

## What's Chillin' with Northern Camellias<sup>©</sup>

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### INTRODUCTION

*Camellia japonica* is a large shrub or small tree native to a broad band of territory in East Asia, including parts of China (Shandong, Zhejiang), Taiwan, Japan, and Korea. It is found in mountainous areas and frequently on rocky hillsides near the ocean.

Cultivated forms of *Camellia japonica* were introduced to Europe in the early 1700s and to the United States of America in the early 1800s, where they eventually became a familiar feature of southern gardens. The earliest introductions were mostly, if not all, Chinese cultivated cultivars, followed by many introductions from Japan.

Until recently, the outdoor cultivation of camellias in the eastern United States was limited to U.S.D.A. Zones 7 to 9. Washington D.C. was considered to be the northern limit of hardiness, and even there most camellias were killed or severely injured in the coldest winters. Unusually cold weather in the late 1970s and early 1980s killed almost all of the 900 cultivars of camellias at the U.S. National Arboretum. Except for a few plants in the most favorable coastal locations along the Atlantic coast as far north as Martha's Vineyard, camellias were impossible to grow outside the South without protection from winter wind and cold.

### ORIGIN OF *CAMELLIA JAPONICA*

Despite its wide range in the wild in East Asia, it is likely that until about 35 years ago, all of the wild *C. japonica* genetics in the USA were of Japanese origin, and all of the cultivated genetics were from China and Japan. Wild Japanese genetics were introduced several times through explorations conducted by the U.S. National Arboretum, but I have found no record of wild genetics being introduced from China or Korea. The 1980 Sino-American Botanical Expedition marked the resumption of the collection of wild genetics of trees and shrubs in China, but *Camellia japonica* was not among its many collections.

### CHOLLIPO ARBORETUM, CHOLLIPO, SOUTH KOREA

In 1979, I finished my studies in the Longwood Gardens M.S. program and accepted a job working in Korea, helping to develop the Chollipo Arboretum on the Yellow Sea coast of Korea. The arboretum had been founded by the late Carl Ferris Miller, an expatriate American, at a fishing village called Chollipo in what was then a very remote part of Korea. While I was living there I was given an article written in the early 20<sup>th</sup> century by the Japanese botanist Ueki. I had studied Japanese language at the University of Maryland, so I was able to read this very interesting account about finding populations of broad-leaved evergreen trees and shrubs such as *C. japonica* growing on islands near what is now the North Korean coast of the Yellow Sea, at and above 38° N latitude. This area is very cold in winter, buffeted by the bitterly cold prevailing winds from Siberia. I became determined to visit these islands and see if those camellias could still be found.

### CAMELLIA COLLECTION AT SOCHONG ISLAND, SOUTH KOREA

After 2 years at Chollipo, I arranged to return to the USA, but took some time to investigate the prospect of collecting these northern camellias. At Chollipo I had become friends with Mr. Young June Chang, a young man who was fulfilling his mandatory military service at a remote army camp about 7 miles further up the peninsula. We were helping each other learn our respective native languages, and I earned points by packing a case of beer, on foot, for 7 miles into the army camp on most Friday nights. Young June and I first asked around various government agencies in Seoul, trying to find out if anyone had any information about these plants, and if we could get permission to visit the islands. The islands belong to South Korea, but are within sight of the North Korean

mainland, so only native born residents of the islands and military personnel are permitted to take the ferry that is the only transportation to the islands. Despite the fact that Young June's uncle was a four star general; we were shunted from agency to agency and finally gave up. We decided to take the less formal and more direct approach, and went to the ferry pier at Incheon with our camping gear and a bottle of whiskey, and bribed our way onto the boat. The authorities were very put out when we arrived at Sochong Island after about 20 h at sea, but there was no boat returning for several days so they allowed us to look around with a Korean army baby-sitter.

My first sighting of the grove of old camellias on a slope near the ocean on Sochong Island is a sight I will never forget. It was winter and the landscape was brown and bleak except for a few pine trees and the camellias with their glistening dark green leaves. They were growing on open hillsides completely exposed to the northwest wind. I found a cut stump and counted about 500 growth rings. The seed capsules had opened and seed lay thick on the ground. This grove of old trees at Yedong village was one of the most impressive groups of old plants we saw, although we saw many smaller plants growing along rocky cliffs on Sochong and Taechong islands. We also saw many trees growing in the gardens of villagers who had moved them from the wild, even on Paekryong Island, part of which is north of 38° north latitude.

As the military authorities on the island realized that we were odd but not dangerous, they permitted us to visit the other nearby islands, and Young June was able to arrange for us to return. I returned to the islands again with Young June to collect more seeds and cuttings, most of which went to Dr. Clifford Parks at the University of North Carolina Chapel Hill. Based on a proposal that I wrote, the U.S. National Arboretum developed a plan to visit the islands in 1984, and I returned twice more with several representatives of cooperating public gardens. Altogether a large quantity of seeds and cuttings representing many different genotypes were introduced to the United States. Several cooperating institutions, including Longwood Gardens and the Morris Arboretum in Pennsylvania, germinated wild seed and planted it outdoors for observation.

