

Considering *Cotinus*

Kim E. Tripp

“I was spellbound by the combination of the prunus and sumach [Cotinus] painting the hillsides with bold bands and splashes of fiery orange and red . . . it created an unforgettable picture . . .”

Like Roy Lancaster marvelling at the combination of a cherry and a smokebush near the Great Wall of China one autumn, I was spellbound myself by an exceptional plant of *Cotinus coggygia* (smokebush, smoketree, or Venetian sumac) creating a billowing cloud of “smoke” along Meadow Road at the Arnold Arboretum. It was amazingly dense and uniform, with surprisingly simultaneous development of its inflorescences throughout the canopy. Inspection of its label revealed that this notable *Cotinus* was a seedling grown from wild-collected seed, and a little digging through the Arboretum’s records told me that the seed was brought back from Mt. Maschuk above the city of Pyatigorsh during the Arboretum’s 1980 expedition to the then USSR. What a striking sight it made with its light pink smoke dramatically framed by the deep burgundy foliage of a nearby Japanese maple.

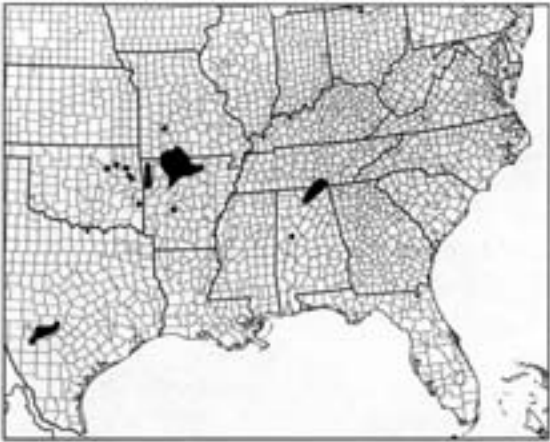
The drama and appeal of this plant set me to thinking about this interesting genus and to wondering why, even though it has been in cultivation since at least the mid-seventeenth century, plants such as this exceptional seedling are not used more widely in landscapes and gardens. After all, *Cotinus* is a well-known genus of lovely summer-flowering, deciduous shrubs or trees of limited size. Members of the genus are pest and disease resistant, drought tolerant, and relatively cold hardy. They thrive

in a range of soils, and most can be vegetatively propagated. Plus, there is a handsome, native species. Add its multiseason interest, and it begins to seem like a perfect plant for the modern landscape.

The genus *Cotinus* is a member of the Anacardiaceae, or cashew family, and as such is botanically related to the sumacs (*Rhus*) and our familiar poison ivy (*Toxicodendron radicans*); but *Cotinus* only rarely causes dermatitis and, unlike poison ivy, is not invasive. Because of their close botanical relationship, the smokebushes were originally placed in the genus *Rhus*, but they are distinguished from that genus by their simple (that is, undivided) leaves. *Cotinus* is comprised of two, three, or four species depending on whether certain Chinese populations are considered as variants of an all-inclusive *Cotinus coggygia*; there are sound points that favor both approaches. The wood of *Cotinus* has been an important source of orange-yellow dye wherever the plant is found and continues to be so used in China.

***Cotinus obovatus* Rafinesque**

The American smoketree (sometimes known as chittamwood) is arboreal, reaching twenty to thirty-five feet in height. It is generally larger and coarser in character than *Cotinus coggygia*, and its flowers are more modest. Its leaves are obovate in outline and can be ten to



The shaded areas on a partial, county map of the United States indicate the very limited range of our native smoketree (*Cotinus obovatus*). (From Elbert L. Little, Jr., *Atlas of United States Trees*, Vol. 4, 1977.)

twelve inches in length. While the leaves emerge from the buds a rich burgundy, they soon change to green. Their fall colors, which cover a spectrum that includes brilliant oranges, scarlets, purples, and russets, are among the most spectacular of all woody plants. As the mostly multitrunked trees mature, the bark develops an interesting fishscale texture.

