest things about Willows lie within the bark sap of this tree. The sap is loaded with salicylic acid, the active ingredient of one of our first pain relievers, aspirin (acetylsalicylic acid). Aspirin is the pioneer drug in what has come to be known as the *NSAIDs* or nonsteroidal anti-inflammatory drugs. The bark of the Willow tree has been used medicinally since the time of Hippocrates as a pain reliever, and in the treatment of fevers, headaches, stomach-ache, and coughs. Native Americans such as the Ojibwa also used the tea for heartburn, scurvy, and labor pains. Willow root bark at one time was even used as a quinine substitute to treat malaria.

The flowers of the Willow tree are called catkins. Catkins are cylindrical flower clusters that have no petals. Male and female flowers appear on different trees (dioecious). They appear before the leaves of the tree emerge in early spring. The male flowers quite consist of only of 2-10 stamens (filament with an anther that contains pollen) with a special gland that produces nectar to attract the pollinators. The female flower, catkin, consists of a pistil that has an ovary (which becomes the fruit) with many ovules (when fertilized they become seeds) and a nectar gland. Catkins of the Willow tree were often cooked by the poor to make a porridge or mash.

All Willow trees are important food sources for insects (especially butterflies and moths), birds, and other animals (rabbit, deer, and beavers). The tree is one of the earliest sources of pollen and nectar for the honey bees. Because of their proximity to the water, they can even provide habitats for fish, aquatic species of insects, and nesting for birds. Look on the underside of the leaves and you will probably find aphids, small insect pests that feed on the plant juices.

The Willow tree is another tree that easily hybridizes with different Willow species, something that sometimes makes identification quite challenging. Man has also produced many cultivars (plants selected for desired characteristics and maintained by propagation) of the different Willow species. Yet, most Willows are products of a natural vegetative propagation (asexual reproduction) in which branches or twigs that have fallen from a tree will readily take root and begin to grow. Therefore, these new trees are clones with the exact genetic make-up of the parent tree.

There is beautiful story that all of England's Weeping Willows are from Willow tree twigs that were used to make a basket for figs that were sent from Spain (others say Turkey or Portugal) to Lady Suffolk (Henrietta Howard, mistress to King George II). Her good friend, Alexander Pope, an 18th century English poet, upon seeing the basket asked the lady for a twig. He then planted it and from cuttings of this tree came forth all the Weeping Willows of England. A good story, but it is more likely that a sapling came from Thomas Vernon, a merchant in the trade with the Ottoman Empire (and his landlord), who had bought the tree over for planting on his estate.

Willow wood has been used to make furniture, chairs, doors, cabinets, boxes, barrels, and veneer. It has also been used to make smaller items like toys, dolls, flutes, whistles, cricket bats, and tool handles. Willow wood can also be cut into thin strips that can be woven into wicker to make all types of baskets and furniture. What makes the wood special is that is pliable and can be bent around corners without splitting or breaking. Very early on, our ancestors learned to make fishing nets and traps, fences and walls, and small light-weight boats from the Willow tree wood. Historically, the Willow tree was a silent hero of the American Revolution. It was used by colonists to make an extremely high-grade charcoal that was then used to make gunpowder for soldier's rifles and cannons.

In Greek mythology, the Willow tree is associated with the ancient Greek goddess of the underworld, Hecate. The myth says that the Willow tree bends because Hecate wrapped her victims (men still alive) in the tree's vines and the branches bent to hold the weight. The Willow tree has great significance in many religions. In parts of Europe, Christian churches use Willow branches in place of palms on Palm Sunday. During the Jewish holiday of *Sukkot*, Willow is one of the "four species" used. And in Buddhism, the bodhisattva of compassion, *Kwan Yin*, is most often portrayed holding a leafy Willow twig that one of her chief attributes. In China and Japan, the Willow tree can be seen in countless pieces of art.

The Black Willow (*Salix nigra*) is most widespread in New York City. When compared to the Weeping Willow (*Salix babylonica*) you will notice that the Black Willow has a bark that is darker, a gray-brown to almost black with a crooked or leaning trunk. While the bark of the Weeping Willow is much lighter with a ridged and corky trunk that is short and straight. In addition, if you observe the leaves you will see that the Black Willow tapers at its base much more abruptly than the gradual taper of the Weeping Willow. And considering the name, the Weeping Willow, you should see branches that droop (pendulous) or hang down more. Take some time and look closely at the Willows in Drake Park and look to see if in fact they are all the same species and how similar or different they really are.