

NORTH  
CAROLINA

# wild flower

PRESERVATION  
SOCIETY, INC.



Dwarf Crested Iris  
*Iris cristata*

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**NORTH CAROLINA WILD FLOWER  
PRESERVATION SOCIETY, INC.  
1996-98**

*President*

Charlotte Patterson  
7706 Tannery Road  
Summerfield, NC 27358-9004  
910-643-4656 (H)  
910-294-7343 (W)

*Vice President*

Eric Hawkins  
2428 US 70  
Mebane, NC 27302  
919-563-1026 (H)  
910-279-3513 (W)

*Recording Secretary*

Ken Bridle  
Roure 3, Box 68-L  
Walnut Cove, NC 27052  
910-591-5882 (H)

*Corresponding Secretary*

Craig Moretz  
2342 US 70  
Mebane, NC 27302

*Treasurer*

Nancy Julian  
1933 Gaston Street  
Winston-Salem, NC 27103  
910-722-8629 (H)

**1998 TRUSTEES**

Larry Early  
126 Forest Road  
Raleigh, NC 27605  
919-834-4533 (H)  
919-733-7123 (W)

Nancy Hillmer  
Route 2, Box 173  
Pittsboro, NC 27312  
919-542-1068 (H)

Wayne Irvin, PhD  
145 Riding Lane  
Southern Pines, NC 28387  
910-695-7269 (H)

*Immediate Past President*

Bob Tuggle  
Route 4, Box 317B  
Bassett, VA 24055  
540-629-7420 (H)  
540-634-2502 (W)

*Conservation Preservation*

Ed Swab, PhD  
1400 Athlone Place  
Raleigh, NC 27606  
919-851-0006(H)

*Publications Publicity*

Neil Lewis  
907 Greenwood Drive  
Greensboro, NC  
910-299-1842(H)

*Shinn Grant Program*

Benson Kirkman, PhD  
708 Brent Road  
Raleigh, NC 27606-2775

*Program Meetings*

Eric Hawkins

*Consultant*

Julie Moore  
1918 Fuller Street  
Hattiesburg, MS 39401  
601-544-0770

**2000 TRUSTEES**

Ken Bridle  
Route 3, Box 68-L  
Walnut Cove, NC 27052  
910-591-5882 (H)

Alvera Henley  
Rt. 2,, Box 565  
Newland, NC 28657  
704-733-4486 (H)

Harry Phillips, PhD  
7114 McWhorter Road  
Waxhaw, NC 28173  
704-843-1645 (H)  
704-342-5012 (W)

**NEWSLETTER**  
**of**  
**North Carolina Wild Flower Preservation Society**

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COVER DRAWING: Dwarf crested Iris (*Iris cristata*)  
by Eric Hawkins

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## *President's Message . . .*

Springtime is my favorite time of the year. You watch and hold your breath that the plants you put in in the fall survived the winter; then you're rewarded with those little sprigs of green. Somehow the stresses and irritating influences of the work day tend to melt when you're greeted by the happy sight of *Iris cristata*, *Aquilegia canadensis*, and *Dicentra eximia*. They remind you that "God's in his heaven and all's right with the world."

I've been a member of the NCWFPS for about four years now. Throughout those years, I've enjoyed seeing that same joy in the faces of fellow wild flower enthusiasts when they spot their favorite flower on the trail.

That enthusiasm is the backbone of this society. This is your organization, so let me and the board know your ideas. I've already had great suggestions from Sally DeGroot and Joe and Jane Srail. You will be hearing from me! We need ideas on how to publicize the Society and its events. Any of you who live in areas where events are planned could help us contact local newspapers so we can advertize our meetings. Bring like-minded friends to the meetings and give gift memberships. Talk about the Society when you go to garden clubs and horticultural events. You can provide our best commercials. If you have any great ideas on how to publicize the Society we would love to hear them.

The newsletter is also a source of self expression for members. If you have a particular plant you would like to see profiled or if you visited a garden that impressed you, you are welcomed to submit a piece to the newsletter staff. We welcome book reviews as well. Let us know about local outings or events that might be of interest to other members. Newsletter deadlines are May 1 for the Summer edition and October 15 for the Winter edition.

The Society has been a happy group of wild flower seekers with no organized political agenda. Since we've stayed out of politics, maybe that's why we're a happy group! Anyway, some of our members have expressed a desire to become more actively involved in conservation and preservation issues. Any of you who would like to become involved in such an effort are welcomed to get in touch. Let us know your ideas on issues and join us at a board meeting.

Many thanks to Bob Tuggle for a job well done over the past two years. I have big shoes to fill. Thank you for the opportunity of being your president. I look forward to hearing from you as we face the challenges of the next two years.

Charlotte Patterson

## Calendar Of Events

July 24-27, 1996 Conference on "Landscaping with Native Plants" at Western Carolina University, Cullowhee, NC.  
(For information call: 704-227-7397)

August 4, 1996 NCWFPS Board Meeting, 12pm at Bethabera Gardens in Winston-Salem, NC.

October 12-13, 1996 NCWFPS Fall Meeting Southeastern NC.  
(Further details will be mailed out in advance.)

October 15, 1996 Deadline for receiving articles or other materials for the Winter 1996 Newsletter. (Contact Craig Moretz for more information)

April 6, 1996 NCWFPS Board Meeting (Tentative)

April 26-27, 1996 NCWFPS Spring Meeting, South Mountains State Park, Burke Co., NC