Cotinus obovatus occurs naturally on rocky, calcareous soils in a few hilly and mountainous areas in south central United States. While not abundant, it is no longer under the pressure it experienced during the Civil War when it was harvested nearly to extinction for its dyewood. An excellent, tough, small tree, it thrives in a far greater range of conditions under cultivation than those in which it naturally occurs. For instance, it is completely cold hardy through Zone 6 and into areas of Zone 5 and will grow with no pest or disease problems in soils that are poorly drained just as well as in those similar to its native terrain. (For an extensive discussion of the horticultural attributes of *C. obovatus*, see Koller and Shadow, 1984.) It is currently available or soon to be available in the United States and could be far

more widely used in our landscapes, especially in light of the current demand for regional natives.

***Cotinus coggygia* Scopoli**

Cotinus coggygia is a large shrub that generally reaches heights of six to fifteen feet with a variable habit and a potentially equal or greater spread. The irregular, multitrunked habit contributes to its interesting architecture. The common name for *C. coggygia*, smokebush, refers to the unique inflorescences of the entire genus, which are covered with tiny, persistent hairs that give the inflorescences the appearance of plumes of smoke.

The panicles are borne at the ends of the branches, and they can be anywhere from three inches to a foot in length. Usually they are about half as wide as long, with a rounded, feathery tip. Small, dark seeds develop among the panicles over several weeks and in exceptionally prolific years can detract slightly from the ornamental quality of the inflorescences. The inflorescences range in color from a smoky ivory to rosy pink, grayish purple, and deep burgundy. At least in this country, most seedlings will bear dusty pink inflorescences that mature to smoky ivory and actually dry to shades of tan rather than the gray described in some of the older literature. (A few cultivars retain deep wine-hued panicles until they break apart.) The lovely inflorescences of *C. coggygia* are light and airy—the slightest breeze will set them dancing and waving—but they hold their structure and maintain an effective display for weeks.

Leaf shape and color are also exceptionally variable. The leaves can be three-fourths to four inches long with a circular, obovate, or elliptical outline. Color ranges from light gray-green to dark blue-green to burgundy and shades of purple. New spring growth is often red-purple or burgundy fading to green in maturity. The autumn palette includes clear yellows, oranges, scarlets, muddy wines, burgundies, purples, and brown.



An exceptional smokebush (*Cotinus coggygria*) framed by surrounding trees on Meadow Road (Kim Tripp).

Cotinus coggygria is the most widespread of the species, in nature as well as in cultivation, with a broad Eurasian native range. It occurs from south central Europe into the Mediterranean region and, with discontinuities, across the continent through the Himalayas and into China—a range it and its antecedents have occupied through fifteen million years of change. Throughout this range there is great variability of habit, foliage shape, size, and color (in new growth as well as fall display), color of inflorescence, and degree of floriferousness.

Cotinus coggygria is a tough plant that thrives in diverse landscape conditions. It will perform well in soils that range from well-drained and sandy to heavy clays, and from Zones 4 to 9. It is very drought tolerant and has no significant pest or disease problems, although some leaf spot occurs occasionally. In Zone 4 it usually dies back to the ground each winter. The root collar is hardy, however, and

the new flush of growth each year is especially vigorous and, in purple-leaved plants, deeply colored.

Still, it is *Cotinus coggygria*'s widely diverse leaf characteristics that have been so frequently described and widely debated. This variability of foliar and habit characteristics among any seedling population argues for inclusion of all Eurasian populations of *Cotinus* in one species—*C. coggygria*—but see *C. szechuanensis* and *C. nana*, which are discussed below. This variability no doubt explains why *C. coggygria* has been the source (in two cases as a hybrid parent) of most existing horticultural cultivars. Considering the potential for selection among such an apparently diverse gene pool, there are surprisingly few cultivars.

