



# TENNESSEE NATIVE PLANT SOCIETY NEWSLETTER

Volume 14, Number 1

February 1991

## Plans for the Annual Meeting

March 15-17 at St. Mary's near Sewanee

A combination of discussions and field trips will occupy members and guests at this year's TNPS annual meeting March 15-17 at St. Mary's Center in Sewanee.

Special programs will be presented by David Duhl, noted wildlife photographer and co-author of *A Guide to Photography and the Smoky Mountains*, and Tom Hemmerly, professor of botany at Middle Tennessee State University and author of a recently published book on wildflowers of Middle Tennessee.

A representative of the Tennessee Nature Conservancy will address the immediate goals of the conservancy. Also Paul Somers will give an update on the Department of Conservation and will talk about the Tennessee 2001 Flora Project.

Two other TNPS members, Nita Heilman and Dennis Horn, are scheduled to give slide programs about recent trips—Nita to Newfoundland and Dennis to Oregon and Northern California.

The first activity of the weekend will be supper Friday March 15. After supper members will be invited to share photographs of wildflowers, field trips, and similar personal projects. A slide projector will be available with a stack loader to go on a carrousel projector for easy loading.

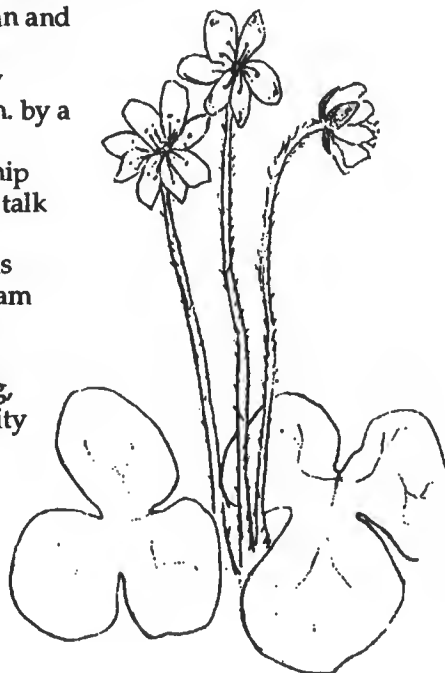
After breakfast Saturday morning, Paul Somers and Tom Hemmerly will give their programs, as will the Tennessee Nature Conservancy. The afternoon will be devoted to field trips (weather permitting), or programs by Nita Heilman and Dennis Horn.

A Board of Directors meeting Saturday afternoon will be followed at about 5 p.m. by a general TNPS membership meeting. Immediately after supper Life Membership Awards will be presented. David Duhl's talk will begin about 7:15 p.m.

Please keep in mind that the schedule is flexible to permit adjustments in a program somewhat dependent upon the weather.

The annual meeting will officially conclude with breakfast Sunday morning, though members may have an opportunity to socialize and even plan informal outings.

*See Directions to St. Mary's  
Center on Back Cover*



## How to Make Reservations

Are you interested in attending the TNPS Annual Meeting?

Please notify Kay Jones of Columbia as soon as possible so that reservations can be made at St. Mary's Retreat Center. You will also need to send her a \$20 deposit, refundable if reservations are cancelled by March 13.

The cost is \$75 a person for double occupancy and \$85 a person for single. These costs include linens, refreshments, and five meals, beginning with supper Friday, March 15, and ending with breakfast on Sunday. If you stay only one night, the charges will be adjusted.

Members not wishing to stay overnight may purchase meals separately.

Kay will need to know:

- 1) How many will be in your party;
- 2) Which nights you wish to have accommodations;
- 3) Double or single occupancy;
- 4) Which meals you plan to attend.

Write To: Kay Jones, Rt. 11, Box 736B, Columbia, TN 38401. Or call 615/388-8373.

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# TENNESSEE NATIVE PLANT SOCIETY NEWSLETTER

February 1991  
Volume 14, Number 1

This Newsletter is a publication of the Tennessee Native Plant Society and is published six times a year generally in February, April, June, August, October, and December.

The Tennessee Native Plant Society (TNPS) was founded in 1978. Its purposes are to assist in the exchange of information and encourage fellowship among Tennessee's botanists, both amateur and professional; to promote education of the public about Tennessee flora, and wild plants in general; to provide, through publication of a newsletter or journal, a formal means of documenting information on Tennessee flora and of informing the public about wild plants; and to promote the protection and enhancement of Tennessee's wild plant communities.

Dues are \$8 for the calendar year (\$5 for students and senior citizens, \$15 for institutions, and \$150 for life memberships). Membership privileges include a subscription to the TNPS Newsletter. Dues may be sent to the Tennessee Native Plant Society, Department of Botany, the University of Tennessee, Knoxville, TN 37996-1100.

## TNPS OFFICERS

Mary Martin Schaffner of Nashville,  
President  
Dennis Horn of Tullahoma,  
Vice-President  
Andrea Shea of Nashville,  
Corresponding Secretary  
Nita Heilman of Clarksville,  
Recording Secretary  
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Lois Lord of Jackson

Latham Davis, Editor

Letters to the editor or correspondence about the Newsletter should be addressed to: TNPS Newsletter, P.O. Box 856, Sewanee, TN 37375.

## The President's Message

FOR SALE: PINK LADY'S SLIPPERS  
40 CENTS A PIECE. MINIMUM ORDER 1000

We may be loving our wildflowers to death. While responsible nurseries sell only wildflowers they have propagated themselves, others exploit Tennessee's especially rich native treasure by digging plants from the wild and selling them across the country and even abroad.

Of urgent concern is *Cypripedium acaule* (pink lady's slipper). Not only has commercial propagation of the "queen of the wildflowers" been unsuccessful, but the pink lady slipper is virtually impossible to transplant because it requires a particular fungus in the soil to survive. Commercial exploitation seems to be its certain death knell. Concern has also been expressed for the number of *Trillium grandiflorum* (large flowered trillium) that are being dug and sold from the wild.

Tennessee's commissioner of conservation has recommended that both *Cypripedium acaule* and *Trillium grandiflorum* be added to the state's list of endangered species with a special footnote to explain they were being added due to evidence of large numbers being taken from the wild and lack of success with propagation and/or transplant. State law requires the commissioner of agriculture to concur in the listing before the protection of Tennessee's "rare plant" legislation can be extended to include these wildflowers. Reportedly, the commissioner of agriculture is investigating the appropriateness of including *Trillium grandiflorum* on the list, but no question has been raised about *Cypripedium acaule*.

Meanwhile, make sure your spring includes plans to see these wildflowers again—before it's too late.



## Legislative Alert

The Tennessee Flora 2001 project has been introduced as House Joint Resolution 62 by Rep. Lane Curlee. Write your legislators (senators and representatives) to express support for the publication of the three references on Tennessee flora contemplated by the project. Letters (with copy to Rep. Curlee) should be sent to legislators at the Legislative Plaza in Nashville (37219). (See related story on page 4.)

Mary Martin Schaffner

# Membership, Chapters, Surveys

## TNPS Board Covers Broad Agenda

Eleven members of the TNPS Board of Directors met February 2 in Nashville to discuss and take action on a variety of society interests.

After a discussion of membership and the advisability of a membership drive, President Mary Schaffner appointed B.F. Jones of Cookeville to chair the membership committee. She asked that membership, including the question of dues, be opened for discussion at the annual meeting March 15-17 in Sewanee.

The policy governing the formation of chapters was also brought into the discussion. It was noted that members in Crossville are interested in having a chapter and that there are other communities with potential for chapter development. A possible survey of the TNPS members was also discussed.

In other action Kay Jones of Columbia was selected to represent the society on the Tennessee Environmental Council.

The board nominated two persons for the 1990 and 1991 Life Membership Awards. The announcement of the recipients and the presentations will be made at the annual meeting in March.

Paul Somers of Nashville reported on the Tennessee 2001 Flora Project and efforts to get state funding of 2001.

Bus Jones of Chattanooga was appointed to chair a committee to study the publication of a popular book on Tennessee wildflowers.

Bus Jones, who also chairs the TNPS committee on poaching, reported on meetings with the Tennessee Nurserymen's Association that led to a supporting resolution. (See related story below.)

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## Nurserymen's Association Discourages Digging from Wild

The Tennessee Nurserymen's Association recently passed a resolution supporting and recommending the sale of only nursery propagated wild flowers and plants and discouraging the collection of plants from the wild.