## FALL MEETING 1995: Bear Island and the Croatan

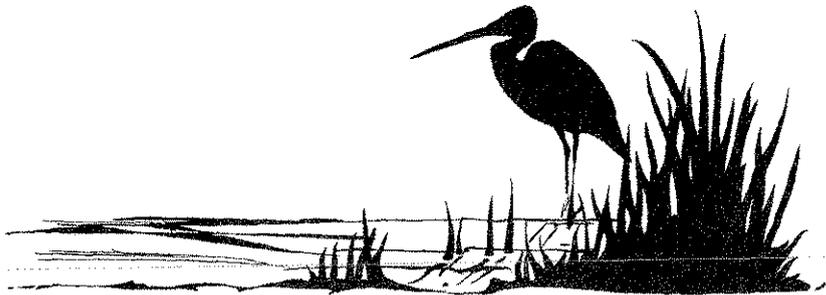
*by Ken Read*

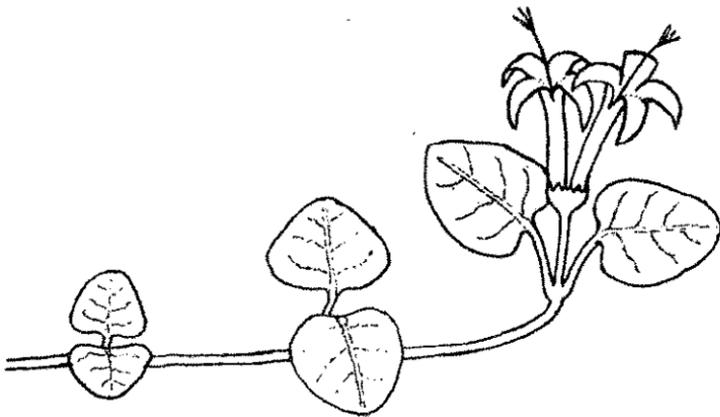
A fulfilling and exhilarating experience was the reward of the numerous members and friends attending the fall gathering. We explored many habitats, from the dunes of the strand all the way to the heavily managed Croatan National Forest. Our forays were made wonderful by the knowledge and spirit of Jeannie Kraus.

At Hammocks Beach State Park, we had an informative lecture on loggerhead turtles, followed by actual digging out of a hatched nest and release of three trapped tiny turtlings, who immediately headed for the breakers! We saw fox tracks, also diminutive maritime whitetail deer. Our boots were impaled by spike balls of prickly pear cactus. We ate yucca petals. Seaside grasshoppers startled us. We saw the power of moving dunes covering entire trees. The salt spray's pruning of the seaside maritime vegetation was observed. We struggled to identify *Aster* ssp. We did NOT make tea of *Ilex vomitoria*, but learned how the Native Americans had used this plant in their eating orgies. Earth stars were found. Sulphur butterflies were everywhere. Many plant adaptations to the challenging seasalt environment were seen and discussed. Fantastic!

In the Croatan, we saw a great group of huge-clawed fiddler crabs, flaunting their weird appendages as if they were actually useful. Also seen were many, many species of plants, including some rare and endangered species. Naming these would be superfluous, as Jeannie provided us with fine listings for the two major ecosystems we visited.

All in all, the botanizing and socializing among fellow victims of "green fever" was a great and satisfying experience, and we all made a note never to miss these fabulous forays sponsored by our marvelous society.





## Past President's Message

Two years goes by pretty fast when you're having fun. (I really expect time to start moving again now.) The newly elected slate of officers provide a great resource to the Society. There is a momentum at the present and the new regime has the capability to continue that positive movement into the future.

You - the membership drives this society. All of the board members and officers are always listening to hear what the membership is telling them. Always listening, to try and see what direction the Society should move in. You have a lot of ways that you can make your desires known. Call an officer or board member - the numbers are in the newsletter. Be verbose on the evaluations that you fill out at the meetings. Or drop a line, in the form of post card or letter, to the President. We're always on the lookout for new ideas. New places to go. New ways to improve the organization. Share your ideas with your officers and we'll try and find ways to implement those ideas. (We couldn't figure out how to work in the skinny dipping idea, but it stimulated some conversation.)

Well, what to say as a last official message? How about: Listen up. Be quiet while your trip leaders are giving instructions. Try and keep the group together. Be at the curb on time. We leave at 9:00 promptly. Watch for the car in front and behind. Don't stop the caravan without prior approval from the leader. But, most of all: keep on enjoying and spreading the seeds of wildflowering.

All of you that know me, know how much I love this Society and its members. See you all in the fall.

Bob Tuggle

## MOUNTAIN SOJOURN, SPRING 1996

by Jeannie W. Kraus

Perhaps like you, spring isn't complete for me without a ritual trip to the mountains. Like wild flowers emerging from a long winter's hibernation, we were ready for a spring outing after being cooped up this winter. The spring meeting location in Pisgah National Forest near Hot Springs was the perfect setting to see familiar and new wild flowers with others who share a similar passion.

After greetings and announcements at the Best Western in Asheville, the group divided in half to explore Big Laurel Creek and Paint Rock with Alvera Henley and Jean Claude Linossi. The group of about 60 people ranged from faithful long-time members to some new folks and students from NC State University with botany professors, Dr. Jim Hardin and Dr. Tom Wentworth.

I visited Paint Rock with Alvera Henley's group. The rock formation seemed to rise abruptly from the banks of the French Broad River. The sedimentary origin of the rocks in the area contain limestone, sandstone, and dolomite from an ancient French Broad River. As we were to see, many wild flowers thrive on soil with a circumneutral pH. Paint Rock was probably well known to the Indians as both a meeting place and a navigational landmark. A campfire at the base of the rock revealed huge smoke stains from many years of use. Unfortunately, today the rock is painted with modern graffiti.

Even though the slope was steep and rocky, most of the wild flowers were visible along a pleasant roadside walk. These plants stand out most in my memory. Flowering shrubs featured silver bells (*Halesia carolina*), aptly named for its white, pendent flowers and bladdernut (*Staphylea trifolia*), recognized by its trifoliolate leaves and inflated capsule. Mock orange (*Philadelphus inodorus*) with its four-petaled, white flowers, is actually related to hydrangea. Pawpaws (*Asimina triloba*) are always a favorite with their fleshy, purple flowers. A first for some people was the pirate bush (*Buckleya distichophylla*), a parasite on hemlock roots. Its rare occurrence is compounded by its requirement of direct sunlight, which seems mutually exclusive beneath hemlock trees. We looked for it on bluffs or openings in the canopy, but Dr. Hardin led us to it further up the road. A member of the sandalwood family, pirate bush is dioecious (separate male and female plants) and is named for its distichous leaves (meaning one plane).

