

The Snowbells of Korea

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***Styrax japonicus* and *obassia* are small, spring-blooming trees that add a touch of elegance to any garden. Both species have gained in popularity in recent years.**

When horticulturists think of the origin of many oriental garden plants, Japan and China most frequently come to mind. Though overlooked until recent years, Korea is also home to an exceptionally rich temperate flora and contributes much to our American gardens. When the Korean climate is compared with that of the northeastern United States, strong similarities are evident, often more pronounced than similarities to the climates of most of Japan or China. When a species occurs across a wide geographical range that includes parts of China, Japan, and Korea, the Korean populations may be the most adaptable to the growing conditions of the northeastern United States.

Over the past fifteen years, a number of American institutions—the U. S. National Arboretum, the Holden Arboretum, the Arnold Arboretum, and the Morris Arboretum—have aggressively collected plants in Korea. I personally have participated in five trips to Korea in search of trees and shrubs well adapted to the growing conditions of the eastern United States.

During the course of these expeditions, I have become interested in the genus *Styrax*, the so-called snowbells, represented in Korea by two species, *Styrax japonicus* Siebold and Zuccarini and *Styrax obassia* Siebold and Zuccarini—both outstanding horticulturally as small flowering trees. Although familiar to American gardening connoisseurs for more

than a hundred years, both species are little known beyond the circles of avid gardeners. These Korean snowbells are among the hardiest of some one hundred and twenty *Styrax* species. The genus, largely tropical and subtropical, occurs in East Asia, the West Indies, South and Central America, the Mediterranean region, and North America.

***Styrax japonicus*—Japanese Snowbell**

Both the scientific epithet and common name of this species obscure the full breadth of its natural range. It is indeed native to Japan, where it was first collected by Western botanists, but it is also native to Korea, China, Taiwan, and the Philippines. Japanese snowbell is a small tree, seldom much taller than ten meters at maturity. When young, it can be narrow and upright, or multistemmed and spreading. At maturity it broadens to become a spreading, flat-topped tree. At the Morris Arboretum, a plant of unknown origin is at least seventy-seven years old, and measures 11 meters tall by 12 meters wide, with a trunk diameter of 48 centimeters measured at breast height. Another plant at the Arnold Arboretum (AA #17334), raised from seed C. S. Sargent collected in Japan in 1892, is still thriving, having reached a height of 10.8 meters, with a spread of 14.6 meters. Both trees branch relatively low to the ground, and their trunks have a distinctly sculptural quality. Bark on the trunk and older branches, dark



Close-up of the flowers of *Styrax japonicus*. Photo by P. Del Tredici.

charcoal in color, is relatively smooth and sinewy. The leaves are small, dark green and fine textured, and give the tree a refined appearance.

In late May, numerous pendulous flowers create horizontal layers of white beneath the already dense green foliage. When seen from above, the bell-shaped flowers are scarcely visible, but from below the effect is striking. The flowers are followed by pendant, oval, light-green fruits which, though interesting when examined closely, have little landscape merit. These fruits contain the poison *egosaponin*. When the fruit is crushed, its poison can stun fish if sprinkled on a pool of water. In the Orient, it is used as part of a traditional fish-gathering technique.

Widely distributed in south Korea, *Styrax japonicus* occurs in a variety of ecological

niches from relatively well-drained lowlands to higher elevations. Most commonly found in the understory and edges of oak-pine woodlands, it grows in association with *Quercus dentata*, *Q. aliena*, *Pinus thunbergiana*, and *P. densiflora*.

During a 1984 United States National Arboretum expedition to Korea that I participated in, along with collectors Barry Yinger, Sylvester March, and Peter Bristol, an interesting, naturally occurring variant of *Styrax japonicus* was spotted. The plant was growing in dry, sandy soil just a short distance from the coast of the Yellow Sea, exposed to salt spray, periodic drought, and reflected heat. We noted that this collection had particularly large, glossy, leathery leaves, and speculated that plants adapted to these stressful natural conditions might be well adapted to analogous



The multistemmed trunk of Styrax japonicus (AA #17334) raised from seed collected in Japan in 1892 by C. S. Sargent. Photo by P. Del Tredici.

urban conditions. Six-year-old seedlings from this parent plant are now under evaluation in a relatively stressful site in the Morris Arboretum parking lot. They range between 2 and 2.3 meters tall and all are 3 centimeters in diameter. One seedling in particular, which shows the distinct leathery leaf characteristics of its parent, will be evaluated closely over the next few years for possible introduction.