The resolution was passed after TNPS member Bus Jones met with TNA officers. It was introduced by TNA member Don Shadow of Winchester, a native plant enthusiast and nurseryman.

The same resolution also says that collectors of native plants "should be informed and educated on propagating rather than collecting and that sellers should be encouraged to buy and encouraged to pay a premium for these propagated wild flowers and plants."

Finally, in its resolution "the Tennessee Nurserymen's Association encourages the University of Tennessee, Tennessee Technological University, and Tennessee State University to actively pursue research on the propagation of wild flowers and plants and disseminate this information as quickly as possible."

Bus Jones said that while this action by the TNA is important and valuable, the down side is that fewer than 200 of almost 800 nurseries in the area belong to the TNA. Many small operators have for long made their living by digging and will likely continue, he said.

Society members are asked to be alert to the sale of native plants and question dealers about their sources.

*Editor's Note: The TNPS Newsletter carries advertisements by nurseries that specialize in the propagation of native plants.*

## Weinstein Exhibit at Cheekwood

Noted photographer and TNPS member Miriam K. Weinstein will exhibit her photographs of wild orchids and carnivorous plants in Cheekwood's Botanic Hall from March 10 to May 19.

Most of the photographs were taken in the Middle Tennessee area, but the exhibit also includes pictures taken in Michigan, Nova Scotia, Alaska, Louisiana, Australia, France, and Israel.

Cheekwood is open from 9 a.m. to 5 p.m. Monday through Saturday and from noon to 5 p.m. Sundays. A reception will be held from 2 to 4 p.m. Sunday, March 10.

## Legislative Exhibit

Mary Schaffner, TNPS president, is planning an exhibit of Tennessee wildflower photography for display in the State Legislative Plaza. The exhibit is schedule to open next January to coincide with the opening of the legislative session.

Society members are asked to participate if possible. Miriam Weinstein is in charge of organizing the exhibit.



## Impact of State Reorganizations

As a member of TNPS, you should have a concern in some degree with the current plans on Capitol Hill in Nashville to break up the Departments of Conservation and Health and Environment.

For instance, there seem to be grave questions about putting state parks under the Department of Tourism, which places emphasis on recreation and less on resource management and protection. One also may wonder about the wisdom of placing the state's thirteen forests under the Department of Agriculture, which is more likely to treat the forests as a commodity and revenue producer than as areas for demonstrations, research, and education as is the case now.

These are only two of many complex questions raised by the new plans. You may want to learn more. The issue will undoubtedly be discussed at the TNPS Annual Meeting March 15-17.

## Logging Plans

State and federal agencies are on the verge of approving several chipmill operations along the Tennessee River near Nickajack Port in Marion County without the preparation of an overall environmental impact statement.

Estimates are that the demand created by just four proposed chipmills will result in clearcutting of 236 square miles a year in a 41-county area of Tennessee, Alabama, and Georgia. This translates into the logging of 51 percent of our forests over the next 20 years.

Concern among conservationists runs deep. Intensive logging a few decades ago changed the character of most of our eastern forests. These forests are still recovering from erosion and general soil degradation.

You may wish to inquire with Dr. Ruth H. Neff, a biologist with the State Planning Commission, or express concern to your elected representatives.

# Legislative Progress on Tennessee Flora 2001

The Tennessee Flora 2001 project is making headway in the State Legislature. A joint resolution in support of the project has been introduced by Rep. Lane Curlee of Tullahoma (Dennis Horn's area). The wording of the resolution seems worthy of quoting.

Whereas, the state of Tennessee has one of the most diverse botanical floras among the fifty United States, consisting of over 2,600 species; and

Whereas, no one has published a popular or technical guide to Tennessee's flora since Augustin Gattinger's effort of 1901 published by the Gospel Advocate Press in Nashville; and

Whereas, there is great value in having informative publications describing this flora for use by citizens of the state and visitors to it, including scientists, educators, students, naturalists, conservationists, tourists, gardeners, and nurserymen; and

Whereas, the few botanists knowledgeable about the state's flora are retired or near retirement in most cases, and these people are not being replaced in academic institutions because of insufficient funds and the shift to exploring new frontiers of science made possible by new technologies; and

Whereas, many states have produced popular and technical guides to their flora in the last decade or two, or are in the process of updating existing publications; and

Whereas, funds to investigate and describe state flora are difficult to obtain from the National Science Foundation and other federal programs, and

Whereas, it would be in the interest of Tennesseans entering the 21st century to have references on the state's present and past flora to guide their future stewardship and enjoyment of our rich botanical legacy; now, therefore,

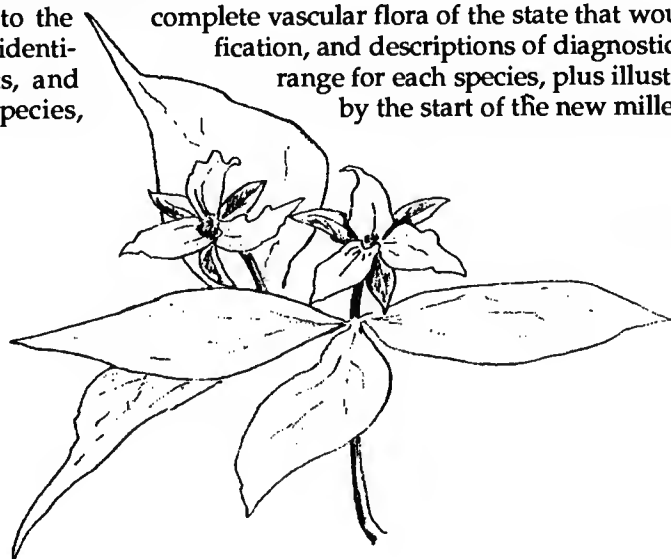
Be it resolved by the House of Representatives of the Ninety-Seventh General Assembly of the State of Tennessee, the Senate Concurring, that funds be appropriated by the General Assembly to adequately support publication of three references:

1) A popular photographically illustrated book on native plants of the state by the end of 1993;

2) A county atlas of known flora vascular plants based on a computerized inventory of state herbaria, published records, and new observations, to be compiled by the end of 1995;

3) A guide to the complete vascular flora of the state that would provide keys for identification, and descriptions of diagnostic features, habitats, and of selected species, in 2001.

complete vascular flora of the state that would provide keys for identification, and descriptions of diagnostic features, habitats, and of selected species, plus illustrations by the start of the new millennium



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*You can help by asking your legislator for support.*

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# Bloodroot

*Sanguinaria canadensis*

One of the harbingers of spring that members can expect to find, perhaps, during an outing at the Annual Meeting March 15-17 is a old familiar but still amazing friend of the woodland slope—bloodroot (*Sanguinaria canadensis*).

Its white petals always seem even whiter than they are against the bleak background of the winter—yes, still winter—landscape. But you will not have long to enjoy the contrast.

The solitary erect bud rises from the embrace of a silvery-green leaf cloak (some protection against late frost), sheds its sepals, and opens to give but a fleeting glimpse of its immaculate golden-centered blossom before it drops its petals and is gone. The leaf continues to rise on its smooth reddish petiole, unrolls, and at length overshadows the narrow, oblong seed pod.

Wound the plant in any part, and out flows an orange-red juice. This fluid stains whatever it touches, hence its value to the Indians as a war paint and dye. But who among us would wish to pick something so ephemeral.

The plants have thick rootstocks, corms, and bulbs, which store up food and are prepared to rush into blossom far earlier than fibrous-rooted species that must accumulate nourishment after the season has opened.

A newly opened flower is in the female stage and has its anthers tightly closed. In this stage, bloodroot produces no nectar, yet must depend upon short-tongued bees and flies, expecting a morsel non-the-less, to alight and cross-pollinate them. Late in the afternoon the petals rise to the perpendicular and close to protect the flower's precious contents for the morrow's visitors. In the blossom's staminate stage abundant nectar becomes available, and the bees return to do their work.

Where hardwood leaves fail to form thick carpets on the woodland floor, bloodroot can form vigorous colonies and in dense shade; its deeply-lobed leaves, unlike its flowers, will continue to labor most of the summer. The leaves are so unusual, there is no mistaking them for those of another species.