I took delight in the array of wild flowers. Blue star (*Amsonia tabernamontana*) is one of our true blue flowers. Virginia waterleaf (*Hydrophyllum virginianum*) and purple phacelia (*Phacelia bipinnatifida*), in the waterleaf family, were abundant. A lovely colony of yellow trilliums (*Trillium luteum*) attracted quite a bit of attention as cameras flashed. On the rock outcrops, was Michaux's saxifrage (*Saxifraga michauxii*) with scattered grape and lip ferns (*Botrychium* and *Cheilanthes*). Some of our more common wildflowers included crested iris, (*Iris cristata*), rue anemone (*Anemonella thalictroides*), false Solomon's seal (*Smilacina racemosa*), toothwort (*Dentaria laciniata*), jack-in-the-pulpits (*Arisaema triphyllum*), golden ragwort (*Senecio aureus*), and fire pink (*Silene virginica*). Several members of the violet family were present - sweet white violet (*Viola blanda*) and long-spurred violet (*V. rostrata*), as well as green violet (*Hybanthus concolor*), with small, green, axillary flowers. Some coveted, edible morels even went to supper with a few folks!

After the delightful riverfront picnic at Murrey's Branch, the groups switched for the afternoon excursions. Big Laurel Creek trail was my group's destination. Flowering shrubs included dog hobble (*Leucothoe editorum*), hydrangea (*Hydrangea arborescens*), and hearts-a-bustin or strawberry bush (*Euonymus americanus*). Alvera told about the fleshy, maroon flowers of sweet shrub or sweet betsy (*Calycanthus floridus*) being used as a moth repellent and as a cologne hidden in young ladies garments. Buffalo nut (*Pyrularia pubera*), in the family with pirate bush, is also parasitic on deciduous tree roots. Alvera said that the oil from the nut was valued for dulcimer finishes.

Hidden in a Rhododendron thicket near a stream-side cabin were some fringed gaywings (*Polygala paucifolia*) and large-flowered trilliums (*Trillium grandiflorum*). Wildflowers along the trail included the wood anemone (*Anemone lancifolia*), golden ragwort (*Senecio aureus*), wild ginger (*Asarum canadense*), and its close relative (*Hexastylis minus or contracta*), and a nice specimen of yellow mandarin (*Disporum lanuginosum*). The trillium display included *Trillium cuneatum*, *T. luteum*, red and white forms of *T. erectum*, and nodding *T. cernuum*. Sweet white violets (*Viola blanda*) and long-spurred violets (*Viola rostrata*) lined the trail. It was said that the hay-scented fern (*Dennstaedtia punctilobula*) could be a 100-year-old clone. Growing near a spring was bishops cap (*Mitella diphylla*) with tiny fringed petals visible with a hand lens.

The meeting announcement stated that the rare alumroot (*Heuchera longiflora*) and Carolina saxifrage (*Saxifraga caroliniana*) occur in the area, although I'm not sure if anyone found them. Before turning back, we hiked

as far as the climbing fumatory (*Adlumia fungosa*), a relative of bleeding heart. The rest of the trail awaits another day.

The evening auction raised a nice amount of money for the Shinn Scholarship Fund. Bob Tuggle revealed yet another talent - that of auctioneer! Prices went higher when people said that Jacki O. had the plant in her garden, after the recent auction of her estate!

Alvera entertained us with her backyard pharmacy slide program. All folktale and wives tales probably have a basis in truth, though she doesn't give recipes since some can be dangerous if not used properly. Also, the "doctrine of signatures" is untrue, such as liver leaf (*Hepatica*) does not cure liver ailments. Don't try these remedies at home. My notes taken in the dark aren't necessarily reliable!

Chickweed grown aboard ships prevented scurvy; dandelion was brought from Europe as a source for vitamin C, edible greens, and a diuretic; dock, related to rhubarb, relieved intestinal difficulties; ox eye daisy soothed sore throats; and Queen Anne's lace supplied vitamin C, although some carrot family members are deadly, such as water hemlock.

Stinging nettle helped arthritis (remove the spines with boiling water); skunk cabbage relieved fever and swelling and was a natural deodorant; bloodroot was used in toothpaste (sanguisorbic acid binds with tartar); partridge berry, in the coffee family, reduced labor time; bee balm, in the mint family, produced a sedative tea; touch-me-not relieved the itch of poison ivy and chicken pox; and striped wintergreen tea was used to rid worms and the berry is tasty.

Dogwood made a quinine substitute; Rhododendron and Mt. laurel are toxic - don't use them as hot dog sticks; and winter green oil comes from birch trees. Cinnamon fern was used for a hair rinse; mosses provided an antiseptic and absorbent diaper stuffing; cattails provided an edible tuber, baby powder, cake flour, and life jacket stuffing.

On Sunday morning, we toured the Asheville Botanical Garden with Edward Caldwell, Director and Dr. Lowell, volunteer. Wild flowers are planted in natural habitats, and labels helped us review many plants seen on Saturday. Highlights were nice specimens of yellow lady's slippers, a variety of trilliums, and Virginia blue bells. It was a pleasant stroll beneath singing warblers before heading home.

The formula was right for a great weekend - good comraderie, clear sunny weather, and a great show of wildflowers. Many thanks to all organizers and leaders for a job well done, and all the knowledgeable members who assisted in identification! I was able to simply enjoy myself, which my family and I did very much!

## 1996 North Carolina Wildflower of the Year Eastern Silvery Aster, *Aster concolor*

Eastern silvery aster is an aster with a difference. This plant's many violet ray flowers with yellow disks are clustered on the upper third of its wand-like inflorescence. Unlike many native asters that assume a branched and rounded shape, eastern silvery aster assumes an upright, unbranched habit 2 to 3 feet tall. Its many small, medium-green leaves, often clothed in fine, silky hairs, all press against the reddish-tan stems and point upward. These finely silked leaves, back-lit by a low morning or evening sun, have a silvery glow that accounts for this attractive fall bloomer's common name.

At a glance, you may mistake this pretty native wildflower's spiky habit and relatively small (1-inch), numerous flowers for that of some of the beautiful blazing stars, *Liatis* spp. Look for it growing on the margins of woodlands and thickets, in old fields, and on roadsides throughout the eastern United States.

In the fall perennial garden, eastern silvery aster is very effective near the front of the bed in groups of 3 or more. It is quite striking alongside Maryland golden aster, *Chrysopsis mariana*, and performs best in situations where it receives full or nearly full sun.

In piedmont North Carolina, eastern silvery aster begins blooming around the first of October and continues its display through early November. However, the variable weather at this time of the year and the particular weather in your area will determine when silvery aster blooms.

