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2007

The Trillium

Piedmont Chapter
North American Rock Garden Society
Chapel Hill, Durham, Raleigh, NC

Global Warming

Everything was white. We had been walking across the glacier for hours it seemed, and in less than ten minutes, our guides assured us, we would be at the summit of the highest mountain in Africa. It was 1993, and the enormous expanse of snow and ice atop Mt Kilimanjaro seemed to go on forever. As I sat in the cold and gazed 100 miles in all directions, drinking coffee still hot from that morning's camp, little could I imagine what that mountain would look like thirteen years later…..

Today, that glacier is almost gone. The white mass that in 1993 covered a third of the mountain is now only a tiny mass of white near the very summit. It is expected to disappear altogether by 2020. It is melting away, flowing downhill to the Indian Ocean, taking thousands of years of stability with it. Unfortunately this is an all too common story in our rapidly warming world.

Global warming. If I had a dime for every time that term appeared in the news….

Well, suffice it to say that I'd be living on one of those secluded sandy beaches that are shrinking yearly due to the rise in global sea levels that is fueled by melting glaciers. Why is this happening? To begin, the amount of carbon dioxide be-

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The Making of A Garden in the Woods

When my husband and I moved to this sloping, heavily wooded two-acre property in 1988, I was a novice to gardening. We removed fallen trees, shrubby undergrowth and two-to-three feet of dead, undecayed leaves. I probably should have known there was a problem when most of the newly planted, supposedly over-aggressive, *Aegopodium* died. Maybe there was a clue when I dug up the forlorn-looking *Lonicera fragrantissa*, planted for two years, and found that its roots had never left the small hole in which it was planted. Eventually, when I finally did the right thing and had my soil tested, the results indicated soil with a highly sandy texture of low fertility with a pH of 4.3. I was horrified to find out that I had "sour soil," words used by Harriet Morse in her 1939 book, Gardening in the Shade. She described sour soil as that "which has gone beyond a healthy degree of acidity and is dead. Sometimes even the necessary bacteria cannot live in such soil."

Undaunted, I began a search for plants that preferred acidic soil. I read all the books I could find, especially about native plants. I visited gardens, at-

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Upcoming Programs

November 17, 2007
Ellen Hornig
Seneca Hill Perennials, Oswego, N.Y.
"Notes from a Northern Garden"

January 19, 2008
Tony Avent
Plant Delights Nursery, Raleigh, N.C.
"Mow No Mo': The Wonderful World of Ornamental Grasses"

February 16, 2008
Todd Lasseigne
Paul J. Ciener Botanical Garden
Kernersville NC
"Japanese Plantsmanship and Nurseries"

March 22, 2008
(note it's fourth Saturday)
Peter Korn
Nurseryman and Extreme Gardener
NARGS traveling speaker,
Eskilsby, Sweden
Title to be announced

April 19, 2008
Tom Stuart
Gardener, Croton Falls, N.Y.
"Rock Garden Ferns"

May 3, Spring Picnic
Charlotte-area gardens by bus.
Details to be announced.

(Continued from page 1) **Global Warming**

ing emitted into the atmosphere today is twelve times greater than a century ago. Carbon dioxide is a greenhouse gas, which means it traps heat in the atmosphere and holds it there. In the next hundred years, the earth's average temperature is expected to rise approximately 4-5 degrees Celsius. To put that in perspective, during the last ice age, the earth's temperature was approximately 5 degrees Celsius cooler than today. As a result of our current warming trend, we have rising sea levels which threaten our shoreline habitats, earlier springs which disrupt plant and animal reproductive cycles, and fundamental shifts in where plants and animals are able to survive within their native ranges.

While some animals and insects are able to migrate away from an area grown inhospitable due to rising temperatures, plants have a much greater challenge. It is estimated that in the coming years many plant species will have to move an average of 4 miles north or twenty feet in elevation per decade in response to climate changes. Also, as spring comes earlier, the challenges of matching the life cycles of plants and pollinators will get more difficult, and the danger of frost damage to early flowering plants will become more severe. Finally, where the ocean meets the sea we well witness entire ecosystems, like the fragile but vital mangrove forests, disappear beneath the waves as glaciers melt and recede worldwide.

