

# Azalea Diversity — Back to the Future

Hank Bruno — Pine Mountain, Georgia

The loss of species diversity on this planet is a major concern of conservation biologists and botanists. Along with habitat restoration, efforts to propagate and preserve maximum genetic diversity are the basis for recovery of endangered species. Once lost, an extinct species will never return. One can dismiss this as a regrettable but natural process that has been part of life since it first appeared. But the human influence on evolutionary proceedings has become a major causal factor, often the thing that determines the survival or extinction of a species. One of the most gratifying parts of my work at Callaway Gardens is the intervention on behalf of a few endangered plants through the Georgia Plant Conservation Alliance. Garden founders Cason and Virginia Callaway began this conservation ethic with the propagation of the then endangered *Rhododendron prunifolium* or Plumleaf Azalea. In 1946, the Garden Club of America recognized the planting of twenty thousand azalea seedlings with the presentation of the Frances K. Hutcheson Award. When the gardens opened to the public six years later the Plumleaf Azalea was chosen as the floral emblem and signature plant.

Human influence on Darwin's "descent with modification" is most obvious in the horticultural world of azalea hybridizing. Often created in designed breeding programs or selected from random out-crossings, thousands of varieties live or die by people's infatuation or indifference. The domestication of azaleas, though complex, is a relatively modern story, not even a blink in geologic time. The gardeners of China and Japan may have been making selections from the wild for nearly 2,000 years, and they began recording their efforts at the end of the 17th century. Plants made their way to Europe from the Orient and North America in the 18th century and were given scientific names by

Linnaeus in the genus *Azalea*. The next 100 years saw active manipulation of azaleas in England, France, Germany and Belgium. Trade carried plants and seeds around the world, and exotic azaleas, named and renamed, were widely distributed. The 20th century saw new introductions from China and Japan by plant explorers and large scale breeding projects such as the one in Glenn Dale, Maryland, conducted by B.Y. Morrison. Along with government- and university-sponsored trials there were innumerable commercial nurseries and hobbyists creating "new" azaleas. Botanists worked and reworked the nomenclature agreeing that all should be classified under the genus *Rhododendron*. Our eastern deciduous azaleas had long been neglected due to the lack of demand and the degree of difficulty in vegetative propagation. The application of tissue culture techniques and a growing public interest in native plants will soon do for "wild honeysuckle" what years of hybridizing have done for exotic azaleas. Now, at the dawn of a new century, it is time to examine azalea diversity in the hope of preserving the best of the past and setting goals for the future.

It is not my intention to champion individual varieties or hybrid groups. I will not lament the disappearance of certain selections nor advocate new lines of hybridization. I would like to share a few observations from our efforts to maintain an aging collection and the design and construction of a new azalea garden at Callaway. It has been my good fortune to garden with, as one co-worker phrased it, about the largest box of crayons the horticulture world can offer. I am humbled by the fact that the plants were assembled, and in some cases created, by Mr. Fred Galle. Rejuvenation pruning, transplanting, and propagation from a large collection offers many choices. Protecting these plants from drought, the destructive winds of storms, lace

bugs, and petal blight keeps my staff busy year round. The attempts to identify unlabeled plants are restricted to the spring blooming season, which is also the time of greatest visitation for a public garden. This process was interrupted by a fire, which consumed the Callaway horticulture offices in 1997, destroying maps, records and herbarium specimens as well as our label-making machines. Fortunately I had a working copy of the maps and plant records in another location, and we have since replaced the label-making equipment. The death of Mr. Galle on July 26, 1998, is a loss for which there is no compensation.

Still there are many valuable lessons to be learned from the garden and writings of Mr. Galle. Of the literally thousands of native azalea seedlings that he and his staff produced, he chose to name and register only five. He would not want us to waste good names on less than superior plants. An article in *American Nurseryman* by Harrison Flint titled "Standards of Excellence" (Dec. 15, 1994) provides a synopsis of guidelines for plant evaluation to avoid "introductions that contribute little to diversity." High standards and comparison to the best existing cultivars are critical to avoid "proliferation of unworthy genetic material." This is not to say that Fred composted all of the rejected seedlings, or what Frederic Lee would refer to as the "mongrel progenies of deciduous azaleas." The fact that a plant did not warrant a name did not exclude it from the garden. Likewise, if the name or parentage was lost, a plant might be banished to the woodlands or the edge of a golf course. The day may come when geneticists can decipher the lineage of those mongrels, and their unique inheritance may confer some as yet unnoticed adaptability. Still, if one is involved in breeding for specific traits, the importance of record keeping cannot be overstated. Permanent labels are also

critical to the long-term success of collections management. With new computer software it is possible to keep records and maps updated to provide valuable information to future generations of horticulturists. As our experience with near disaster has proven, back-up copies of all work needs to be housed in at least two locations.