*Sanguinaria canadensis*, bloodroot, sometimes called Indian paint or red puccoon. A member of the poppy family (Papaveraceae), bloodroot is the only known member of its genus.

Flower: Pure white, rarely pinkish, and golden centered, 1.5 to 2 in. across, solitary, at the end of a smooth naked scape 6 to 12 in. tall. Calyx of 2 short-lived sepals; corolla of 8 to 12 oblong petals, early falling; stamens numerous; 1 short pistil composed of 2 carpels. Leaves: Rounded, deeply and palmately lobed, the 5 to 9 lobes often cleft.

(Sources: *Nature's Garden* by Neltje Blanchan; Doubleday, New York, 1901. *A Field Guide to Wildflowers* by Peterson and McKenny, Houghton Mifflin Company Boston, 1968. *Wildflower Folklore* by Laura Martin, The East Woods Press, Charlotte, NC, 1984.)

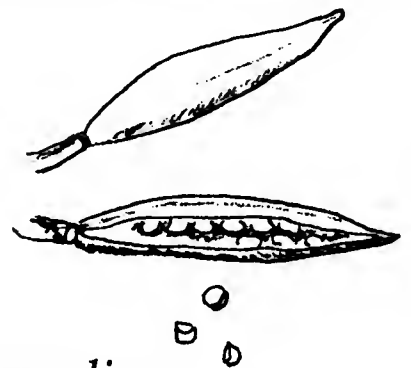
## Bays Mountain Wildflower Walks

Bays Mountain Park in Kingsport is sponsoring a series of wildflower walks, led by a staff naturalist, each Saturday in April.

Each walk will begin at 10 a.m. at the Nature Center parking lot and will last about two hours. Some of the flowers in bloom during April are trailing arbutus, wood anemone, rue anemone, pink azalea, nodding mandarin, bellwort, pennywort (*Obolaria virginica*), toothwort, and bloodroot.

The busiest day—Wildflower Day at Bays Mountain—will be May 4. Three wildflower walks are scheduled at 9:30 a.m., 12:30 p.m., and 3 p.m. Species that may be seen then include pink and yellow lady's slippers, showy orchid, and flame azalea. Other programs and activities relating to wildflowers are planned throughout the day. For additional information call 615/229-9447.

Joe Taft, a TNPS member, is senior naturalist at Bays Mountain.



## Spreading the Bloodroot

The narrow, elliptical seed capsules of the bloodroot which may be three inches long, contain 25 seeds or more. These seeds (2-3 mm long) bear a distinctive white fleshy crest, called an aril or elaiosome, which is eaten by ants that disperse the seeds.

Bloodroot is found from the Canadian provinces south through the Midwest and East to Florida—convincing testimony to the industriousness of the ant. . . and the ingenuity of *Sanguinaria canadensis*.

(Propagating information is taken from *Growing and Propagating Wild Flowers* by Harry R. Phillips; UNC Press, Chapel Hill.)



## A Brief Salute

A special thanks is extended to Karen Yarbrow of Knoxville, who two years ago volunteered (albeit reluctantly) to edit the TNPS Newsletter. She performed yeoman's work despite a lack of time, difficult communications, and those ever present production problems. Karen is now our treasurer, which means the money is in good hands.

## Your Letters, Ideas, and Articles Are Needed

We TNPS members are a far-flung group who, nevertheless, enjoy sharing our experiences and learning from others about native flora. In whatever ways this newsletter can bring us together to share, your newsletter staff (what there is of us) will endeavor to make it happen.

But your participation is important. Please undertake to send us ideas, clippings, and information about what you have seen or discovered, anything that might add to our knowledge and understanding of native plants and their protection. We will all be the richer.

## Thoughts on a Moss Covered Rock

Tennessee's heavy rainfall in recent months has been a bother to some species (*Homo sapiens* among them) but a boon to others.

On a recent impromptu hike along a north-facing ridge of the Cumberland Plateau, our small group came upon a rock covered in a luxurious blanket of mosses and lichens. On a closer look we counted at least five moss species, including a hairy-cap and a species in the genus sphagnum.

A point to make here is that while most of us devote our botanical attention to flowering plants, we perhaps should not ignore the ecological value and unusual characteristics of the "lower plants."

A small sisterhood of plodding lichens  
Wrought on the rock; the sun, the wind and rain,  
Helping them gladly, till each fissure filled  
And fit for planting, mosses came in haste  
And strewed small seeds (spores) among them, destined they  
To clothe the stern old rock with softest verdure  
With ferns and flowers, where yet the laboring bee  
May find pasture.

*Titus Andronicus, Act II, Sc. 3.*



## A Reminder about Dues

The following list is a reminder to TNPS members who have not yet paid their 1991 dues. No other reminder will be sent, but you may check your newsletter mailing label for the year you last paid.

If your name is on the list but you have recently paid your dues, please accept the thanks of all other TNPS members.

All those listed below are still counted, and the total TNPS membership numbers 219, including 26 life members and four institutions.

(This is a sneaky way to get your name in the newsletter. Next year we may publish the names of those who pay early.)

Bob Anderson	Mark L. Fuzek	Katherine Nordsieck
Laurie N. Armstrong	Dr. Frank B. Galyon	Rebecca Odom
Linda Arnold	Bob Gamble	Lillian Owen
Jean W. Bangham	Ann W. Goodpasture	Paul S. Pardue
Jane M. Barnes	Bonnie M. Greene	Roberta M. Patton
Vernon Bates	Bernard Gross	Sally Rhodes
Bays Mt. Park Assoc.	Mrs. Annie R. Hafele	Frances Riggs
Elsie Beckler	Cherrie H. Hall	Dr. and Mrs. Norman Rone
Dr. Frank B. Bowers	James Jeonard Hatmaker	Martha S. Salk
Willa M. Brooks	Jamie L. Herman	Walter F. Schatz
Betsy Bunting	Donald L. Hines	Myrtle M. Seno
Mary I. Burks	Otto R. Hirsch	Richard W. Simmers, Jr.
Jack and Dorothy Carman	Dr. Duane F. Houck	Sarah B.S. Simms
Georgeanne Chapman	Patsy Huffman	Dale Smith
Dr. and Mrs. John A. Churchill	Ijams Audubon Nature Center	Frances Spence
Carol T. Coffey DDS	William R. Jarrell, Jr.	Susan McMahon Stahl
William O. Cole	Dr. David S. Johnston	Mary (Cissy) Stanifer
Dr. Joseph L. Collins	James I. (Bus) Jones	Timothy E. Stevens
Mrs. Elizabeth C. Collins	Patsy Jones	Dixie Suttle
Martha H. Crites	Ed Landers	Allen and Susan Sweetser
Ann L. Crow	Mildred Lassiter	Joe H. Taft
Maureen Cunningham	Ruth Lassiter	Wanda L. Thomas
Robert L. and Evelyn E. Davis	Gail Leverett	Carolyn Townsend
Anna George Dobbins	John E. Lothers	Adam and Susanne Turtle
David Duhl	Virginia H. Lusk	Jo Varga
Delce Dyer	Norma Sue Luton	Mrs. Kenneth Von Nieda
George W. Eckerd	Linda K. Mann	La Vergne Waddell
Maurice E. Edwards	Lillian T. Manning	Miss Mary Walker
Rela and David Edwards	Bradley S. Maxwell	Dr. Russell C. Weigel
Mrs. K.R. Egger	Eileen J. McCay	Miriam K. Weinstein
Joe C. Feeman, Jr.	Richard P. Metcalf	Herb White
Mrs. William D. Felts	Sondra Methvin	Carl Wright
Mr. and Mrs. J.C. Fleischer	Agnes P. Miller	Dr. and Mrs. Harry C. Yeatman
Jenny Steves Floyd	Paul Moore	Ralph J. Zaenglein
Robert J. Fulcher	Curtis and Carol Neely	
Dennis L. Fulcher, Sr.	Eileen Neiler	

# The 1991 TNPS Field Trip Schedule

The following schedule of trips has been approved by the Board of Directors of the Tennessee Native Plant Society for the 1991 season. Each trip will be described in more detail in the appropriate issue of the Newsletter. Trips are led by persons familiar with native Tennessee plants and they provide an opportunity to observe, photograph, and learn about our native flora.

Since plant protection and conservation are primary objectives of our organization, digging or collecting on field trips is not permitted.