Habit and size of almost all of the nonhybrid cultivars is very similar but can vary among individuals depending on site and culture.

Plants in full sun are vigorous, dense, floriferous, and deeply colored. In shade they are more open and scraggly, slower growing, with sporadic flowering and reduced color. In general, the plants are multistemmed and will reach from ten to eighteen feet in height with an equal or greater spread. Plants are often broader than tall with an informal rounded to arching habit when young. With age they can develop a very irregular architecture that ranges from fascinating and picturesque to gangly and unattractive. Color retention in the cultivars with purple foliage varies with region. Plants in the north generally hold their color longer than do those in the warmer south. However, color retention can differ drastically among plants of the same cultivar depending on whether they have been grown unpruned rather than as coppiced or natural die-back shrubs, the new growth of coppiced and die-back plants being more intensely colored than that of unpruned plants.

Descriptions of selected cultivars follow. This list includes only those that the author has had personal experience of or has been able to obtain reliable information and documentation on. Unless otherwise noted, habit is as described above for the species.

'DAYDREAM' was selected at Newport Nursery in Michigan for its dense, sterile, red-pink inflorescences and its especially deep blue-green foliage. It is sometimes advertised as a more compact form than other selections of *Cotinus coggygria*. However, although it is slower growing, it will eventually reach similar proportions. (For example, at the Arnold Arboretum a twenty-year-old plant of 'Daydream' is more than fifteen feet tall.) The inflorescences themselves are significantly tighter and more compact than other *C. coggygria* inflorescences. The smoke display tends to peak somewhat later, and panicle structure remains intact longer than that of other selections.

'FLAME' (*C. coggygria* x *C. obovatus*) is a selection from Hillier's Nursery in England. Originally sold as *C. obovatus*, it is now recognized as a hybrid. It is larger than *C. coggygria*,



The fishscale pattern of the bark of the American smoketree (Rácz & Debreczy).

reaching the more tree-like proportions of *C. obovatus*, and its foliage is intermediate in size and character between those of the parents. Inflorescences are showy and pink, but it was for its dramatic scarlet-to-orange fall foliage that 'Flame' was selected.

'FOLIIS PURPUREIS' ('RUBRIFOLIUS') was named for its purple foliage, which emerges plum to wine colored and retains varying degrees of this color depending on climate. In cool climates it holds color well but it fades to a medium green in hotter ones. Inflorescences are red-pink to light pink. Other cultivars with purple leaves (like 'Velvet Cloak' or 'Royal Purple') are far more dramatic and useful in the landscape (some of which have been developed from this cultivar).

'GRACE' (*Cotinus coggygria* x *C. obovatus*) is one of five hybrid seedlings raised in 1978 by

Peter Dummer of Hillier's Nursery from a cross of 'Velvet Cloak' pollinated by *C. obovatus*. Only Clone #2, 'Grace', has been named to date, and it received an award from the Royal Horticultural Society in 1983. 'Grace' is extraordinarily vigorous, quickly becoming a small tree of about twenty feet with large leaves up to six inches long. The leaves emerge burgundy colored, fade to a green still tinged with burgundy, and develop brilliant orange and red fall color. The rosy pink inflorescences are exceptionally large and showy. Its habit is more narrow and upright as a young plant than that of nonhybrid cultivars. It is an excellent choice for large gardens and landscapes, but it is too vigorous for small spaces.

'NORDINE RED' ('NORDINE') is promoted as the most cold hardy of the purple-leaved forms (which are less cold hardy than green-leaved forms). Named in honor of the prominent propagator Ray Nordine by Interstate Nurseries in Hamburg, Iowa, it actually originated at the Morton Arboretum in Illinois. The plant was grown there from seed received as *Cotinus coggygia* f. *purpureus* from the New York Botanical Garden. Its leaves and inflorescences are a clear red-purple, with the leaves turning scarlet-purple in the fall. Summer color retention is reported to be highly variable. It is a die-back shrub in colder areas of the country where other purple forms of *C. coggygia* are also die-back shrubs; consequently it is not yet known whether this cultivar is significantly more cold hardy than other purple-leaved forms. Nonetheless, its red-purple color makes it a striking cultivar.