In addition to the fact that plants and animals have to cope with a warming world, the specter of invasive species in their habitats looms large as well. Whether introduced accidentally or by design, invasive plant and animal species, once established in the wild, are able to outcompete their native counterparts. Often this is due to a lack of pathogens or predators in their new found homes. Without the need to devote energy to ward off pests or predators, invasive species can devote those resources toward rapid growth and reproduction. Many invasives are also more adept at handling rapid change, as their genetic makeup is often more plastic or adaptable. This makes them better able to respond quickly to changes in habitats such as temperature changes or large-scale disturbances such as timbering or fire. In addition, invasive species may even hybridize with their native cousins, often increasing their own vigor in the process while possibly introducing pathogens or non-competitive genes into the native gene pool.

A third type of threat to native ecosystems is one we witness every day: human encroachment into native wild habitats. We develop land for our own purposes irrespective of whether or not the natural world can respond to the changes we bring. What is left once the human presence in a given area has been established is, at best, a patchwork of fragmented wild areas that themselves have most likely been developed at some time in the past. In response to this, we create "preserves" which, in light of the affects of global warming, can really be seen as prisons .As climate change warms the earth and alters rainfall patterns, plants and animals will seek to "escape" these protected areas to find greener pastures to which they are better adapted. Unfortunately for most of these species, those alternative sites do not exist nearby, and an attempt at migration can be a road to extinction. In addition, human disturbance in neighboring areas can create fertile ground for the establishment of invasive species, making the viability of these "preserves" seem even more fragile.

Now to the meat of the matter- why does it matter to you? If plants and animals can't adapt, so what? If invasives out compete natives, so what? Didn't Darwin talk about survival of the fittest as how evolution has progressed for millions of years? True. The playing field is a bit different now, though. Humans have become the players in the game and nature has become the pawn. To understand a bit better what is at stake here, let's talk a bit about something we all must do- eat and drink. Studies show that in the U.S. Midwest and Great Plains, our breadbasket, so to speak, the future does not look bright. If past years are any indicator, as regional temperatures rise due to global warming we can expect crop yields to go down. In order to make up for decreased productivity and higher demand as our population continues to grow, it will be necessary to clear new land for agriculture as well as incorporate more synthetic fertilizers to increase productivity.

In addition, the rapid climate change in the region will most likely favor an increased presence of invasive species. This entails not only increased use of synthetic pesticides and herbicides to combat the unwanted guests in the field, but also increased water consumption for agricultural purposes. More weeds in the fields mean less water for the crops, and higher temperatures mean the crops will be using water at a faster clip. This all means increased stress on already depleted reservoirs and aquifers. In the short run, this all translates as more expensive food and more competition for scarce water resources. As it requires a significant amount of fossil fuels burned or put into the ground just to produce a bushel of corn, you can see that we are headed toward a vicious

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(Continued from page 1) **Making a Garden in the Woods**

tended seminars and workshops, and even worked one summer at a native plant nursery. I had a vision of a woodland garden incorporating those plants that I had seen growing in the woods behind my childhood home in South Carolina.

Easy to find acid-loving shrubs were the first to be planted. Of course, azaleas are well suited, although I have not made them a huge part of my garden. Planted by the previous owner was a mismatched colorful array of evergreen azaleas lining the stone walkway to the front door. I moved the orange colors to the other side of the driveway and left the pink and the white ones. Luckily for me, the white variety is 'Delaware Valley White,' which I prefer because, as its large blossoms turn brown, they immediately fall to the ground. An azalea that looks nothing at all like any other is *Rhododendron linearifolium* var. *macrocephalum* 'Seigai.' Not what you would call "beautiful," it is certainly unique with its narrow strap-like pink petals and extremely narrow fuzzy leaves. Early on, several different cultivars of our native evergreen *Rhododendron catawbiense* were planted en masse and are now six feet tall.

Deciduous native azaleas are fantastic additions to the woodland garden. However, they do appreciate some sun. After moving my Piedmont Azalea, *Rhododendron canescens,* to three different locations, it has found its home at the top of the driveway where it is now over seven feet tall. It is a joy to walk up the driveway when it is in bloom as the fragrance wafts all the way down the hill. After we stopped using the weed eater to cut down all the undergrowth, I was overjoyed to find the Piedmont Azalea indigenous to the property, living on the edge of the woods. Many of the native azaleas I purchased did not fare very well. A huge success is a purchase named *Rhododendron* Pastel #23, found in the wild as a "natural" hybrid. It is a knockout with white flower petals blotched with gold and tipped with pink.