Dates and locations of the various trips are listed below along with phone numbers of trip leaders. Please call or write to the leader prior to each trip that you plan to attend. All phone numbers have area code 615 unless otherwise noted.

You may want to keep this schedule and plan to attend as many trips this year as possible.

Date	Event/Location	Leader/Coord.
Mar. 15-17	Annual Mtg/Sewanee	Kay Jones/Facilities Nita Heilman/Prgms
Apr. 13	Old Stone Fort Park/ Coffee County	Jack Carman 455-2585(h), 454-7134(w)
Apr. 28	Smokies Hike/ After Wildflower Pilgrimage	Tom Patrick 404/557-2514 Dennis Horn 455-5742(h), 454-7447(w)
May 25	Big South Fork Area/ Scott County	Ed & Shirley Nicholson 588-6976(h)
June 15	Harding University Glade/ Wilson County	Paul Somers 385-3482(h), 742-6550(w) Andrea Shea 724-6550(w)
July 27	Caney Fork River Bluffs/ DeKalb, Putnam Counties	Dennis Horn 455-5742(h), 454-7447(w)
August 24	Native Gardens Nursery/ Loudon County	Ed & Meredith Clebsch 856-3350
September 7	Roan Mtn. Naturalist Rally	Ed Schell/Coordinator 282-6125
<b>West Tennessee Weekend</b>		
September 21	Millstone Mountain/ Tipton County	Dudley Bowden
September 22	Carroll Cabin, 9 Acre Glade Decatur County	Paul Somers/Coord. 385-3482(h), 742-6550(w)

## TNPS Trip to Old Stone Fort Park

Saturday, April 13, 1991;  
1 p.m. Central Time

Meet at the state park Visitors Center. Leave I-24 at Manchester (Exit 110). Take State Highway 53 toward Manchester. Go approximately one mile or less to U.S. Hwy 41. Turn right and drive just over a half mile to the state park entrance on the left.

Our leader will be Jack Carman, 106 La Salle Lane, Tullahoma, TN 37388; 615/455-2585(h), 454-7134(w)

Old Stone Fort State Park is an archaeological park at the edge of the City of Manchester. It is situated at the junction of the Duck and Little Duck Rivers at a point where these rivers descend from the Highland Rim to the central basin of Middle Tennessee. Trails lead along the "Fort" rim to waterfalls on both rivers. Wildflowers abound on the wooded hillsides and near the junction of these two rivers.

We will hike one or more trails in the park to see a rich variety of spring flora. Among the wildflowers we are likely to see include Virginia bluebells, yellow trout lily, dwarf larkspur, spring beauty, Greek valerian, large flowered trillium, woodland phlox, and dutchman's breeches.

The state park will provide a variety of other outdoor activities that day as part of their Nature Day program. These will include bird walks, other wildflower hikes, and an edible plant walk followed by tasting of prepared wild plant foods. The Nature Day activities will begin about 9:30 a.m.

Trails average two to three miles in length and are easy to moderate in difficulty. Manchester has plenty of places to find lunch.

Come and enjoy a day in the park.

## Join the TNPS Pilgrimage Hike

Meet other society members April 28, after the Smokys Wildflower Pilgrimage, for a special TNPS hike led by Tom Patrick and Dennis Horn.

The hike will be to some park destination not normally featured during the Pilgrimage. The distance will be limited to two or three miles on moderate trails. Bring a lunch or snack.

Call Patrick or Horn (see field trip schedule) or write to Dennis at 222 Crestwood Dr., Tullahoma, TN 37388.

Meet at 9:30 a.m. (Eastern) at Sugarland Visitors Center parking lot (the end toward Elkmont).

The annual Great Smoky Mountains Spring Wildflower Pilgrimage will be held April 25-27. Registration will be at the Gatlinburg Convention Center.

## Directions to St. Mary's Center and the Annual Meeting March 15-17

For the second consecutive year, the TNPS Annual Meeting is being held at St. Mary's Retreat Center.

Those not attending last year are assured by Kay Jones, the coordinator, and others who were there that the facilities, meals, and surroundings are especially nice and appropriate for TNPS. The Center sits on a brow of the Cumberland Plateau about 1,000 feet above the valley.

Those driving should put their sights on Sewanee, about five miles from Monteagle and Interstate 24 between Nashville and Chattanooga. Some of you may want to travel Highway 64 or 41A, passing through Monteagle to the north or Winchester and Cowan to the south.

Less than a half-mile south of where 64/41A touches the "village" of Sewanee, turn onto Highway 56 toward Sherwood. From there drive just over a mile to the first major bend in the road to the left and turn right onto St. Mary's Road (marked). Drive to the end and into the parking lot. Assuming good weather the view into the valley is spectacular.

If fog or other obstacles cause you to become lost around Sewanee, call St. Mary's Center, and help will be forthcoming. The number is 598-5342. See you at St. Mary's.



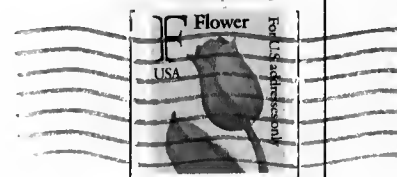
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## Tennessee Native Plant Society Newsletter

P.O. Box 856  
Sewanee, TN 37375

It's Membership Renewal Time







# TENNESSEE NATIVE PLANT SOCIETY NEWSLETTER

Volume 14, Number 2

April 1991

## STATE FUNDING SOUGHT FOR PARKS AND NATURAL AREAS

### *TNPS Involved in Legislative Effort*

A key bill currently before the State Legislature, known officially as the State and Local Parks and Recreation Partnership Act of 1991, could provide some much needed funding for the purchase of additional land for state and local parks.

The problem is increasing real estate development and pollution that threatens existing parks and natural area. Federal funding that once helped with state land acquisitions has decreased from \$7 million for Tennessee in 1979 to \$500,000.

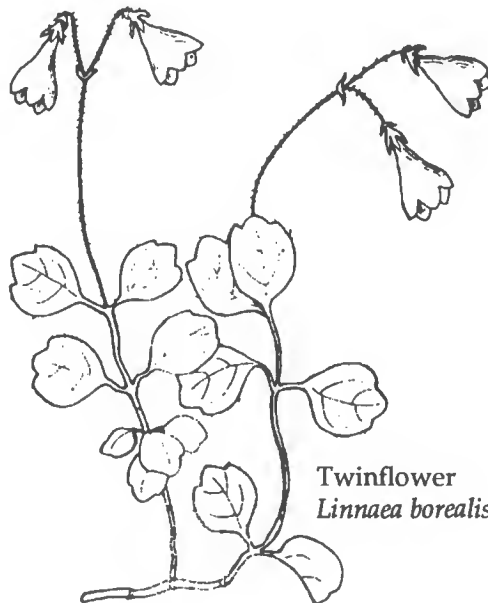
The bill is being supported by about 20 organizations, including the Environmental Action Fund, the Tennessee Recreation and Parks Association, the Tennessee Conservation League, the Tennessee Nature Conservancy, and TNPS.

With a new amendment, here's what the bill would do:

- Provide \$4 million a year in new revenue by adding four cents to the tax on real estate transfers;
- Allocate about 30 percent of that money to the Department of Conservation to purchase new land for state parks, forests, natural areas, and scenic river boundaries;
- Provide for the distribution of another 30 percent to counties and towns willing to match state grants with equal amounts for the purchase of local park lands and for trail and facilities development. The local match might be an in-kind donation of land from a third party;
- Allocate about 40 percent for abatement of agricultural runoff.
- Preserve the Wetlands Acquisition fund indefinitely beyond its scheduled demise in 1996.

Certainly much of the land that might be acquired for parks and natural areas supports important native plant species.

At last report, this legislation was moving out of committee, and votes by both House and Senate were expected by the end of the legislative session. An expression of your support made to your local representative could make a difference. Time is short.



Twinflower  
*Linnaea borealis*

## SOME FACTS ABOUT ENDANGERED PLANTS

Among the continental 48 states, Tennessee's flora is one of the most diverse, consisting of about 2,750 vascular plant taxa. Many possible reasons for Tennessee's rich flora come to mind, such as its relatively mild climate, its extremely varied rock formations and soil types, its 11 recognized physiographic regions stretching from the Blue Ridge Mountains to the Mississippi floodplain, and its geographic position relative to other centers of botanical diversity.