The construction of the Callaway Brothers Azalea Bowl (opened March 1999) provided numerous object lessons in azalea selection, production, and culture. Propagation from the existing collection required verification of hybrid names and considerable effort to maintain proper identification of a multi-year contract-grown crop. Numerous inventories were produced to track the 6,000 cuttings of some 175 cultivars taken over four years. The advancing age of some of the parent material made successful rooting difficult. Some of the varieties are not easily distinguished, and offered little toward the goal of a diversified color scheme. In designing color combinations, flowers were collected and tagged, then brought to match on a table with a planting plan. There were numerous points of view about how plants should be arranged for maximum effect, as might be expected in an artistic exercise. Once the design is complete, it is best to turn over the

planting and maintenance duties to those guided by the left hemisphere of the brain. It was Sydney Edison in *A Patchwork Garden* who said: "Gardeners and designers will never, I fear, be in accord about plants."

For those who have not seen the movie, *Back to the Future* involves Michael J. Fox getting in the nutty professor's time machine and going back one generation to when his own parents were teenagers. Through a series of misadventures he interferes with their budding relationship and thereby jeopardizes his own future existence. Azalea growers are constantly in the time machine of horticulture. We go back to the varieties known in ancient China to select parents for future crosses. A survey of the wholesale nursery catalogs will reveal that we cannot depend on them, either, to preserve genetic diversity. Name recognition and economic realities will necessarily limit the varieties offered. As mentioned above, micropropagation techniques may soon overcome commercial limitations with native azaleas, but it may be at the expense of diversity.

It is up to the members of this Society to take action that will ensure our safe arrival when we get back to the future. First, exercise good judgment

in breeding to make certain that the "azaleas you name and introduce are really different, superior and represent an advance over those already in hand." (Galle, 1987:347-348) Second, take cuttings of your five favorite plants, label them well, and pass them along to fellow gardeners to provide vigorous stock for the future. Collections can become moribund in a single human generation. Finally, keep and distribute records of what you are growing. At this time it is not possible to know when a variety is near extinction. They may not all be worth saving, but some are bound to be parents of future generations of beauty.

*Hank Bruno earned undergraduate degrees in Botany and Anthropology from Duke University in 1976. Following Peace Corps service in Guatemala and two years of archeological fieldwork in the southeastern United States he entered graduate school at Texas A&M University. Working full-time as a Landscape Maintenance Supervisor, he received his M.A. in 1988 with research in Ethnobotany. He has worked at Callaway Gardens since October 1991, where as the Trails Manager, he cares for 150 acres of wildflowers and woody ornamental plant collections.*

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## Azalea Hybridizing

*Fred and Jean Minch — Puyallup, Washington*

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Our home and garden is located in the Puyallup Valley of Washington State. This valley is between Seattle and Tacoma in the shadow of Mount Rainier. From our garden we have a view of Mount Rainier off to the left and what is left of Mount St. Helens to the south. Puyallup Valley used to be famous for the vast acreage of daffodils and other bulbs. There is a Daffodil Festival each spring; however, the acreage has all but disappeared to be covered with industry.

One of our favorite azaleas that we hybridized is *Rhododendron* 'Puyallup

Centennial'. This one starts out with buds of green and yellow, opens and develops through many shades of yellow with some shades of green and pink, and finishes off to a light yellow. It is one of our doubles and there are so many florets it forms a large round ball. Multicolor and large trusses are common in most of our azalea crosses. The 'Puyallup Centennial' was put into production by the Briggs Nursery, and we then donated it to Puyallup for a fund raiser during the celebration of the city's 100th year anniversary. When we visit the East

Coast we are always fascinated that most of those areas have been settled for 300 or more years and we are just marking 100 years in Washington State.

When we hybridize azaleas we have several goals in mind. Of course the color is probably foremost. Most of our azaleas tend to go through many stages of color, so we can only identify them by the most prominent. Most common are the yellow, orange, white, and pink. Red is rare and there are very few really good ones. We are