Rhododendron Pastel #23

Loving shade and acid soil, *Leucothoe (Agarista)* and *Pieris* are lush and bloom abundantly. *Kalmia latifolia* has been touted as our most beautiful native plant, and I am most fortunate to have it growing in my garden. An amazingly easy-to-grow *Hydrangea* for me is *H. quercifolia,* so much so that in addition to the species, I now have the

Hydrangea quercifolia 'Snowflake'

double-flowering 'Snowflake,' the more compact 'Snow Queen,' and 'Harmony,' which sports a huge flowerhead. *Camellia sasanqua* has also become a mainstay with its white or pastel flowers in the fall when very little else is blooming in the woodland garden. It has smaller leaves and a looser form than *C. japonica.* The best conifer for shade is *Tsuga canadensis;* this and the weeping cultivar 'Sargentii' has found a home here.

I have not yet found a *Viburnum* that I don't love. Of course the first *Viburnums* I purchased were

Viburnum plicatum tormentosun berries

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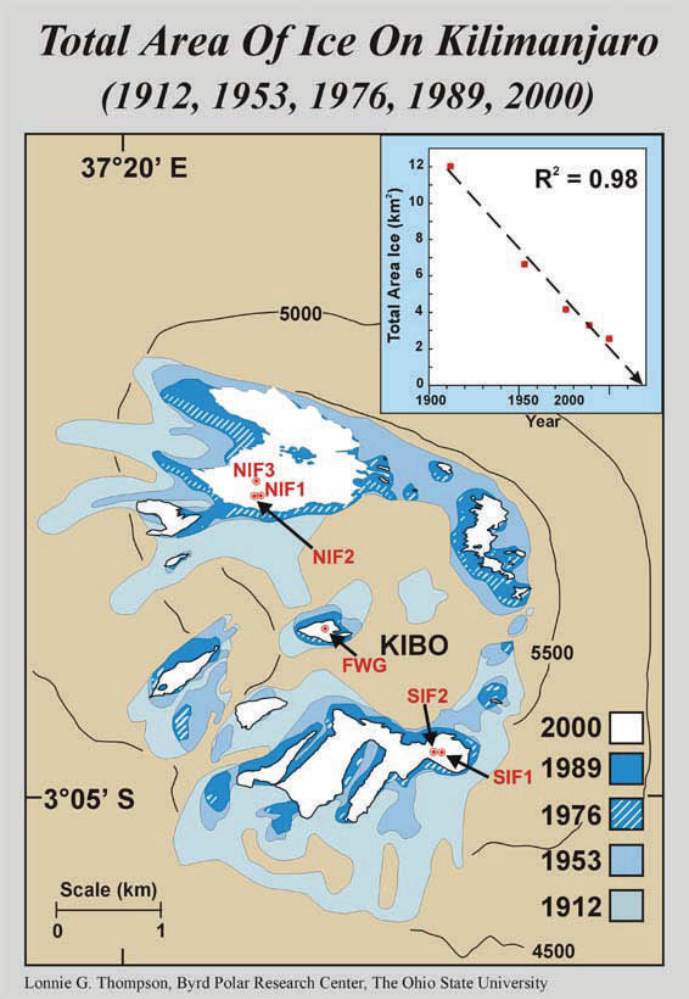
cycle in which we pollute more to produce more. The long-term outlook looks even more grim, with more severe droughts and catastrophic storms pushing more fragile ecosystems and economies toward the brink. Humans it seems are hard wired to ignore the problems not hitting them directly in the face (or the pocketbook).

In Colorado recently it was the disappearance of drinking water that prompted the governor to "declare war" on a rather unconventional target. An invasive species of Tamarisk had naturalized along river bottoms in the state, and not only were their enormous root systems killing off the native cottonwoods and cedars, but they were also lowering the water tables in the region, causing river and stream levels to become dangerously low. Water was becoming expensive, and at times downright scarce. Huge resources are now being devoted to research into and eradication of this invasive, and perhaps just in time. One can imagine what an increased frequency of drought due to climate change coupled with a water guzzling invasive infestation could do. I would argue that the entire world is at such a tipping point, with more than we can imagine hanging over the abyss.

