Schima sinensis

"On the way to Darjeeling…the roads…from March to May are found strewn over with the white flowers of *Schima Wallichii*." (Biswas, 1966)

Schima Reinwardt ex Blume, is an attractive genus of evergreen trees of sub-tropical and warm temperate regions of Asia. Once considered to contain up to fifteen species, a revision of *Schima* published in 1952 by S. Bloembergen placed them all under ***Schima wallichii*** (DC.) Korth., as he considered them to be only one variable species. However, the recently published *FLORA OF CHINA* states that there are about 20 species. It is a member of the Theaceae, the tea family, and is closely related to the genus *Gordonia* J. Ellis, though *Gordonia* in Asia are now referred to as *Polyspora* Sweet. Those in the New World are still called *Gordonia*. *Schima* occur from Nepal and India eastward to Taiwan at elevations of 200 to 2500 meters. Most become quite tall with some reportedly over 40 meters. They have showy fragrant white flowers ranging from 3 to 7 centimeters across with five petals and numerous yellow stamens. These bloom on pedicels 1 to 6 centimeters long in the terminal axils of the spring growth. On some species this is accompanied by a flush of delicate shiny red new leaves.

I have collected seeds from *Schima* in the wild in five different areas. The first time was in October of 1991 in western Sichuan on Erlang Shan at 1820 meters elevation with Charles Erskine, Charles Howick, and John Simmons. Only one tree was seen, and at the time, we did not know which species it was. Several years later after it flowered at Quarryhill Botanical Garden, I was able to determine that it was ***Schima sinensis*** Hemsley & E. H. Wilson, from the descriptions and keys in the *FLORA OF CHINA*. It was a narrow tree to about 7 meters high growing among dense regenerating vegetation. The steep mountainsides had previously been logged and were now a dense jungle of competing trees and shrubs. The few seed capsules found were near the top of the tree. These were brown globular capsules about 1.5 centimeters across similar in shape to camellias. *Carpinus fangiana*, *Davidia involucrata*, *Pterostyrax psilophylla*, and *Idesia polycarpa* were growing nearby along with a number of rhododendrons, hydrangeas, roses, clethras, and viburnums. I have been to Erlang Shan several times and always found it to be very wet and almost always raining. The Erlang Shan typically receives over 120 centimeters of rain in the summer months with occasional rain throughout the rest of the year.

The next time that I collected *Schima* was in October of 1992 returning from Muli west of Xichang with Hans Fleigner, Charles Howick and Martin Staniforth in southwestern Sichuan at 2330 meters elevation. Again, only one tree was seen and the species was not known at that time. As with the previous collection, when it flowered at Quarryhill, I concluded that it was ***Schima argentea*** Pritzel. It also was a narrow tree in an area of dense regenerating trees and shrubs. Like Erlang Shan, this area also receives heavy summer rainfall, although the annual rainfall is less.

The third time that I collected *Schima* was in October of 1993 while traveling alone in Nepal. There it is called Chilaune and is used in construction as well as for medicine. The leaves and roots are used for fevers and the bark is sometimes used for intestinal worms. They were growing about 10 kilometers west of Nargarkot at an elevation of 1590 meters. Unlike the two previous times, here they were plentiful. They dominated the north-facing mountainsides along with *Pinus roxburghii*, *Castanopsis indica*, and *Alnus nepalensis*. These *Schima* had rounded crowns and were from 7 to 10 meters tall.

The fourth time that I collected *Schima* was in Taiwan with David Crombie and Charles Howick in October of 2004. Here they were abundant and very tall, with some reaching 30 meters. Local botanists considered the species to be ***Schima superba*** Gard. & Champ. They were growing on a very steep northwest-facing mountainside with *Acer serrulatum*, *Alnus formosana*, *Abies kawakamii*, and *Tsuga chinensis* var. *formosana* at an elevation of 2150 meters in Taroko National Park. Locally the wood is used in construction, while the bark serves as a fish poison.

My last collection was in Pyin Oo Lwin, Myanmar, a British hill station not far from Mandalay, at the National Kandawgyi Gardens in February of 2009 with Joanna Welti. The seeds were collected from trees, of which there were many, in the wild area of the large garden growing at 1270 meters elevation. They ranged from 15 to 25 meters in height and many were partially defoliated presumably from the very dry winter. The botanist there called them ***Schima wallichii*** (D.C.) Korth., and said that they had small white flowers about 2.5 centimeters across. The Kandawgyi Garden was started by the British during their occupation of Burma in 1915. Pynn Oo Lwin, previously called Maymyo, is often referred to as the "City of Flowers". Reginald Farrer spent a couple of months there shortly before he died in the wilderness of upper Burma in 1920. In one of his letters he referred to Maymyo as, "the loveliest place in the world."

Although the bark is said to be a skin irritant, I suffered no harm from climbing these trees to gather the seed capsules. Of the five collections, only the first two have germinated for us. The Nepal and Taiwan collections failed to germinate and it is too soon to see if the final collection from Myanmar will sprout. From the 1991 collection of ***S. sinensis***, we have several trees at Quarryhill Botanical Garden in Glen Ellen, California. Our most vigorous tree is now 12 meters tall by 8 meters wide, after sixteen years in the ground. Unfortunately, some of our early plantings succumbed to oak root fungus (*Armillaria mellea*), a problem we think we can solve with proper culture. Finding them relatively easy to root, we now have several more young trees in the garden and coming along in Quarryhill's nursery. All are growing as low-branching single trunk trees and have large dark green leaves 18 by 5 centimeters with serrate margins. They start blooming in September and have two large bracts wrapping the bud. The white flowers are up to 6 to 7 centimeters across. It took them five years at Quarryhill to begin blooming.