#### **TRIALING CAMELLIA COLLECTIONS IN U.S.D.A. ZONE 6**

In 1992 I started to plant camellias grown from collections from these islands at my farm in south central Pennsylvania in U.S.D.A. Zone 6. I have trialed many camellias there, but none has proved quite sufficiently hardy, including the fall-blooming introductions bred by Dr. William Ackerman. In general, I found that at my location, camellias lost some or all of the top growth at -18 to -12°C (0 to 10°F) and flower buds rarely survived at temperatures lower than -12°C (10°F). In the winter of 1993-94 we experienced the coldest temperatures ever recorded [-36°C (-23°F) night low, with a high temperature of -24°C (-12°F) the following day. A typical low winter temperature for us was -21 to 23°C (-5 to -10°F)]. The Korean camellias suffered little damage, and have thrived ever since, with volunteer seedlings appearing throughout the garden. They have never failed to bloom, with flower bud hardiness of at least -24°C (-12°F). Over about 25 years I have tested many of the camellias said to have enhanced cold-hardiness, and the only selections that keep their wood through cold winters are some of Cliff Parks' April series, but even those sometimes lose some or all of their flower buds.

When I started planting Korean camellias in Pennsylvania, I did not know they were in fact hardier than Japanese or Chinese selections as we know them. As I continued to grow the plants from wild seed, I noticed that some of the morphological characteristics that I saw in the wild — smaller, thicker leaves with a heavy cuticle; shorter internodes — were displayed in cultivation as well. I also noticed that they bloom over an unusually long season. Some buds will open in late winter after a brief warm spell, and others will bloom throughout the spring until some time in May. This will allow an unusually long season for pollination of the Korean genetics.

## **TRIALING AT ARBORETA AND NURSERIES**

At the U.S. National Arboretum in Washington D.C., hundreds of seedlings were planted out in rows for observation. One of these seedlings was selected by Joe Gray of Hines Nurseries in California, planted out at my farm in Pennsylvania, and later named 'Korean Fire'. It has a larger, flatter flower than the typical wild plant, along with excellent U.S.D.A. Zone 6 hardiness. Dr. Cliff Parks, then a professor at the University of North Carolina, selected a white-flowered form from my first seed introductions that has since been named 'Korean Snow'. The Morris Arboretum in Philadelphia, PA, and Longwood Gardens, in Kennett Square, Pennsylvania, have been observing plantings from wild seed for many years, but they are not quite cold enough for a good U.S.D.A. Zone 6 trial.

Cliff Parks' April series, and other hardier forms of camellia, are now widely promoted for U.S.D.A. Zone 6, but often they do not perform well in the middle to colder parts of that zone. Many gardeners who think that they are in U.S.D.A. Zone 6 are now in U.S.D.A. Zone 7. Heavily populated parts of Pennsylvania, New Jersey, New York, and coastal New England that once were considered to be in U.S.D.A. Zone 6 are now shown on the U.S.D.A. hardiness map to be in Zone 7, or even 7b. There is still a great opportunity to enhance hardiness, especially flower bud hardiness.

With the backing of my employer, Conard-Pyle Star Roses, I have initiated a breeding project at my farm in south central Pennsylvania. On the most recent U.S.D.A. hardiness zone map, we are now shown to be in U.S.D.A. Zone 6b, but my farm is in a valley that is consistently 5° to 10° colder than the surrounding area. I have created a 1-acre trial plot in an open field, fenced against deer and rodents. Here we are planting the hardiest known cultivated cultivars along with the wild Korean genetics. So far 129 plants are in place, with perhaps another 50 to be planted next year.

Cultivars to trial were selected based on my own experience, and the experiences of gardeners and nurserymen with long experience growing camellias. Most of the cultivated cultivars are from Dr. Cliff Parks' breeding, plus a few old cultivars that have survived harsh winters in other locations. There are a few from Dr. William Ackerman's breeding program. Additional cultivars will be added as I find a source for plants.

We will transfer pollen between the Korean plants and non-Korean cultivars in spring, and allow bees to pollinate. Seed will be harvested in early fall, germinated at Conard-Pyle, to be grown for 1 year in deep cell pots. These seedlings will be planted out in the same field in their second spring for evaluation. Superior individuals will remain for observation and further breeding.

Any mother plants or seedlings that lose wood or flower buds over winter will be removed from the trial plot. The goal is to develop a series of cultivars with a range of flower forms and colors that are reliably hardy throughout U.S.D.A. Zone 6, and perhaps into Zone 5b. Preliminary selections will be propagated and sent out for trial to sites in U.S.D.A. Zones 5b to mid-6.