'NOTCUTT'S VARIETY' is nearly identical to 'Royal Purple', from which it was developed, but its foliage is slightly redder and less black-purple than that of its parent. Unlike its parent, leaf color is not retained well in the eastern United States.

'PENDULUS' is an old form reported by Krüssman as having weeping branches, and one that may no longer be in cultivation.

'PINK CHAMPAGNE' is an essentially green-leaved form, although early in spring the new

foliage may show tinges of purple or red. This cultivar is especially floriferous with lovely clouds of light, clear pink inflorescences. It has performed especially well in the southeastern United States and retains its smoke display for a longer period than other green-foliaged, pink-smoked forms, even though most inflorescences are developed simultaneously in most years.

'PURPLE SUPREME' bears deep purple leaves that hold their color well through the summer. Its inflorescences are a light, smoky pink.

'PURPUREUS' ('ATROPURPUREUS') was named for its pale, purple-tinged inflorescences (as opposed to the foliage, which is always gray-green). This is one of the oldest cultivated forms and is frequently indistinguishable from most plants of *Cotinus coggygia* that tend to have purple-tinged inflorescences. Some have distinctly pink-purple inflorescences and a handsome upright habit, but these characteristics vary greatly. Other named selections will be more predictable in color, but this is an old, reliable form, common in established landscape plantings. For irregular massed plantings in large settings it is a good choice, but newer selections are more dramatically and uniformly ornamental.

'RED BEAUTY' is a striking, purple-red-leaved form from Boskoop in the Netherlands that is apparently unavailable in the United States at this time.

'ROYAL PURPLE' bears deep black-purple leaves and dark, burgundy-colored inflorescences that age to a dusty wine pink. The leaves hold their color well, even in hot climates, and brighten to a red-purple in the fall. Of the purple-leaved forms, this is the darkest hued, probably the least cold hardy, and certainly the most widely available. ('Velvet Cloak' runs a close second.) It is occasionally advertised as a compact form, which it is not, but its growth rate is somewhat slower than vigorous seedlings and hybrids. Its smoke display often begins later than in green-leaved forms, and while it is generally prolific and handsome, it is not always uniform in develop-

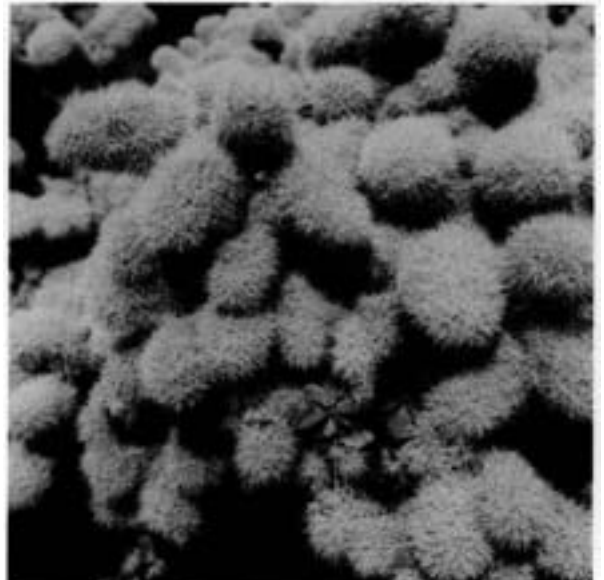
ment. In my experience, 'Royal Purple' has been the best purple-leaved form for use as an unpruned plant. It is spectacular in combination with silver-leaved perennials, blue-green ornamental grasses, or silver and blue-gray conifers.