Other young plants of *Styrax japonicus* of known Korean origin are growing throughout the Morris Arboretum. The oldest ones, ranging from 2 to 6 meters tall, are eleven years of age. Phenologically, these Korean collections bloom about one week earlier than other older plants in the collection of unknown natural origin. In years when a late frost

occurs, this earlier blooming tendency might be a problem. Plants grown from seed are highly variable, some individuals growing upright with a strong central leader, while others are multistemmed and spreading.

J. C. Raulston of North Carolina State University Arboretum has promoted another interesting natural form of *Styrax japonicus*. Collected in 1986 on Souhuksan Island off the southwest coast of South Korea, this form is notable for its large flowers and exceptionally large, lustrous leaves, nearly twice the size of the typical species. The hardiness of this cultivar, which is of a more southern origin, is not yet established. A specimen of this clone at the Morris Arboretum continued to produce new growth late into the autumn in



The pendant fruits of *Styrax japonicus*. Photo by Peter Del Tredici.

1991, and may, therefore, be particularly susceptible to winter damage. Though promising for some regions, this clone requires further evaluation before it can be widely promoted, especially in the Northeast.

As one might expect with any widely distributed species, *Styrax japonicus* is quite variable. Prior to recent collections, most plants in cultivation in this country came from a few individuals introduced at the turn of the century and therefore represented only a narrow slice of the potential genetic diversity of the species. Newly introduced populations from Korea may, in time, result in improved winter hardiness, stress tolerance, disease resistance, overall form, and landscape

characteristics, thus increasing the adaptability of this attractive landscape tree.

***Styrax obassia*—Fragrant Snowbell**

Although grown in the U.S. since 1879, *Styrax obassia* is still rare. Like *Styrax japonicus*, it is a relatively small tree, usually under 10 meters. Its large, bold, heart-shaped leaves, measuring up to 20 centimeters across, create a strong textural element in the landscape. Racemes of fragrant white flowers open in mid-May in the Philadelphia area (in late May around Boston)—about a week before *Styrax japonicus*. In the autumn, the leaves turn a clear yellow before falling away to expose a smooth, sculpted, gray trunk. On the young



The flowers and foliage of Styrax obassia growing in Harrisburg, Pennsylvania. Photo by J. Horace McFarland, 1935. From the Archives of the Arnold Arboretum.

branches, the brown bark peels off in long, narrow strips, often persisting for some time before falling away.

Like *Styrax japonicus*, *S. obassia* is a plant of open woodland understory or edges. It grows best in moist well-drained soil and is susceptible to drought, especially a newly established plant. In many ways the natural habitat and horticultural adaptability of both these species are similar to those of the native American flowering dogwood (*Cornus florida*).

In older literature, *Styrax obassia* is reported hardy only to Zone 6. This informa-

tion was probably based on plants collected in warmer parts of its range in Japan and China. In South Korea, my colleagues and I have collected populations north of Seoul where winter temperatures drop to -35 degrees Centigrade. We're eager to test these populations in the hope that they will provide individuals with greater winter hardiness. At the Morris Arboretum, these new populations have performed well so far. One plant, grown from Korean seed collected in 1979, stands 5 meters tall and 2.2 meters wide. Nine plants from a 1981 expedition to Korea average 10 centimeters in diameter, 5.4 meters in height,

and 4 meters in width. It is common for young plants to grow more than a meter a year when well sited.

Dr. Michael Dirr of the University of Georgia has been testing the hardiness of a number of different individuals within this species in the laboratory. As one might predict, early results indicate that these northern populations show superior hardiness. In particular, one northern collection showed laboratory hardiness to at least -30 degrees Centigrade. Trees from this population are growing at the Morris Arboretum and the Arnold Arboretum, and seeds from these plants are now being distributed to interested nurseries for further evaluation.