Because Tennessee represents only a portion of the range for most of its plant species, many of them are naturally rare here. The majority of Tennessee's 418 state-listed rare plants are more common in adjacent or nearby states more at the centers of their ranges. The exceptions to this, in most cases, are the species that are federally listed as "endangered" or "threatened" or under consideration for listing by the U.S. Fish and Wildlife Service.

At the present time, there are eight plant species in Tennessee that are federally listed as endangered

*Continued on Page 2*

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# TENNESSEE NATIVE PLANT SOCIETY NEWSLETTER

April 1991  
Volume 14, Number 2

This Newsletter is a publication of the Tennessee Native Plant Society and is published six times a year generally in February, April, June, August, October, and December.

The Tennessee Native Plant Society (TNPS) was founded in 1978. Its purposes are to assist in the exchange of information and encourage fellowship among Tennessee's botanists, both amateur and professional; to promote education of the public about Tennessee flora, and wild plants in general; to provide, through publication of a newsletter or journal, a formal means of documenting information on Tennessee flora and of informing the public about wild plants; and to promote the protection and enhancement of Tennessee's wild plant communities.

Dues are \$8 for the calendar year (\$5 for students and senior citizens, \$15 for institutions, and \$150 for life memberships). Membership privileges include a subscription to the TNPS Newsletter. Dues may be sent to the Tennessee Native Plant Society, Department of Botany, the University of Tennessee, Knoxville, TN 37996-1100.

## TNPS OFFICERS

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Latham Davis, Editor

Letters to the editor or correspondence about the Newsletter should be addressed to: TNPS Newsletter, P.O. Box 856, Sewanee, TN 37375.

# ENDANGERED SPECIES

*Continued*

and four others that are listed as threatened. Additionally, three others have been proposed in the Federal Register for endangered status and one for threatened status. Tennessee's rare plant list includes 56 other taxa that are candidates for federal listing, meaning they are still under evaluation or awaiting the writing of a formal listing proposal.

Tennessee's law, "The Rare Plant Protection and Conservation Act of 1985," established similar definitions, but focused strictly on each species status within Tennessee. In this law an endangered species means "any species or subspecies of plant whose continued existence as a viable component of the state's flora is determined by the commissioner to be in jeopardy, including but not limited to all species of plants determined to be an 'endangered species' pursuant to the Endangered Species Act."

The official regulations published pursuant to this act presented a list of 145 plant taxa considered to be endangered in Tennessee. These, therefore, are the ones that currently have protection from "taking" or "sale" without a license agreement with the state.

The Tennessee law also requires that the Department of Conservation maintain lists of "threatened" and "special concern" species, but it does nothing to protect these species from "taking" or "sale."

What criteria are used to distinguish the status of each species in Tennessee? The main criteria, in most cases, are based on the number of known or estimated populations, the size and viability of these populations, the judgments about the immediate and perceived threats to these populations.

The viability of the populations is often a difficult thing to assess, but sometimes there are obvious problems. Examples are disease, insect infestations, lack of pollinators, or lack of seed set. More subtle examples are problems associated with inbreeding which might not show up right away. Immediate and perceived threats are usually directly or indirectly related to man's management or mismanagement of the environment.

Destruction or alteration of natural habitat by man's activities is responsible for decline or loss of rare plant populations in the vast majority of cases. Commercial exploitation has been a significant factor for only a few of Tennessee's rare plants thus far.

Who decides which plants are worthy of listing as endangered in Tennessee? A Scientific Advisory Committee of 12 botanists knowledgeable about the state's flora was established in 1981 to help the Department of Conservation revise a list of rare plants published by the Tennessee Academy of Sciences in 1978. The committee helped with revisions again in 1983, 1985, and most recently in March of 1989.

Regulations require that a public hearing be held prior to any official additions or deletions to the lists of endangered or threatened species.

*This material about endangered and threatened species was compiled from an article by Paul Somers, a botanist in the Ecological Services Division of the Department of Conservation. Paul is also a TNPS member.*

## Endangered List

Eight Tennessee plant species are listed as endangered by the U.S. Fish and Wildlife Service. These are:

Tennessee coneflower ( <i>Echinacea tennesseensis</i> )	Cumberland sandwort ( <i>Arenaria cumberlandensis</i> )
Ruth's golden-aster ( <i>Pityopsis ruthii</i> )	Small whorled pogonia ( <i>Isotria medeoloides</i> )
Green pitcher plant ( <i>Sarracenia orepbila</i> )	Spreading avens ( <i>Geum radiatum</i> )
Large-flowered skullcap ( <i>Scutellaria montana</i> )	Roan Mountain bluet ( <i>Hedyotis purpurea</i> )

# HONORARY LIFE MEMBERSHIP AWARDS

*Elsie Quarterman, Hector Black Honored*

The Tennessee Native Plant Society awarded honorary life memberships to Hector Black of Cookeville and Elsie Quarterman of Nashville, during the TNPS Annual Meeting March 16 in Sewanee.

Dr. Quarterman, a plant ecologist and professor emerita of botany at Vanderbilt University, was recognized for "decades of personal contributions to ecological research, botanical teaching, and efforts to preserve biologically significant natural areas in Tennessee and the Southeast.

In academic circles she is recognized as a Fellow of the American Association for the Advancement of Science and the Tennessee Academy of Science. During her career she served as treasurer, vice president, and president of the Association of Southeastern Biologists, which in 1988 awarded her its highest honor, the ASB Meritorious Teaching Award.

After leaving Vanderbilt Dr. Quarterman directed her energies more to conservation. One of her accomplishments was to co-author a National Park Service report on "Potential Ecological/Geological Natural Landmarks on the Interior Low Plateaus."

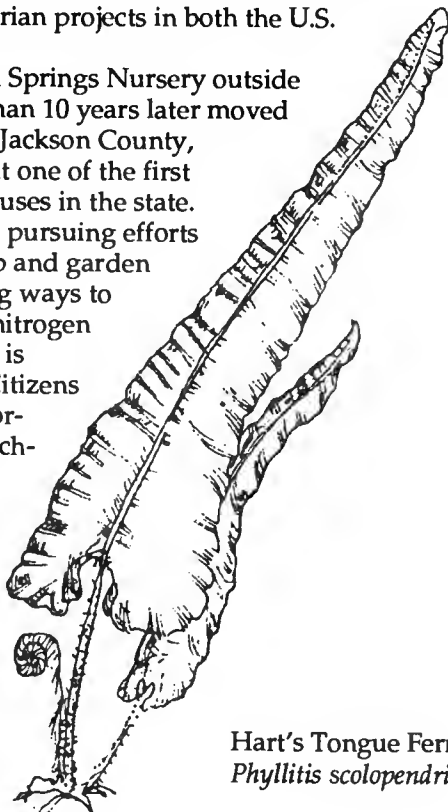
She served as president of the Tennessee Environmental Council and is a founding member and former science advisor to the Tennessee Chapter of the Nature Conservancy, which she continues to serve as vice president for the Middle Tennessee area. Recognizing her contributions, the Conservancy awarded her one of its distinguished Oak Leaf awards in 1981. She is also the recipient of a 1984 Sol Feinstone Environmental Award.

Mr. Black was recognized for his contributions to safe horticultural practices and conservation projects in the state and for his donation to the Tennessee Nature Conservancy of Wash Morgan Hollow.

His interest in botany and horticulture can be traced at least to his college years at Harvard, and this interest was often woven into his involvement in humanitarian projects in both the U.S. and South America.

He established Hidden Springs Nursery outside Atlanta in 1968 and less than 10 years later moved his family and nursery to Jackson County, Tennessee. In 1977 he built one of the first commercial solar greenhouses in the state.

Soon afterward he was pursuing efforts to find alternatives to crop and garden pesticides and was seeking ways to reduce the need for high nitrogen commercial fertilizers. He is currently the director of Citizens to Save Spring Creek, an organization acting as a watchdog over environmental concerns in areas around Jackson County.



Hart's Tongue Fern  
*Phyllitis scolopendrium*

## WILDFLOWER FAIR AT CHEEKWOOD

Cheekwood Botanical Gardens in Nashville will hold its annual Wildflower Fair April 19-21.