'VELVET CLOAK', with its intense red-violet foliage and light red-purple inflorescences, is one of the most dramatically colored cultivars. Its foliage is generally a brighter red-purple than that of 'Royal Purple'. The duration of its smoke display is especially protracted but not as dense as in other selections. The performance of this cultivar depends on whether it is grown as an unpruned or coppiced shrub. 'Velvet Cloak' is reported to hold its color well throughout the season, but these observations relate to plants grown as coppiced or die-back shrubs. When grown unpruned, the leaves lose more color over the summer than those of 'Royal Purple'. However, as a coppiced or die-back shrub, 'Velvet Cloak' gives the brightest red-purple foliage display and is the best choice for new foliage color. In warmer areas of the United States, where there is a long fall

season, the foliage turns a brilliant, translucent carmine-purple in the fall, but in the most northerly areas of the country, it may simply brown and drop.

Cotinus nana W. W. Smith

Found in the dry areas of mountainous regions of Yunnan but not yet in cultivation in the United States, this species has been described as a low, compact shrub that reaches only three to four feet in height. Its leathery leaves are one-half inch long, and its flowers are crimson. Separating species by plant habit and leaf size is a debatable practice, especially within such an inherently variable genus as *Cotinus*, but the dramatic differences reported between this species and *C. coggygia* argue for further investigation. Whether the exceptionally compact habit and small leaf size are functions of environment or would be retained in cultivation is unknown. Limits of cold hardiness, drought tolerance, and other cultural information are also as yet unknown, but a truly compact *Cotinus* with red-to-pink inflorescences would be invaluable in urban landscapes, espe-



These photographs clearly illustrate the wide range of density of the inflorescences of *Cotinus coggygia* (Rácz & Debreczy).

What's Behind the "Smoke" in "Smokebush"?

The common names for *Cotinus*, "smokebush" and "smoketree," refer to its unique display as it flowers and fruits—a display that looks like a cloud of smoke throughout the summer. The ornamental smoke consists of numbers of upright, many-branched inflorescences (panicles of six to eighteen inches) that develop at the ends of the shrub's branches. Inconspicuous cream or yellowish flowers, about one-eighth of an inch across, generally appear sometime in late May or June. Fertile flowers then develop into small black seeds that resemble flattened peppercorns. Infertile flowers disintegrate, but the structure of the highly branched, paniculate inflorescence persists. Its branches bear tiny, pinkish hairs (at the bases of the pedicels) that continue to elongate and persist for weeks after flowering is finished, even if no seed is present. It is these hairs that create the smoke of the smokebush.

The color, density, rate of development,

and longevity of the hairs varies widely among individual plants. *Cotinus obovatus* is dioecious (that is, with male and female flowers on different plants), and while the smoke display of this species is not as showy as that of *C. coggygia*, male plants of *C. obovatus* give better smoke displays than female plants. On the other hand, *C. coggygia* is primarily monoecious (male and female reproductive structures are borne on the same plant) with some reports of polygamous plants (unisexual flowers plus some bisexual or "perfect" flowers on the same plant). Therefore, unlike *C. obovatus*, the quality of *C. coggygia*'s display is not affected by whether the plant is male or female but instead depends on density and longevity of the hairs on an individual plant. Cultivars of *C. coggygia* have been selected for prolific, deeply colored smoke displays as well as for purple foliage, good fall color, and cold hardiness.

cially if its fall color were handsome. Collectors heading to the mountains of Yunnan might wish to keep a weather-eye for this *Cotinus*, which W. W. Smith described as a very beautiful little shrub.