Eastern silvery aster was selected as the North Carolina Wildflower of the year for 1996. If you are interested in obtaining seed of Eastern silvery aster, please send your request with a self-addressed, business-size, stamped envelope to:

1996 North Carolina Wildflower of the Year  
North Carolina Botanical Garden  
University of North Carolina-Chapel Hill  
CB# 3375, Totten Center  
Chapel Hill, NC 27599-3375  
Phone 919-962-0522



# IRIS - An Overview of The Southeastern Species

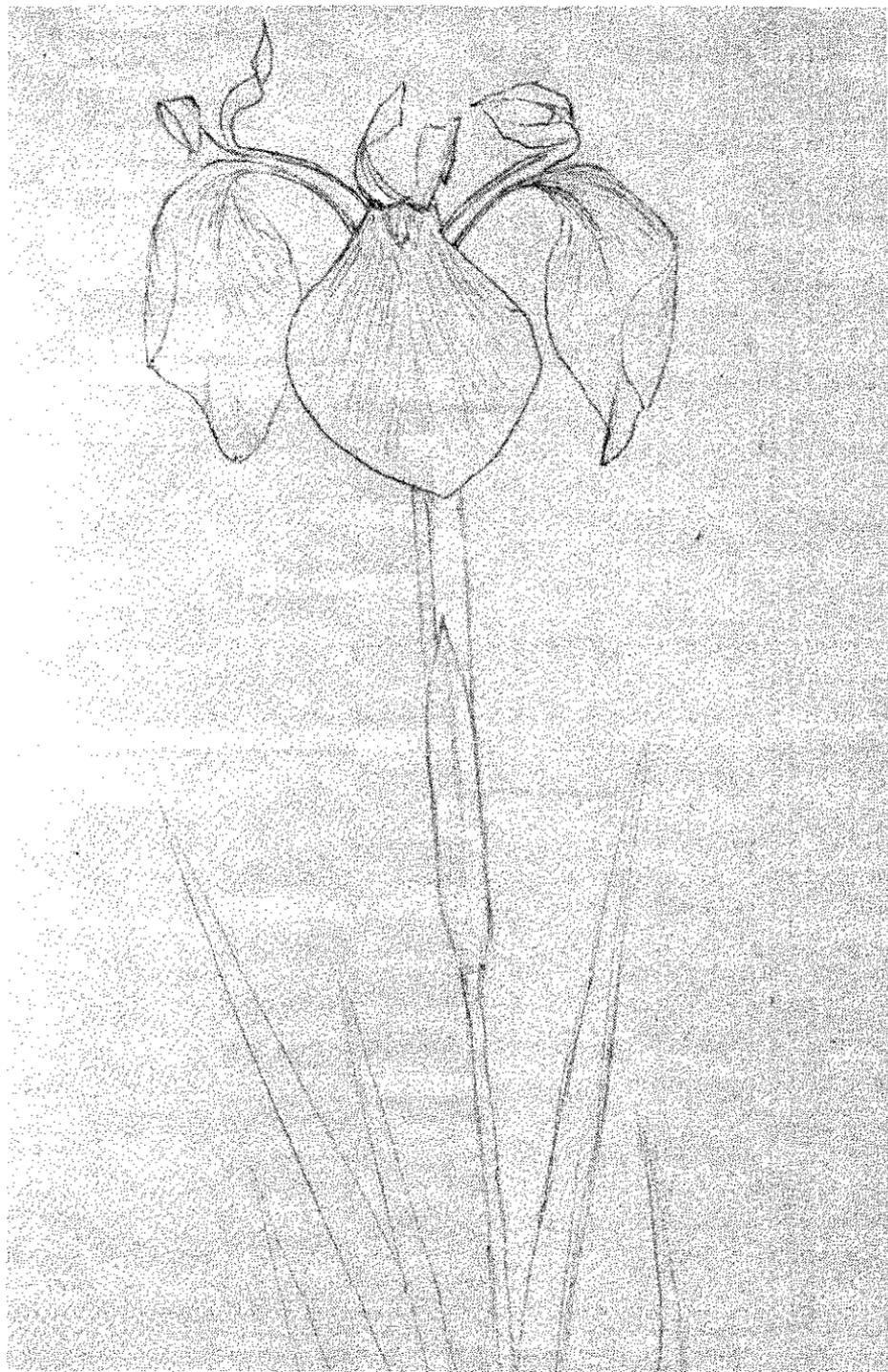
by Craig Moretz

One of the most showy groups of native wildflowers is undoubtedly the Irises. This genus is comprised of approximately 200 species worldwide with 36 species occurring in North America. Most iris species occur in the north temperate regions. The genus gets its name from Greek mythology where Iris, a messenger of the gods, was a woman personifying a rainbow which connects heaven to earth. A fitting name since Irises range in hues of almost every color in a rainbow. The common name, flags, has its origin in early history when an iris flower adorned the banners or "flags" of earlier cultures. The three part flowers may have had symbolic applications representing the Christian trinity.

Ranging from the coastal plain to the mountains, irises can be found in every geographical region in the southeastern United States. They come in all shapes and sizes. Perhaps the smallest species are also the most charming ones. *Iris cristata*, *Iris verna ssp. verna*, and *Iris verna ssp. smallii* fall into this category. *Iris cristata* more commonly known as dwarf crested iris delights us with its iridescent lavender purple flowers highlighted with a tufted bright orange crest from whence it gets its name. Flowering in early April it is one of the harbingers of spring in our deciduous forests. Dwarf crested iris rises only to four or five inches in height at time of bloom and is the only one of the three dwarf species that is completely deciduous during the winter season. *Iris verna ssp. verna* is a more coastal species although it does occur in some places in the piedmont. Flowers are typically pale lavender and characterized by their lack of cristae on the crests which are highlighted by a bright orange or yellow patch. *Iris verna ssp. smallii* is very similar to *Iris verna ssp. verna* although its range is more montane versus coastal, and its flowers are slightly larger. Likewise, *Iris verna ssp. smallii* is a tightly clumping plant forming small compact specimens versus the long running stolons of *Iris verna ssp. verna* which can sometimes create specimens several feet across. Both subspecies of *Iris verna* are evergreen with only the leaf tips dying back in winter. All three of our dwarf species come in a wide range of color variants even to pure white.