The fair includes a sale of nursery-grown wildflowers and native trees and shrubs, along with seeds and garden-related items. Guided tours of Cheekwood's Howe Garden of native plants will be given at 10 a.m. and 2 p.m. on Friday and Saturday and at 2 p.m. on Sunday of the fair weekend. Cheekwood has a gate fee of \$4 for adults, \$3 for seniors.

The exhibit of Miriam Weinstein's photography will still be open in the Cheekwood Botanic Hall.

More information may be obtained by calling Jenny Andrews, Cheekwood's wildflower horticulturist, at 615/353-2148.

## ROAN MT. TOURS

The Thirty-Third Annual Roan Mountain Wildflower Tours and Birdwalks will be held May 3-5 at Roan Mountain State Park.

Naturalists will lead morning and afternoon hikes both May 4 and 5, and an Owl Prowl will be held the evening of May 4 after a talk by Ranger Naturalist Marty Silvers.

More information is available from Roan Mountain State Park, Rt. 1, Box 236, Roan Mountain, TN 37687 (615/772-3303).

---

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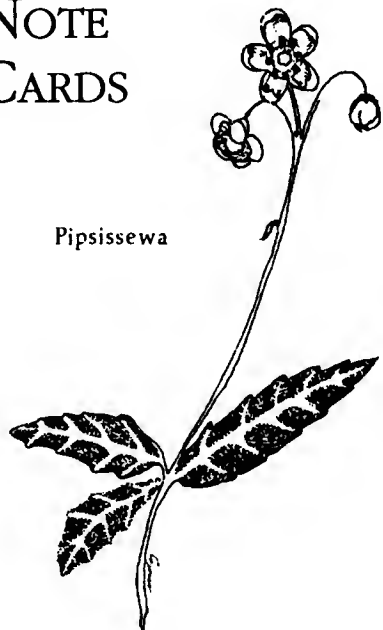
A TNPS Member Advertiser

## ILLUSTRATIONS

Several sketches of plants in this issue are taken from the TNPS native plant note cards. Except, the cards look even better.

## NATIVE PLANT NOTE CARDS

Pipsissewa



Order these attractive TNPS cards while they are still available.

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All proceeds will be used to  
support conservation of  
Tennessee's native wild flora.

## SOME MEDICAL NOTES ON BLOODROOT— *Sanguinaria canadensis*

In the last Newsletter of TNPS (Vol 14, No 1, page 5) was given a good description of the bloodroot by an anonymous author. Some notes about the chemistry and pharmacology of this pretty woodland poppy family (Papaveraceae) *Sanguinaria* contains alkaloides called isoquinolenes, among which morphine is the best known.

Bloodroot contains the isoquinoline, called by the trivial name sanguinarine. For those who might think about getting "a fix" from it, forget it. This plant has none of the pain-relieving, euphoria-producing high promised by the honorable poppy.

This plant when ingested will cause colic from inflammation of the stomach, pulmonary congestion compounded by respiratory depression, drooling with thirst, and staggering. Soon upon falling to the ground convulsions begin heralding the final period of stupor and coma.

Surprisingly there have been very few deaths from this plant, in as much as the root suggests use for curing conditions of the blood.

Perhaps it has been used by the Indians as a war paint, but painting the juice on one's skin is a bad idea because the chemical can be absorbed through skin.

A very dilute solution of the com-

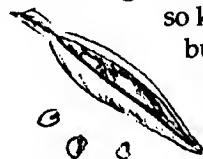
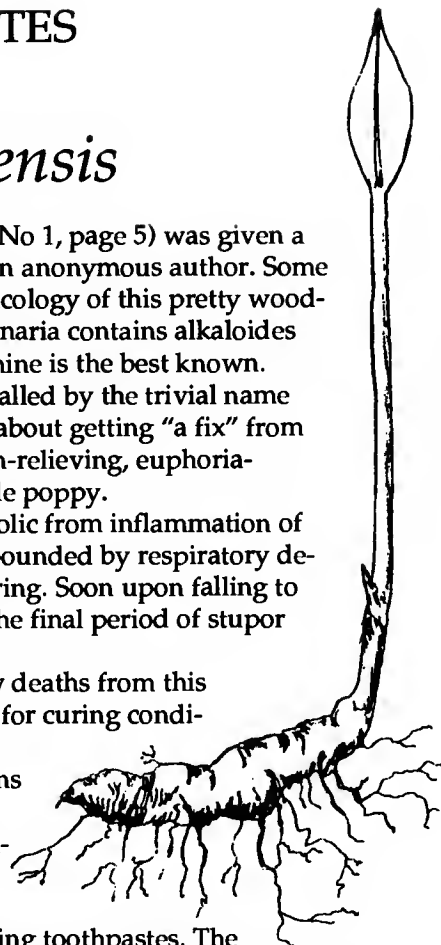
compound has been marketed in plaque-fighting toothpastes. The sanguinarine does fix to the protein cell walls of plaque bacteria and so kills them; it does work for this purpose. This is good news; but the bad news is that sanguinarine causes a rise in pressure within the eye, glaucoma. This poses a special problem for people who have any threat of this great silent thief of sight. Well, maybe this problem could be fixed by the extract of another plant—*Pilocarpus*.

Sanguinarine is most concentrated in the root rind, and its reason for being probably is to destroy the root rotting fungus *Phymatrichum*.

I found that as little as 0.16 gm of wet root kills fish within one hour. Well, plants with pretty spring flowers need to have defences.

—John A. Churchill, MD

*John Churchill is a past president of TNPS and makes his home in Johnson City, Tennessee*



## Organizing for Native Plant Rescue

Meredith Bradford Clebsch of Greenback, chairman of the Plant Rescue Committee, asks that members notify her if they are interested in plant rescue. She knows of one rescue opportunity in Unicoi County. The state has given her permission to rescue plants at the construction site of a new road.

Write her at Native Gardens, Box 494, Greenback, TN 37742 or call 615/856-3350.

# TNPS ANNUAL MEETING

## A Great Success

**M**ore than 45 members gathered for a memorable and stimulating TNPS Annual Meeting March 15-17 at St. Mary's Center near Sewanee.

The program was varied, and there were good opportunities for lively discussions. Despite the early date, field trip guides searched out interesting flora activity in nearby Shakerag Hollow.

Stephanie Meeks presented a program about the Tennessee Nature Conservancy, and Paul Somers described some programs of the State Conservation Department. Paul also gave an update of Tennessee Flora 2001.

Tom Hemmerly of Middle Tennessee State University's Botany Department described the work done on his recently published book, *Wildflowers of the Central South* (1990, Vanderbilt University Press). He said material for the book originally concentrated entirely on the cedar glades, but for commercial purposes the publisher asked that the scope of the book be expanded. Hemmerly said he is not aware of another book about flowers of the cedar glades.

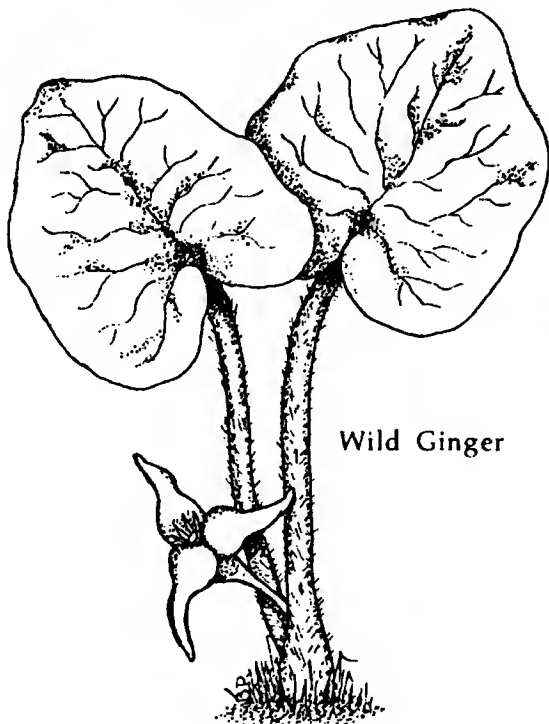
David Duhl presented an excellent program on techniques of photographing wildflowers, and he showed some stunning slides to illustrate his points.

Life Membership Awards were presented to Elsie Quarterman for 1990 and Hector Black for 1991. (See special story in this issue.)