Those humans that are already close to the edge are the millions of subsistence farmers and fisherman the world over who live from hand to mouth in a good year. Productive marine estuaries will be flooded by rising sea levels, as spreading deserts will engulf more farmland. The incessant clearing of our tropical rainforests, the lungs of the world, will continue to decrease the amount of carbon dioxide the earth can recycle itself. What we do now, as a global community, will be remembered in years to come as either the hastening of catastrophic ecological collapse or the halting of the world's worst mass extinction since the end of the age of the dinosaurs.

We all can do our part to bring this battleship around. Educate yourself about how much carbon dioxide your family produces and some simple things you can do to lower that figure. Demand that your politicians make global climate change an issue at the top of their list. Most of all, talk about it. Ignorance is our greatest enemy here. If people truly understood what the ramifications are of continuing down this path, many would choose to make changes in their lives. Demand cleaner technologies and the market will have to respond. Here at the Duke gardens, we are trying to respond in our own way. Environmental sustainability has been a topic of much discussion here of late, and recently we formulated a committee to create a policy to address the issue of invasive species and what we can do in our horticultural and educational efforts to make things better. It is hoped that this will be the seed for an over-arching conservation policy that will look at global environmental issues and determine in what manner the Sarah P. Duke gardens can most effectively and efficiently respond. As parent and future grandparent, I don't want to have to tell my children and grandchildren how beautiful things used to be; what species you once could see that are gone. I would love to be able to stand atop Mt. Kilimanjaro with my grandchildren and tell them about how we as humans have turned toward healing the earth as our reason for being. As cold as it may be up there at nineteen thousand feet, it would break my heart if there were no snow to sit on.

Stefan Bloodworth
Curator of the Blomquist Garden of Native Plants
Sarah P. Duke Gardens, Durham



Map produced by Ohio State University researchers shows the retreat of Mt. Kilimanjaro's icecap since 1912. Since 1912, more than 80% of the mountain's glaciers were lost.

Saxifraga virginiensis: The Early Saxifrage

I have grown *Saxifraga virginensis* for the past four years, having first encountered it while rescuing plants in the western Piedmont of North Carolina at a dam site planned for inundation. The species grew in a moist seep adjacent to a creek; above it, on rocky, drier slopes, were *Trillium cuneatum, Hepatica americana, Anemonella thalictroides, Claytonia virginica,* and *Antennaria plantaginifolia.*

Saxifraga virginiensis, sometimes called the early saxifrage, is native to the eastern half of the U.S. (there's a variety or subspecies in Oklahoma) and in Canada from New Brunswick westward to Manitoba. It is a member of the Boraphila Section of the genus. The species is a perennial whose hairy and sticky flower stalk (pedicel) may attain a height of 12 inches. The flowers, about an eighth of an inch across, have white petals and are arranged in a loose cymose cluster. They are said to be fragrant, but I have never verified this myself. The oval leaves are basal and arranged in a rosette that hugs the ground. Each leaf is slightly toothed and grows to about 2 inches long.

In North Carolina, there are six species of saxifrage, four of which are endemic to the Southern Appalachians. Current molecular data and taxonomic research suggest that all six species are likely to be subsumed into *Micranthes*, a genus more closely allied to *Heuchera, Tiarella* and *Mitella* than to *Saxifraga* (Weakley 2005).

In my garden in central North Carolina the early saxifrage blooms for about three weeks beginning in late March. I grow some individuals in a low, somewhat moist area near a creek in the deciduous shade of *Emmenopterys henryi* along with a companion planting of the white-flowered *Dodecatheon meadia*, the North Carolina native shooting star, which blooms at the same time as the saxifrage (I am still waiting for the *Emmenopterys* to produce flowers).

I also successfully grow *S. virginiensis* in a hypertufa trough containing a collection of native spring ephemerals. The trough has better drainage, dryer soil, and sits in a sunnier aspect than the area where I grow other *S. virginiensis*. These two growing conditions seem to confirm the adaptability of the plant.