Sometimes towering to a height of five to six feet, *Iris hexagona* holds claim to the giant of our native southeastern irises. It occurs in wet ditches in coastal areas and flaunts large somewhat flattened flowers of purple shades intricately veined on the falls(sepals). It blooms in mid April along the Florida panhandle and later further northward.

*Iris tridentata* occurs throughout the coastal savannahs growing in association with other savannah species such as pitcher plants and grass pink



orchids. It flowers in early to mid June in coastal North Carolina. Sporting the most fragrant of our native iris blooms, *Iris tridentata* is an awesome native that should be more widely cultivated for it's lovely scented lavender flowers.

The mere mention of *Iris prismatica* brings to mind pure simplistic elegance. This delightful native blooms in late May and yields flowers of the most graceful form. They range from pale to dark lavender, and white forms have been reported. The flower sepals and petals are very slender and perched atop delicate wire-like stems rising among equally narrow grasslike foliage. *Iris prismatica* is not very common but is usually abundant where it does occur. It grows in low moist open areas and is very difficult to find when not in flower owing to its very narrow leaves. It grows to a height of approximately 18 inches.

*Iris virginica* is perhaps our most common large native iris. It grows to a height of 2-3 feet and makes it's home in wet ditches, marshes, and other open low wet areas throughout the southeast. It flowers in coastal North Carolina during the early days of June. Flowers vary in color from pale ghostly grey-blue to deep purple. Veining is also highly variable.

The famous Louisiana iris, *Iris fulva*, is unlike any of our other southeastern irises. It boasts flowers of wonderful coppery red and orange hues. It occurs naturally in the deep south and northward along the Mississippi River and is readily adaptable to our climate in North Carolina. *Iris fulva* is a must for any serious wildflower gardener. It grows to a height of 2 -2 1/2 feet and flowers in early summer.

One last iris must be mentioned before ending. *Iris pseudacorus*, better known for it's bright yellow flowers, is a very showy iris that has naturalized itself in some areas in the Southeast. Contrary to popular belief this iris is no more native to the Southeastern United States than are those brilliant scarlet poppies along NC roadways. *Iris pseudacorus* comes to us from Europe via someone's Granny. Thanks Granny, but lets not overlook our own wonderful native irises for our gardens. All of our native irises are easily cultivated and should be grown for their own unique charm.



# EXTINCTION - Is Forever

## The Loss of Biological Diversity

by John Posey

### What is the loss of Biological Diversity – Extinction?

Current political debate over the environment focuses much attention on the Endangered Species Act. Everyone should be familiar with the Spotted Owl controversy in the northwest where commercial logging interests were pitted against environmentalists concerning the old growth forests which provides habitat for species like the owl. That issue has emerged as probably one of the greatest environmental conflicts in North America this century, but what seems to get lost in the shuffle is not the threat to or disappearance of one single species but a greater danger that looms over the entire environment with the loss of the Earth's biological diversity.

We live at a critical time in which this biological diversity is being destroyed at a rapid rate. The diversity of species in our current geological time period is the greatest ever compared to any other period in natural history. At the same time, as a result of human activity, the rate of extinction of species is more rapid and extreme than at any other time in history. Once a species is lost – extinct – the unique genetic information it contains – the DNA structure that has evolved over millions of years – is also lost and is unlikely to ever be repeated again. Its contribution to further evolution is gone as well as its influence on the community of organisms it lived in. Moreover, its value to humans may never be realized. The Rose Periwinkle, a plant found in Madagascar's rainforests (of which less than 5% remain) cures some cases of leukemia.

So what does "extinct" mean? It helps, I think, to understand the terminology. *Extinct* in the sense that the Ivory-billed Woodpecker is *extinct* means that no member of that species is alive anywhere in the world. If the only specimens of a plant or animal are contained in captivity or other human-controlled situations, the species is considered *extinct in the wild*. This would apply, for example, to cultivated plant species that persist only under human horticulture but cannot exist in the wild. Both examples can be considered *globally extinct*. A species is considered to be *locally extinct* when it is no longer found in an area once inhabited but can still be found elsewhere in the wild. An example might be wolves, which at one time were found throughout the country but are now *locally extinct* in many regions. A species is considered *ecologically extinct* when its numbers are so reduced that its effects on other species in the ecological community

it lives in are negligible. It is important to consider this last definition: there may be individuals of a species still around but, for all intents and purposes, it may as well be totally extinct. Its unique DNA isn't exactly lost – yet – but the genetic variation that is so important to the viability of a species population is so reduced that its recovery may not be possible.

### **Human-caused extinction –**

As noted, the present age of geologic time has seen the greatest biological diversity on the planet. It reached its peak around 30,000 years ago but since that time humans have begun having a negative impact on this global diversity.

The earliest example of the effects of human activity on extinction rates is the human colonization of the Americas and Australia. Shortly after their arrival, 80% of the megafauna – large animals – went extinct. Obviously, hunting had an impact, but consider other human related factors that may have contributed to this and other examples around the world: there is ample prehistoric records on all continents of massive alterations or outright destruction of habitat that has led to the extinction of numerous species. For example, the deliberate burning of savannahs in Africa or the steady reduction of grasslands and forests in North America to create pasture and farmland has had its impact on numerous species whose communities have evolved to exist within those original habitats. It is interesting to note that human environmental impact and extinctions did not begin totally in modern industrial times.

How have humans affected extinction rates in recent times? Even though bird and mammal species represent less than 0.1% of global diversity, they have been well documented and studied and so can provide good examples of human-caused extinction rates. According to available evidence 83 mammal species and 113 bird species have gone extinct since the year 1600. This represents 2.1% of mammals and 1.3% of birds. Although the number sounds small, the trend of extinction is on the rise currently, with the majority of extinctions occurring in the last 150 years. As well, numerous additional species have probably gone extinct without having been recorded by scientists.

The extinction rate for birds and mammals was about one species every 10 years during the period 1600 to 1700 but rose to one species every year during the period 1850 to 1950. The trend then looks serious enough in this context but, when considering species whose numbers have been decimated by human activity to the point of being *ecologically extinct*, it could appear even more critical. Around 2% of the remaining bird species and 5% of the mammals are in imminent danger of extinction if threats to their existence are not halted.