The business part of the Annual Meeting dealt largely with whether and how to increase society membership. A few of the points made:

- There is a concern that large groups on field trips will damage sensitive habitats.
- When membership was larger than it is now, only a small percentage was interested in field trips, and one counter balance to any potential threat from large groups may be to limit trips to certain numbers of people.
- The society could increase its activity related to other projects, such as plant rescue, thus involving more members.
- The society should not discourage membership since one of its major purposes is to educate the public about native plants.
- The encouragement of TNPS chapters could stimulate an increase in membership.

- B.F. Jones, chairman of the membership committee, suggested that the method that has proved the best for enrolling new members is for a current member to invite a friend and fellow wildflower enthusiasts to join TNPS.



Wild Ginger



## POST PILGRIMAGE HIKE APRIL 28

TNPS members will gather for a special TNPS hike April 28 after the Smokey Mountains Wildflower Pilgrimage.

Everyone planning to make the hike will meet at 9:30 a.m. (Eastern) at Sugarland Visitors Center parking lot (the end toward Elkmont).

The hike—the destination to be determined at Sugarlands—will be led by Tom Patrick and Dennis Horn.

## NATIVE PLANTS ALONG HIGHWAYS

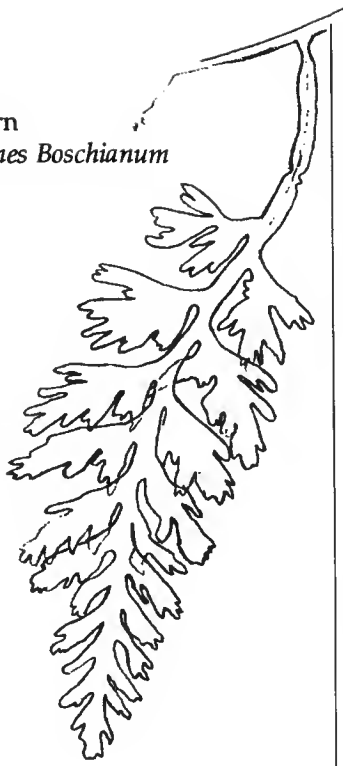
Ed Clebsch, UT botanist and TNPS member, has organized a conference on highway beautification using native plants scheduled for May 28-30 at the University of Tennessee Transportation Center.

The conference is intended to bring together highway planners, transportation engineers, botanists, ecologists, and other persons concerned with the management of highway rights-of-way.

The conference fee of \$95 (\$125 after May 1) will admit the participant to exhibits and several sessions covering such subjects as "The Economics of Using Native Plants" and "What Other States Are Doing with Roadside Landscaping."

Inquiries may be addressed to Native Plant Conference, UT Transportation Center, South Stadium Hall, Knoxville, TN 37996-0700.

Filmy Fern  
*Trichomanes boschianum*



## ADDRESSES FOR TNPS

We need to remind everyone that the official mailing address of the Tennessee Native Plant Society remains the same: TNPS, Department of Botany, University of Tennessee, Knoxville, TN 37996-1100. (This and the Newsletter address are always on the masthead.)

To speed correspondence, there may be times when you would wish to write directly to a TNPS officer. Here are some key addresses:

Mary Martin Schaffner (president),  
Court Square Bldg., Nashville, TN  
37201-1107.

Dennis Horn (vice president),  
222 Crestwood Dr., Tullahoma, TN  
37388.

Andrea Shea (corresponding  
secretary), 341 Huntington Ridge  
Dr., Nashville, TN 37211.

Nita Heilman (recording secretary),  
429 Rivermont Dr., Clarksville, TN  
37043.

Karen Yarbrow (treasurer), 1216  
Dukesbury Rd., Knoxville, TN 37919.

TNPS members may purchase a membership list with addresses (1990) by mailing a request to the TNPS address at UT. The cost of the list is \$1. An additional amount to cover postage would be helpful.

## RARITIES IN UNEXPECTED PLACES

Society members who were game for a last excursion on Sunday morning after the Annual Meeting drove a short distance from St. Mary's Retreat Center to Sewanee's Natural Bridge. Less than 100 feet north of the bridge under rock ledges, the group gathered to see a small colony of filmy fern, also sometimes called bristle fern (*Trichomanes boschianum*) as distinguished from the somewhat rarer filmy fern of the region, *Trichomanes petersii*.

This fern is particularly interesting because the leaves are but one cell thick and allow translucent light to pass through them. For this reason they must be kept continuously damp in the moisture of cliff walls or waterfall spray. Another interesting fact about *boschianum* is that this same species grows abundantly in tropical areas of Central America and the Caribbean but has managed to hang on in a handful of remnant colonies of Tennessee, north Alabama, and Kentucky.

One other interesting note about *boschianum*: Jesse M. Shaver's book on *Ferns of the Eastern Central States, with Special Reference to Tennessee* (1954), notes the early recorded discoveries of bristle fern near Sewanee by Dr. Augustin Gattinger in 1878 and a Vanderbilt University student, J. T. McGill, in 1881.

But Shaver adds a somber note: "Near the Natural Bridge where McGill collected this fern. . . it is now absent. Most of the trees of any size here have been cut, letting in the sunlight and drying out the soil. Considerable dirt has also collected next to the bluff where these ferns probably grew. Similar changes have occurred at the other stations examined. For example, the hillside below Morgan's Steep, where McGill found this fern in 1881, is now rather free from tall trees and this fern is now absent."

It is gratifying that the *boschianum* colonies at Natural Bridge and at least one other nearby site have managed to re-establish themselves.

A final lesson for us here may be that we should always be alert to the discoveries of flora, including rare flora, in unexpected places. This lesson was emphasized immediately after the outing to Natural Bridge when the group drove about five miles to the bluff home of Harry Yeatman to see a small cluster of *Trillium pusillum*, which had appeared unexpectedly this spring. Harry speculated that this dainty little trillium could have been planted in the droppings of a bird or perhaps even in the droppings of an animal that had eaten the bird. One of the mysteries of Nature.

## A Limited Bibliography of Fern References

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## NOTES ABOUT TNPS MEMBERS

# PROFESSOR SHARP HONORED BY JAPANESE

Jack Sharp, UT emeritus professor of botany and TNPS member, has been awarded the prestigious Order of the Rising Sun—Gold Rays with Neck Ribbon by the Japanese government.

The honor was bestowed during an invitation-only dinner last month at the University of Tennessee where Jack taught botany for 45 years.

In addition to having trained Japanese students who went on to become outstanding botanists in their own country, he has made several trips to Japan, once on a grant from the National Science Foundation. During the NSF year, he and his Japanese students discovered more than 50 species of unreported mosses.

Jack has also received a Guggenheim Fellowship, the Merit Award of the Botanical Society of America, and a Meritorious Teaching Award of the Association of Southeastern Biologists.

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In case you may have missed the news about Edward Schell, wildlife photographer and TNPS member, Ed won national acclaim as the 1990 recipient of the Ansel Adams Award for Conservation Photography, bestowed by the Sierra Club.

Ed is a resident of Johnson City, where he settled in the 1970s after retiring as a physicist with the Naval Research Laboratory in Washington, D.C.

An article in the *Tennessee Conservationist* (January/February, 1991) describes how Ed began to pursue an interest in photography before his retirement and how photography drew him into the study of botany.

"I took a few photographs of wildflowers and asked botanists what they were. Now I spend a great deal of time studying the plants on their own merits," he said.

Most of his photography is done with a 35mm Minolta X700 with a 35-70 mm zoom lens and a 70-210 mm zoom lens.

He has produced the award-winning book *Tennessee*, with text written by Wilma Dykeman. Published in 1979, the book is in its third printing. His photographs have also been published in a number of magazines and in the National Geographic Society books *Living Wilderness* and *Natural History*.

Ed did not show any of his photography at the TNPS Annual Meeting in March, preferring instead to enjoy the photography of other TNPS members like David Duhl, who gave a program on wildflower photography. Others to show slides of native plants were Hal DeSelm, Jack Carman, Dennis Horn, Nita Heilman, and Harry Yeatman. Maybe Ed will show next year.

---

Because he is regularly asked to speak to groups about native plants, B.F. Jones of Cookeville and Tennessee Tech University has prepared four different programs on native flora—spring wildflowers, fall wildflowers, glade flowers, and trillium. He is regularly in demand for Tennessee Tech's Elderhostel programs at Fall Creek Falls State Park.