Reginald Farrer, the author of *The English Rock-Garden*, wrote in 1928 that saxifrages are the backbone of the garden. He preferred the English name "saxifrage," which is "singularly apt, easy, expressive, and beautiful." Farrer abhorred those faddists who would call it "rockfoil" as the name is "a dismal and tedious affectation which all reasonable people unanimously ignore." He never gardened in the U.S. Southeast, where warm summer nights with high humidity and late-summer rainfall would turn his beloved Kabschia Section saxifrages, "the jewels of the family," into mush. But Farrer knew (of) *S. virginiensis*, noting that it "is a by no means interesting [plant]. . . It is usually ignored, though a place might more readily be made for it in a cool out-of-the-way corner."

It is true that the early saxifrage doesn't stir the same passions as the cushion and mat-forming alpine saxifrages I have admired on exhibition at various rock garden meetings in North America and Europe. It can also be overlooked and dismissed and "lost" in the garden. Still, the early saxifrage has its own special charm and a reminder that a plant need not be garish, gaudy, and spiked with steroids to be appreciated.

Bobby J. Ward, Raleigh, North Carolina

References: Farrer, Reginald. 1928. *The English Rock-Garden.* London: T.C. & E.C. Jack, Ltd.
Weakley, Alan S. 2005. *Flora of the Carolinas, Virginia, and Georgia.* Working draft. Chapel Hill, North Carolina: North Carolina Botanical Garden.
[*This article originally appeared in the Summer 2006 issue of the NARGS Quarterly*.]

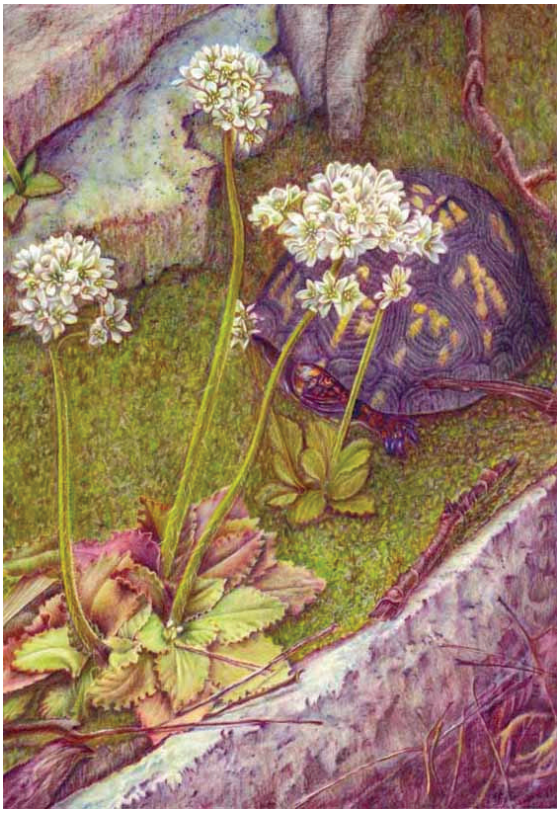


Illustration of Saxifraga virginiensis and Carolina box turtle by Jean LeCluyse, a nature and science illustrator from Chapel Hill, N.C. Used by permission of Jean LeCluyse.

cultivars of *V. plicatum*, the Doublefile Viburnum, all of which died a pretty quick death in my "sour" soil. Still a fairly young gardener (five gardening years), I still had yet to learn the nuances of soil. It was about this time that I attended a seminar on the topic of *Soil*. With my recent Soil Test Report in hand, I learned the actual names of the abbreviations on the test results, and more importantly, I learned the numbers that you would *want* to see as the results. I now add greensand to all my planting holes to add the lacking potassium. Most of all, I use compost to amend the soil of new plantings and use organic matter to mulch established beds. The organic matter is a food source for the microorganisms which produce plant growth hormones, as well as benefiting the soil in so many other ways.

Learning to feed the microbes that live in the soil rather than just adding lime as the Soil Test Report recommends, has allowed me to grow healthier, happier plants with no pesticides. For years now, we spend weeks during the winter and spring raking and stockpiling the fallen leaves. We purchased a tractor with a PTO driven chipper/shredder attachment into which we dump mounds of leaves with a pitchfork in order to shred them to use as mulch on all the beds. To say that this is a lot of work is an understatement. However, the soil has responded with a somewhat higher pH which has allowed me to use more and different shrubs. I do not add lime to the soil in which my shrubs and trees are planted, only on the berms in which I grow perennials. I do add organic fertilizers since nutrients are easily depleted in my sandy soil.