Insect and Disease Problems

Styrax japonicus and *Styrax obassia* are rarely affected by most insect or disease problems. However, the Morris Arboretum, Brookside Gardens, and the Holden Arboretum report some problems in both species with ambrosia beetle (*Xylosandrus germanus*), an insect that bores into the wood, destroying the vascular tissue. Although it was previously thought to attack only plants under stress, recent observations at these three institutions indicate that ambrosia beetle can also attack young, vigorously growing plants. Though infested plants were often killed to the ground, they subsequently resprouted from the base; in other instances, only lateral branches were killed. At the Morris Arboretum, a group of ten plants of *Styrax japonicus* growing in full sun on a hot south-facing slope was severely infested with ambrosia beetle. Our observations suggest that both species grow best on a cool, moist, woodland edge, or in an open understory. Under these conditions, plants are less likely to be attacked by ambrosia beetle.

Propagation

Shelly Dillard, propagator at the Morris Arboretum, reports that seeds of *S. japonicus* and *S. obassia* are readily germinated after



The mature fruits of *Styrax obassia* at the Arnold Arboretum. Photo by Peter Del Tredici.

moist, warm stratification for 150 days, followed by moist, cold stratification. Some seeds, though, may not germinate until the second year. Plants of *Styrax japonicus* can also be grown easily from softwood cuttings. At the Morris Arboretum, cuttings taken in June are dipped for 10 seconds in a solution of 2000 ppm of indolebuteric acid (IBA) dissolved in propylene glycol. Cuttings are stuck in a 3 to 1 perlite/peat mix and misted approximately 6 seconds every 8 minutes. Some selected cultivars are also propagated by grafting.

Cultivars

Until recently, virtually no cultivars of *Styrax* were available to American gardeners. In

the 1980s, however, Brookside Botanic Gardens introduced several cultivars of *Styrax japonicus* obtained by Barry Yinger from Japanese nurseries. Currently, no cultivars of *Styrax obassia* are available in the American nursery trade. The recent introduction of new germplasm of these two species into the U.S., however, will more than likely result in new cultivars over the next decade. The following cultivars are currently available in North America:

***Styrax japonicus* 'Carillon'**

This cultivar was first received in the United States by Brookside Gardens from Shibamichi Nursery of Angyo, Japan, through the collections of Barry Yinger. Philip M. Normandy, Curator of Brookside Gardens, reports that their largest plant of this cultivar was planted outdoors in June, 1983, as a two-gallon plant. It now measures 1.4 meters tall by 1 meter wide and has a diameter at ground level of 3.8 centimeters. Whereas its flowers and foliage are typical of the species, its branches are weeping or pendulous. This cultivar can be trained to form a small tree by staking the leader until the desired height is reached. Its dense, mounded habit resembles that of cut-leaf Japanese maple cultivars. Normandy reports some winter branch dieback, but the plant subsequently grows back vigorously. The cultivar name 'Carillon' was applied by Brookside Gardens, after determining that the Japanese name 'Shidare' was invalid.

***Styrax japonicus* 'Pink Chimes'**

This cultivar was selected for its light pink flowers. The petals, pale at the top and darker at the base, tend not to fade. Branches of young plants are slightly pendulous, but become less so as the plant ages. This cultivar was introduced into cultivation in Japan about 1976 by the Shibamichi Kanjiru Nursery Company, of Angyo. It was brought originally to North America by the U.S. National Arboretum and then reintroduced in 1978 by

Barry Yinger to Brookside Gardens. The largest plant at Brookside Gardens, received in April 1981, now measures 4.5 meters tall by 2.1 meters wide and is 8.9 centimeters in diameter at ground level. Normandy reports that it reliably produces an abundance of attractive pink flowers and is similar in other respects to the species. Both cultivars root readily from soft wood cuttings, although high losses can be expected during the first winter. The weeping trait comes partially true in plants grown from seed, indicating that this cultivar might be appropriately classified as forma *pendula*. At Brookside Gardens, ambrosia beetle has not been a problem on either of these clones so far.

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Paul W Meyer, former Curator at the Morris Arboretum of the University of Pennsylvania, has recently been appointed its Director.