But what are the *natural extinction* rates in the absence of human intervention? Looking at the fossil record, it is inferred that an individual species lasts about 1 to 10 million years before it either goes extinct or evolves into a new species. Using the estimate of 10 million species believed to inhabit the Earth today, it is predicted that between 1 and 10 of the world's species would be lost each year as a result of natural extinction. Applying these estimates of *background extinction* to birds and mammals, the current observed rate of extinction – 1% per century, or 0.01% per year, is 100 to 1000 times greater than would be predicted from background rates. That is, from 1850 to 1950 only one bird or mammal species would have gone extinct instead of the 100 that did. The extinction of 99 out of 100 of these species can then be directly attributed to human activity.

Most other species (99.9% of total) represent rough estimates at present time because many species in remote areas or tropical rain forests have yet to be recorded. However, it is useful to look at human-caused extinction in this way, too. Even a rough idea that illustrates the scale of concern can have an impact. Thus, if a conservative value of 1% of rain forest destroyed each year is used, it is estimated that 0.2% to 0.3% of all species, or 20,000 - 30,000 species (based on 10 million estimated) would be lost per year. In smaller units: 68 species per day and 3 per hour. Over the next 10 years, approximately 250,000 species could go extinct. Current estimates of rain forest extinction rates vary from 2% to 11% per decade. Regardless of the figure you choose, the bottom line is thousands of species doomed to extinction. These rates of extinction are without precedent since the great *mass extinction* of the Cretaceous period 65 million years ago.

In past geological periods, the extinction of species was balanced or even exceeded by the evolution of new species. The present rate of extinction far exceeds the known rate of evolution. Unique evolutionary events require large numbers of generations over time measured in tens of thousands, if not millions, of years. We are witnessing extinction rates that are proceeding in terms of human time – decades or a few years.

*(footnote: I remember a statement made by our current Chairman of the House Natural Resources Committee, the Honorable Don Young (R-AL). He said we didn't need the Endangered Species Act because we have enough pigeons and squirrels. Kind of frightening, isn't it?)*

## LOBELIA BOYKINII, A CAROLINA BAY ENDEMIC

*By Moni Bates*

On our first excursion to a Carolina bay my 5 year old son, Christopher, and I headed toward Brian, who was standing at the end of a long one-lane, sandy road that bisects the flat landscape of cotton fields. Brian, the leader for a North Carolina Nature Conservancy (NCNC) field trip, showed us aerial photographs of several bays while we waited for members to gather. We then entered a narrow forested edge and headed toward the wetland depression pond typically called a Carolina bay. On our way Brian pointed out pond cypress, long leaf pine, Magnolia bay, American holly, among other plants. Soon however, the forest was broken by a landscape as flat as the cotton fields we had left behind; however, clear, brown water covered the earth. Beautiful pond cypress trees with their buttressing bases were solidly anchored in the water. I scanned the landscape, the site of my future research project, and wondered how I would work in such an environment.

Donning dilapidated running shoes, aged from miles of marathon training, I hesitantly stepped into the tannic acid stained waters of the bay. Christopher peered into the darkened waters and adamantly refused to enter the unknown world lapping at his feet. I squatted and offered him my back, like a mother opossum carrying her young. With his body nestled on my hips and his young arms wrapped and twisted around my shoulders we waded into the thigh-deep water in search of a rare plant, Lobelia boykinii T. & G. (Boykin's lobelia).

Like most rare plants, little was known about the life cycle of L. boykinii. It is endemic to the Carolina bays of the southeastern United States and is known to grow in five bays in North Carolina. In some years many flowers are found; in other years they are not observed. We never found L. boykinii on this NCNC field trip, however it marked the beginning of my graduate research project on the species. Habitat destruction and altered hydrology of the Carolina bays possibly causes the rarity of this species. In the fall of 1993 I began a demographic and breeding system study of the species in three Carolina bays that differ in their hydrologic regime.

The goal of the demographic study is to determine whether the populations are increasing, decreasing, or stable through regular monitoring. In the early fall the vegetative plants grow as rosettes from rhizomes. Leaves of the rosettes are narrow and form a tight cluster from 1-2 cm in diameter. In the fall of 1993 I began marking rosettes in Antioch Church Bay. Through the summer of 1994 I marked rosettes in two other NCNC owned bays: Big Cypress and State-Line Prairie. Rosette growth occurs during

winter and early spring, even after they become submerged by rainwater which typically accumulates in the bay during this period of the year.

In the early spring most rosettes produced flowering stalks which bolted out of the water. Flowering began in late May. The number of flowers producing capsules increased through the end of June and then declined to the end of the flowering season, early July. Of all the rosettes marked during the first year of my study, 45% flowered and produced fruit, 37% bolted but their flowering stalks were cut by herbivores and thus failed to produce fruit. Possible herbivores include deer and grasshoppers. Another 9% bolted and were not cut, but still did not produce fruit. The remainder died. Seed dispersal occurred during July and August.

During the fall of 1994 I located and marked seedlings in Antioch Church Bay and State-Line Prairie, but none in Big Cypress. Through regular monitoring I will determine the fate of these seedlings. Germination experiments in the lab suggest that the two requirements for seed germination are moisture and light. These requirements may explain the lack of seedlings in Big Cypress, where little water is held in the bay and a thick layer of litter covers the soil. I plan to collect demographic data for two full years and then use the data to develop population dynamic models for all three populations. The models will allow me to determine the status of populations in each bay. Since the hydrology in each bay differs I will determine if there is a correlation between the status of the populations and the hydrology of the bay.

The purpose of the breeding system experiment is to determine whether the species is an obligate outcrosser and if seed set is limited by pollen and/or pollinator availability. During the summer of 1994 I bagged some individual flowers to test for self-pollination and artificially transferred pollen between plants to enhance pollination.

Preliminary data analysis shows a higher rate of capsule formation in the enhanced, pollination treatment than in the natural, pollination treatment. This suggests that either pollen or pollinators are possibly limiting population growth in Antioch Church Bay. It also appears the species is an obligate outcrosser. During the summer of 1995 I will finish the breeding system studies and continue monitoring individual plants.