To get back to *Viburnums* (the first of which died in my unamended soil), I now grow many different species. In early spring, fragrance permeates the air when the pink flowers of *Viburnum carlesii* bloom. I often tease visitors by having them crush and smell the leaf of *V. siebolidii*, which has an extremely fetid odor. To counteract their distaste, I take them to the nearby blooming *V. x juddii* to partake of its intoxicating sweet fragrance. *Viburnum x pragense* is a very hardy evergreen suitable as a specimen or for screening and has beautiful pink flowers and lustrous textured leaves, to boot. *Viburnum lantana* 'Variegatum' has a small, flat creamy-white flower that sits above its creamy-yellow variegated foliage. Evergreen *V. chindo* makes a very effective screen planted beside my tall deck. *V. opulus* is now seven feet tall and its blooms are 3 inches wide. *Viburnum prunifolium*, the native touted to be so wonderful in the garden setting, has yet to bloom for me after four years. I planted *V. utile* 'Chesapeake' last year and I just purchased *V. grandiflorum*.

Viburnum x pragense

Viburnum lantana 'Variegarum'

Viburnum opulus

I have to admit that not all woody plants like my garden's environment, even with its more enriched state. Many, many let me know they hated it here by dying almost immediately; some lingered for awhile before dying;

and others never thrived (those I dug up, after moving three times in my own garden, and gave to friends where they are most happy and I can visit and enjoy them.) Happy and content in my garden are *Acer palmatum* (six cultivars); low-growing *Cephalataxus harringtonia* 'Prostrata' having evergreen needle-like foliage; single-flowering *Kerria japonica* which is better suited to a natural, woodland setting; and *Amorpha fruticosa* (Desert False Indigo) with

Amorpha fruiticosa

unique flowering spikes in colors of purple and orange. *Cornus kousa* 'Gold Star' is a superior slow-growing Asian

Cornus kousa 'Gold Star'

dogwood. Spicebush (*Lindera benzoin*) is a multistemmed, understory native shrub with yellow blooms in early spring and is the preferred larval host of several butterflies. Other spring-blooming natives are *Physocarpus opulifolius* (Ninebark), a deciduous shrub that shows off in winter with exfoliating bark; *Chionanthus virginicus* (Fringetree) which is also indigenous to our property; and the species *Calycanthus floridus* (Sweetshrub or Carolina Allspice) along with yellow-flowering 'Athens.' *Fothergilla* 'Mount Airy' offers three seasons of beauty with fragrant blooms in the spring; a neat, vigorous habit in summer; and fantastic fall color. Another native to the Southeast

Physocarpus opulifolius

is *Pinckneya bracteata* or Fever Tree; whose flower-like displays are actually bracts, reminiscent of poinsettias. Lack of space prevents me from writing about so many others.

Fothergilla 'Mount Airy'

I consider it almost miraculous to look at the garden today, knowing that a little more that fifteen years ago it was devoid of almost all understory vegetation. It is astounding that plants now seed-in or are so lush that they spread and need to be divided, that I now have soil that is desirably "sweet" instead of deplorably "sour." I truly believe my passion for gardening is a result of the challenge it has been to garden here. The creation of a beautiful woodland garden retreat has been the making of *this* gardener.

Rita Mercer

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Piedmont Chapter Meeting

October 20, 2007

2:00 p.m.

NOTE SPECIAL MEETING TIME.

Stefan Bloodworth
Curator/Horticulturist
Sarah P. Duke Gardens, Durham, N.C.

"Fall Interest in the Native Garden"

The Trillium, Newsletter of the Piedmont Chapter
The North American Rock Garden Society
1422 Lake Pine Drive, Cary, NC 27511

Place Stamp Here

First Class Mail

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Bring Snacks to Share

We appreciate having members bring snacks to share. Our faithful friends Maurice and Gwen Farrier will again set up the beverage station. Please contribute something tasty during the month in which your last name begins with the letters to the right.

October	F—J
November	L– M
January	N– Q
February	R—U
March	V—Z
April — all invited	

(Continued from page 7) ***Garden***

Author's Note:
This article did not take into account the devastating effects of this summer's super high temperatures and terrible drought. Visit Rita's Garden at www.ritasgarden.net

Editor's note:
All photographs in this article were taken by Rita Mercer.

Pinckneya bracteata