From the 1992 collection of ***S. argentea***, we also have several plants in the garden. They were first planted in the summer of 1994 and have grown much slower

than the ***S. sinensis,*** the largest reaching only 5 meters after fourteen years. They also have considerably smaller flowers to about 2.5 centimeters. The bluish leaves are distinctly smaller as well, 9 by 3 centimeters, and have entire margins. They start blooming in July and have much smaller bracts surrounding the bud. It also took five years to bloom at Quarryhill.

In reading about these interesting trees and curious as to why they had, at one time, been lumped under one name, I found several peculiar inconsistencies in the available literature. In leaf shape, our two *Schima* appear to match two of the line drawings in Gerd Krussmann's *MANUAL OF CULTIVATED BROAD-LEAVED TREES & SHRUBS*. This reference does not mention Bloembergen's revision and states that there are 15 species. It describes three of them, ***S. argentea*** Pritzel., ***S. khasiana*** Dyer., and ***S. wallichii*** (D.C.) Korth. The three line drawings however, are of ***S. argentea***, ***S. wallichii***, and ***S. noronhae*** Reinwardt ex Blume. Our 1992 collection of ***S. argentea*** appears to match their drawing of the same and our 1991 collection of ***S. sinensis*** is similar to their drawing of ***S. noronhae***. Krussmann's line drawings are taken from the *ICONOGRAPHIA CORMOPHYTORUM SINICORUM TOMAS II*. Despite having a line drawing labeled ***S. noronhae***, the text implies that ***S. noronhae*** should be ***S. wallichii***.

The descriptions of two species of *Schima* in *TREES & SHRUBS HARDY IN THE BRITISH ISLES*, also seem similar to ours. Our ***S. sinensis*** appears to be what they call ***S. khasiana*** and our ***S. argentea*** again appears to match their description of ***S. argentea***. They do mention the Bloembergen revision though, and go on to state that ***S. khasiana*** should be known as ***S. wallichii*** subsp. ***wallichii*** var. ***khasiana*** and that ***S. argentea*** should known as ***S. wallichii*** subsp**.** ***noronhae*** var**.** ***superba***.

If that isn't confusing enough, several references refer to the bud as being red or scarlet. *HORTUS THIRD* and the *INDEX OF GARDEN PLANTS* both read "scarlet in bud". The *MANUAL OF CULTIVATED BROAD-LEAVED TREES & SHRUBS* states "flowers scarlet-red in bud". None of our *Schima* however, display this characteristic and instead are creamy white in bud.

Several of the references refer to the flowers as blooming in April, May, or June. Frank Kingdon-Ward in *PLANT HUNTER IN MANIPUR* mentions *Schima* as being "covered in June with large Camellia-like fragrant creamy white flowers with a large central brush of orange stamens". Roy Lancaster in *A PLANTSMAN IN NEPAL* writes "the *schima* with its attractive white fragrant camellia-like flowers in April to June make a magnificent tree … in the eastern Himalaya". In the *TREES AND SHRUBS OF NEPAL AND THE HIMALAYAS* one reads "The flowers, which appear in May…" and lastly, according to the *FLOWERS OF THE HIMALAYA*, ***S. wallichii*** blooms in May-June.

Ours however, bloom in late summer and into the fall. The *MANUAL OF CULTIVATED BROAD-LEAVED TREES & SHRUBS* says that ***S. argentea*** blooms in August, ***S. khasiana*** blooms in September-October and ***S. wallichii*** blooms in the late summer. *THE HILLIER MANUAL OF TREES & SHRUBS*, despite mentioning the revision by Bloembergen, describes four species with ***S. argentea*** blooming in late

summer, ***S. khasiana*** blooming in September and October, ***S. noronhae*** blooming in late summer and autumn, and ***S. wallichii*** blooming in late summer. In the paragraph above, all the *Schima* described were in the wild, while those referred to as blooming in the late summer and autumn, were presumably all cultivated trees. Perhaps this is an anomaly of cultivation in Western Europe and North America. I did, however, see a few lingering flowers on naturally occurring ***S. superba*** in Taiwan in October. Also, the *FLORA OF* CHINA states that ***S. sinensis*** flowers in July and August, and ***S. argentea*** from July to September. Dr. Wang Juan, a botanist with the Southwest Forestry College in Yunnan, China, told me recently that the wild *Schima* in Yunnan flower in July and August, while the botanist at Kandawgyi Gardens said their ***S. wallichii*** flower in March and April.

In discussing the cultivation of *Schima*, *THE NEW ROYAL HORTICULTURAL SOCIETY Dictionary of Gardening*, mentions that they should be protected from frost when young and that if under glass the temperature should not drop below 3-5 degrees centigrade. Ours were planted out quite young (the 1991 collection were one year from seed and the 1992 collection was 2 years from seed) and have experienced numerous frosts every winter with temperatures as low as –6 degrees centigrade. Both were less than 30 centimeters high in 4" pots when planted in the ground. None of them have suffered from our frequent frosts.

Clearly, our experience has shown that ***Schima argentea***, and especially ***Schima sinensis*** with its large attractive flowers, have promise as ornamental trees in California. Along with showing no frost damage in Sonoma County in Sunset's zone 14/15, they have withstood our intense summer sun with no sign of sunburn. To date, there are no signs of insect damage either. Unlike many introduced exotics, they have not reseeded in our garden, nor have they suckered. They are also resistant to fire. They are in flower at a time when little else is. Their lush evergreen leaves have a cooling effect in summer and contrast nicely with the starkness of winter. Other than their occasional susceptibility to oak root fungus, which I believe can be ameliorated through proper culture, they seem ideal ornamentals. The fragrant white flowers of this little known tree could easily compliment many gardens.

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