Many people and organizations are contributing to this project: Dr. Elizabeth Lacey, my graduate advisor, many local community volunteers, and Deetra Thompson, an undergraduate assistant. Also, I appreciate the financial support provided by the North Carolina Wildflower Preservation Society and the NCNC during the summer of 1994. The Garden Clubs of America and Nature Conservancy are supporting my research through summer 1996. (*Moni Bates is a Graduate Student at the University of North Carolina at Greensboro.*)

# The Piedmont Environmental Center

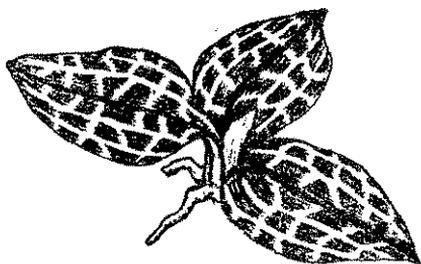
*by Charlotte Patterson*

If your driving through North Carolina's Piedmont Triad region near High Point, try the Piedmont Environmental Center for a relaxing hike. The center is located on 376 acres of protected land located between Wendover Avenue and High Point Road. The site offers a unique opportunity to observe the natural succession process, since it is situated on an old farm and occupies disturbed fields, pine woods and hardwood forests.

Ten miles of trails wind through the woods, over creek beds and seasonal runs, and along the lake shore. The trails are well graded and maintained and provide a relatively easy hike. Moderately steep grades are encountered occasionally for only brief durations. Benches are scattered along the trails for those who would like to bird watch or take in the natural surroundings. Approximately three miles of Greensboro's Bicentennial Greenway run through the center, providing an opportunity for biking.

The primary function of the center, which was built using a high percentage of recycled materials, is to provide environmental education for school children and adults. Classroom and field activities are designed to enhance the science curriculum in local schools. Family and adult workshops as well as field trips to regional habitats provide opportunities to learn about the environment and to learn skills, such as nature photography and wildflower cultivation.

The center propagates wildflowers and sells birdseed to supplement its income. Wildflower seedlings may be purchased in spring, usually around the second weekend in May, from 9:00 a.m. until 12:00 p.m. Wildflower forays are led by the staff, which includes a naturalist. Approximately 100 wildflowers have been identified on the center property as well as 14 types of ferns and 93 species of mushrooms and lichens. The center welcomes anyone who would like to provide voluntary assistance in identification of the local flora. The trails are open seven days a week from sunrise until sunset. For more information call: 910-883-8531.



### **Selected Plants Found at the PEC**

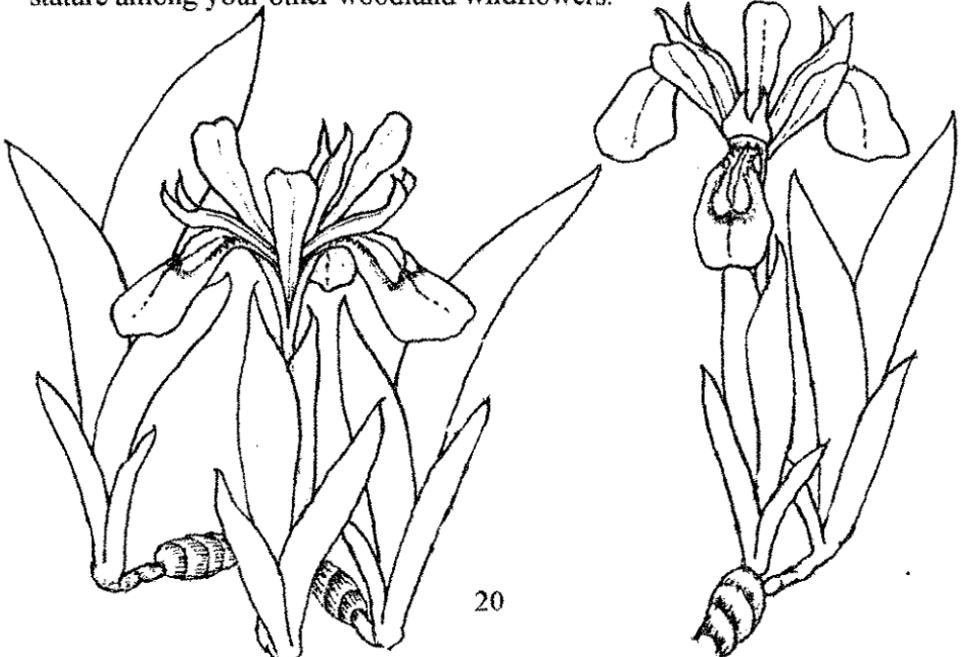
- Bloodroot (*Sanguinaria canadensis*)
- Broad Beech Fern (*Thelypteris noveboracensis*)
- Common Grapefern (*Botrychium dissectum*)
- Christmas Fern (*Polystichum acrostichoides*)
- Dwarf Crested Iris (*Iris cristata*)
- Maidenhair Fern (*Adiantum pedatum*)
- Marginal Shield Fern (*Dryopteris marginalis*)
- Marsh Fern (*Thelypteris palustris*)
- New York Fern (*Thelypteris noveboracensis*)
- Northern White Violet (*Viola pallens*)
- Painted Trillium (*Trillium undulatum*)
- Rattlesnake Plantain (*Goodyera pubescens*)
- Round Lobed Hepatica (*Hepatica americana*)
- Royal Fern (*Osmunda regalis*)
- Rue Anemone (*Anemonella thalictroides*)
- Sensitive Fern (*Onoclea sensibilis*)
- Southern Adders Tongue (*Ophioglossum vulgatum*)
- Southern Lady Fern (*Athyrium asplenioides*)
- Spring Beauty (*Claytonia virginica*)
- Trout Lily (*Erythronium americanum*)
- Wild Geranium (*Geranium maculatum*)
- Wild Hyacinth (*Camassia scilloides*)

Sources: Tom Shepherd, naturalist, PEC  
Brochures published by PEC

## A SPECIAL LITTLE IRIS FOR YOUR GARDEN

### *Iris cristata*

Perhaps one of the most charming of our native irises is *Iris cristata*. It is a true harbinger of spring boasting its wonderful bounty of flowers in its woodland haunts in early April. *Iris cristata* is a very carefree and easy to grow species in the native wildflower garden. It grows well in any fairly rich and loose garden soil. It likes some sun but benefits by light shade from the hot midday sun. It needs a well drained soil that retains moisture during droughts but never becomes water-logged. *Iris cristata* can be easily propagated via division of the rhizomatous rootstocks. This can be accomplished at almost any time of the year but it is perhaps best to divide right after flowering is finished and the first flush of growth has matured. There are several color variants other than its typical pale purple that deserve special note. An albino or white flowered form of *Iris cristata* occurs and is sometimes available from specialty nurseries. The white flowered clone that grows in my garden has somewhat smaller flowers than the typical form of *Iris cristata* although en masse they are quite spectacular just the same. Another color form that grows in my garden has a very pale blue flower with a darker blue mark just under the yellow marking on the falls. This particular plant may also be a tetraploid in that its flowers and leaves are larger than usual for the species. One other color form that deserves mention is one that I saw in the NC mountains many years ago that had very dark purple flowers. All forms of *Iris cristata* are equally elegant and desirable for cultivating in our gardens and should be given a place of stature among your other woodland wildflowers.