Cotinus szechuanensis A. Pénzes

Cotinus szechuanensis, another Chinese *Cotinus* that has been recognized as separate from *C. coggygia*, differs from the latter species in foliar characteristics. Its leaves are relatively small, almost round in outline, and with conspicuous tufts of white pubescence in the vein axils on the lower surface of the leaves. Additionally, the leaves may have a wavy margin. New foliage can be a bright red-purple. Separation of this species is debatable. However, during the history of *Cotinus*, populations of *C. szechuanensis*' antecedents were probably geographically isolated from *C.*

coggygia's antecedents, perhaps during the period in which the Himalayan Mountains were formed. This isolation of antecedents may argue for continued recognition of *C. szechuanensis*. It is not in cultivation in the United States, and cultural information is unknown. However, in its native habitat in Szechuan, it is a plant of dry, open areas, and its cultivation requirements are likely to be similar to those of *C. coggygia*. Roy Lancaster recently collected seeds of *C. szechuanensis* in China, and they have been successfully germinated at Hilliers Nursery in England.

Propagation

Cotinus can be propagated from seed as well as vegetatively from rooted cuttings. (Grafting also works but is generally not necessary.) Seeds require two periods of stratification. The best seed germination is obtained with about



A century-old American smoketree (Cotinus obovatus) on Meadow Road (Rácz   Debreczy).

one hour of acid scarification followed by three months' cold stratification. Some growers sow seeds outdoors in the fall. In the case of *C. obovatus*, which is dioecious (that is, male and female flowers are borne on separate plants), both male and female plants are required for fertile seed production. (Very rarely, an individual plant will bear both male and female flowers that may produce a few fertile seeds.) Cuttings should be harvested as early in the growing season as possible (while growth is still very soft), then treated with high (1%) concentrations of KIBA (potassium salt of indolebutyric acid) and rooted under a relatively frequent mist regime. Mist frequency should be reduced as soon as the cuttings show signs of rooting; otherwise cuttings will quickly deteriorate. Cuttings should be overwintered undisturbed until they begin growth the following spring.

Selections for the Future

The potential for breeding and selection of superior hybrids and seedlings from the wide-ranging wild populations of *Cotinus* remains underexploited. For example, among wild-collected seedlings at the Arnold there is tremendous variability in time of initiation, density, and duration of smoke display. Some plants develop inflorescences over a protracted period, leading to a less dense but longer-lived display than other plants whose inflorescences develop nearly simultaneously (which leads to a very showy, dramatic display that usually lasts for a shorter period of time). The disintegration of inflorescence panicles also affects the display. Some plants lose panicle structure quickly and neatly while others break apart over an extended period, which leaves the plant looking ragged during this period.

There is also a range in plant habit, including what appear to be groundcover types. 'Hillside Creeper' is a selection named for evaluation by Gary Koller that is currently under observation at the Arnold Arboretum as a spreading groundcover form reaching one to two feet in height with gray-green foliage. The

plant develops leaders that with age may or may not reach the full height typical of the species. It remains to be determined if the groundcover habit is truly stable or whether it might be the result of microclimate or a natural process related to layering. A low-growing selection of *Cotinus coggygria* would be very useful and attractive in dry sites. Groundcover forms of *C. obovatus* in the wild have also been informally reported by Don Shadow of Shadow Nursery in Winchester, Tennessee, but to date none have been collected for evaluation.

Cotinus performs admirably as a coppiced plant in a host of landscape settings. Selections could be chosen specifically to optimize new foliage color and vigor when cut back to the ground or grown as die-back shrubs. Flowering, however, is generally reduced or even non-existent when the plant is grown this way, and to my eye the dramatic beauty of the full display of smoky inflorescences atop an irregularly branched crown is never equalled by die-back or coppiced shrubs grown for the foliage alone. However, periodic coppicing is an effective way to rejuvenate older plants, and when it is performed on an infrequent basis, it does not permanently sacrifice the smoke display.

Cotinus seedlings and hybrids selected for optimal combinations of uniformly dense, handsomely colored, long-lived smoke displays with bold red spring foliage and brilliant fall color would make handsome plants in the landscape. Whether under power lines, in the mixed border, in urban gardens, massed in parks, sited between hardscape elements, in droughty chalk, in wet clay, in the heat of the South, or in cold northern sites, *Cotinus* makes a reliably handsome ornamental from spring through fall.

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