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## RECENT LOSSES

We regret to inform our membership that fellow member Steven Warner of Swansboro, NC passed away last summer. He will be sorely missed by all of us who knew, loved, and admired him..

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*... Sometimes I rambled to pine groves, standing like temples, or like fleets at sea, full-rigged, with wavy boughs, and rippling with light, so soft and green and shady that the Druids would have forsaken their oaks to worship in them; or to the cedar wood beyond Flint's Pond, where the trees, covered with hoary blue berries, spiring higher and higher, are fit to stand before Valhalla, and the creeping juniper covers the ground with wreaths full of fruit; or to swamps where the usnea lichen hangs in festoons from the white spruce trees, and toadstools, round tales of the swamp gods, cover the ground, and more beautiful fungi adorn the stumps, like butterflies or shells, vegetable winkles; where the swamp-pink and dogwood grow, the red alder berry glows like eyes of imps, the waxwork grooves and crushes the hardest woods in its folds, and the wild holly berries make the beholder forget his home with their beauty, and he is dazzled and tempted by nameless other wild forbidden fruits, too fair for mortal taste. ...*

Henry David Thoreau  
*from WALDEN*

# BOOK REVIEW

by *Wayne Irvin*

Adams, Kevin and Marty Casstevens. 1996 Wildflowers of the Southern Appalachians, How to Photograph and Identify Them. John F. Blair, Winston- Salem, 257pp. Available from John F. Blair, 1406 Plaza Drive, Winston-Salem, N.C., 27103. Also available from bookstores; \$26.95 paper ISBN 0-89587-143-2

Here is a single, inexpensive volume, ambitiously covering several subjects: identification of some of the native flora of the Southern Appalachians, valuable information on selection of photographic equipment for wildflower photography, thoughtful suggestions on low-impact intrusion into areas where native plants abound and hundreds of quality color images from the authors' files. The identification portion of the book comprises approximately 80%, with descriptive text and a photograph provided for each species. The care given to composition and execution of each photograph is consistent throughout the book. It is no accident that "busy", cluttered backgrounds are conspicuously missing. Artistic placement of subject matter in the frame suggest careful attention to that design element.

Twenty percent of the volume is devoted to recommendations on photographic equipment and photo technique, with choice observations by Adams regarding his philosophy of respect for the natural world.

This reviewer is firm in his belief that the most successful field guides use illustrations (line drawings or paintings) to delineate those characteristics separating species. I have not yet seen a text using photographs that succeeds in conveying precise visual information as well as, for example, the Roger Tory Peterson series from Houghton-Mifflin or the Golden Book series from Western Publishing Co. Having said that, I would suggest that "Wildflowers of the Southern Appalachians" does not fit the mold of a field guide, per se. I would characterize it as a photo essay with accompanying text.

With this book, Kevin Adams and Marty Casstevens have established new standards for authors who strive to publish volumes where significant information and quality photographs co-exist. There are plenty of good texts on botany, most replete with complex adjectives for precise description of leaf and flower parts. Amateur botanists are often driven to a glossary in order to comprehend the author's syntax. The photographs in most pictorial texts are quite run-of-the-mill. Adams and Casstevens provide the reader with aesthetically pleasing images and very readable information.

Careless management by Blair Publishing, unfortunately, has left its mark on this book. It is only available as a paperback. Much more serious is the poor color reproduction in many of the photographs. Two fine photographers have amassed a collection of excellent images only to have their field work reduced to mediocrity by a publisher who should know better. They (and the flowers) deserve better.



## NOTES

# NORTH CAROLINA WILD FLOWER PRESERVATION SOCIETY, INC.

## Aims & Objectives

The North Carolina Wild Flower Preservation Society was formed in 1951 by a group of individuals appreciative of native plants throughout the state and region. The purpose of the Society is to promote enjoyment and conservation of native plants and their habitats through education, protection, and propagation.

Spring and Fall meetings are held at "natural gardens" across the state. Members exchange seeds and propagated plants at these meetings. Other excursions are organized on a local basis throughout the year.

The Society Newsletter is issued twice a year with articles and illustrations by professional and amateur contributors.

The Society publishes the "N.C. Native Plant Propagation Handbook" (new edition available in Fall, 1996).

The Shinn Scholarship/Grant Fund sponsors research on native plants by undergraduate and graduate students. The fund is supported by member contributions and by gifts and memorials. Applications are made to the Scholarship/Grant Fund Committee for awards in May of each year.

The Society is a nonprofit organization under North Carolina and Internal Revenue Service regulations. Donations are tax deductible.

Correspondence concerning the Society and its programs should be addressed to: North Carolina Wild Flower Preservation Society, Inc., c/o North Carolina Botanical Garden, Totten Center 3375, UNC-CH, Chapel Hill, NC 27599-3375.

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### MEMBERSHIP APPLICATION

#### ANNUAL DUES:

Individual or Family: \$15.00  
Sustaining: \$25.00  
Lifetime Membership: \$180.00

Scholarship Fund Donation: \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

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*corrections to:*

*North Carolina Wild Flower  
Preservation Society, Inc.*

*Ms. Nancy C. Julian*

*1933 Gaston Street*

*Winston-Salem, NC 27103-3733*

*Please include your added four  
digit zip number for your address  
in your dues payment.*

*It will soon be mandatory.*

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*The above are permanent advisors and members of the board of directors.*

## NCWFPS NEWSLETTER

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