---

Mark Fuzek, a former TNPS *Newsletter* editor, remains active in his favorite avocation. Earlier this year Mark gave a slide presentation on wildflowers to the Lions Club in Knoxville and to two garden clubs. He plans to do some research on tissue culture propagation of pink lady's slipper. He has done similar research on yellow trillium.



## BIG SOUTH FORK HIKE SUNDAY, MAY 26

Big South Fork National Recreation Area is the TNPS field trip destination Sunday, May 26, and offers members a hike through one of the most beautiful areas in Tennessee.

Ed and Shirley Nicholson of Knoxville will be the guides, and they ask that everyone meet at 10 a.m. (Eastern time) at the Leatherwood Ford Bridge parking area in Big South Fork. From there they plan to carpool to the trail head.

The hike is about 5.5 miles down to and along the river from Big Island to Station Camp. Ed and Shirley say the trail is generally easy but can be boggy in spots. They ask that everyone bring lunch and water.

They hope to see *Cypripedium kentuckiense* (giant yellow lady's slipper) and many other natives.

To reach Leatherwood Ford from Oneida, take State Highway 297 west approximately 12 miles to Leatherwood Ford Bridge. If traveling from Jamestown, go north on State 28 to State 154, then east to State 297 to the bridge, about 20 miles.

If you plan to join the hike, please notify the Nicholsons at 6806 Haverhill Drive, Knoxville, TN 37909 or call 615/588-6976.

## CEDAR GLADES TRIP SATURDAY, JUNE 15

Paul Somers will lead a TNPS field trip Saturday, June 15, into the cedar glades of Wilson and Rutherford counties. He asks that everyone meet at 10 a.m. in the Visitors' Center parking lot of Cedars of Lebanon State Park.

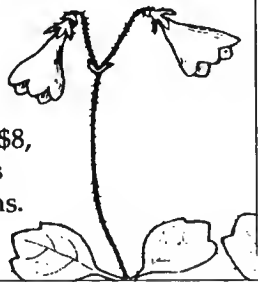
Paul reports we will visit the farm of John and Hester Lane in Wilson County. The farm possesses a number of interesting cedar glades on both sides of an ephemeral stream.

Many cedar glades extend onto a larger tract of land owned by Harding University of Searcy, Arkansas. We will also explore forests on the glade. It will be a prime time to see a number of cedar glade endemics in bloom.

Notify Paul Somers at 4402 Westlawn Dr., Nashville, TN 37209.

**D**on't miss upcoming issues of the Tennessee Native Plant Society Newsletter. You will find stories and articles about the fascinating traits of wildflowers, native plant propagation, field trips and programs of TNPS and other organizations, conservation efforts, wildflower photography, and more.

Renew your membership now... still only \$8, or \$5 for students and senior citizens.



## MEMBERSHIP—NEW OR RENEWAL

Given a certain lack of clarity about dues in the February issue, we would like to make another appeal for new and renewal memberships.

If you would like to join TNPS or renew your membership, please fill out the form below and mail it with your check. If you are uncertain about whether your dues are current for 1991, check the year on your address label.

The Tennessee Native Plant Society is an organization of people with an abiding interest in native flora. This newsletter is only one of its projects. A brief description of the society's purposes is printed in the masthead on page 2. All degrees of participation are welcome.

I am a new member  renewing member

Name \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

**Membership Categories:** Regular \$8, Student or Senior \$5,  
Institutional \$15, Life \$150.

**Mail to:** Tennessee Native Plant Society, Department of Botany,  
University of Tennessee, Knoxville, TN 37996-1100.

Vol. 14, No. 2; April, 1991

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# TENNESSEE NATIVE PLANT SOCIETY NEWSLETTER

Volume 14, Number 3

June 1991

## VANISHING GARDEN

### *The Plight of Tennessee's Cedar Glades*

The following article about the unique value of Tennessee's Cedar Glades and the forces that threaten them was published in *Tennessee Notes* (July, 1987) of the *Nature Conservancy* and is reprinted by permission of the *Nature Conservancy* and the author, Dr. Elsie Quarterman.

Middle Tennessee's most unique natural garden is rapidly vanishing—beneath the waters of lakes, the asphalt and buildings of industrial and housing developments, the litter of dumps, and the feet and wheels of Middle Tennesseans. This garden is known and valued by botanists across the nation, but it is disregarded by all but a handful of Tennesseans. It is a garden that provides a home for nineteen rare and endangered species of plants that grow nowhere else in the world, but which often occur in great profusion here—and in a most inhospitable climate. These are the natural rock gardens of Middle Tennessee called cedar glades.

Mankind, with dollar signs in his eyes, has judged the rocky cedar glades to be worthless because he cannot grow lush crops or giant forests upon them. They are labeled "unproductive." But the poor glade lands of rock and shallow soil support an important scientific resource. This is not the red cedar trees whose name they carry, nor the prickly pear cactus whose spines demand attention from the careless soul who treads upon them, but the rare flowering species of the open glades and the ecosystem they are part of—both now threatened with extinction.

The local abundance of these plants makes it hard for the uninitiated to consider them rare, but once they are gone from the few counties of Tennessee and Alabama where they now grow, they are gone from the earth forever. They are unique to cedar glades. Botanists call such plant species "endemic," meaning restricted to a specific and frequently limited geographic area.

What are these rare species like? Many are small annual herbs in the mustard family like the three species of *Leavenworthia*, or glade cress, whose honeysweet fragrance drifts from white or yellow flowers borne a few inches above the wet soil in late March and early April, and three species of their close relatives, the *Lesquerellas*, that are more common on flood plains than on glades proper.

Others are herbaceous perennials, the most showy of which bloom in spring and early summer. There is the pale blue glade phlox (*Phlox bifida*, ssp *stellaria*) that carpets rocky outcrops; *Psoralea subacaulis*, with silvery, palmate leaves and spikes of deep purple, lupine-shaped flowers, that spreads in dense patches over shallow soil, often close to clumps of vivid purple glade violets. There is the rather infrequent *Astragalus tennesseensis*, the Tennessee milk-vetch, with pale yellow flowers. It would grow best in the full sun of an open glade, but there isn't enough moisture there; more moisture is available

Continued on Page 3

## THE REWARDS OF SEED COLLECTING

Many of us who are fascinated with the structures and habits of wildflowers are equally intrigued with their seed and propagation. For us, even when the flowers fade, the season continues.

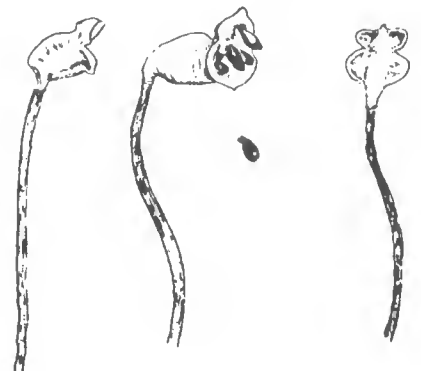
If you're so inclined, now is the time to follow-up some of your earlier hikes with a search for maturing seed. Seed collecting makes us even better acquainted with plants and is a good first step toward learning the complications of plant propagation.

The seed of the early woodland species will likely have disappeared by mid-summer, but you may still find some seeds of trillium, solomon's seal, and Mayapple. Certainly you will be able to collect the seed of coreopsis, helianthus, gaillardia, and the cone flowers. The seed of most of the showy summer bloomers germinate easily, and without trouble you can collect enough to sow in a sunny corner of the yard.

A few rules will get you over the first hurdles:

First, if seeds are moist when collected—being in a fleshy fruit or

Continued on Page 5



# TENNESSEE NATIVE PLANT SOCIETY NEWSLETTER

June 1991

Volume 14, Number 3

This Newsletter is a publication of the Tennessee Native Plant Society and is published six times a year, generally in February, April, June, August, October, and December.

The Tennessee Native Plant Society (TNPS) was founded in 1978. Its purposes are to assist in the exchange of information and encourage fellowship among Tennessee's botanists, both amateur and professional; to promote education of the public about Tennessee flora, and wild plants in general; to provide, through publication of a newsletter or journal, a formal means of documenting information on Tennessee flora and of informing the public about wild plants; and to promote the protection and enhancement of Tennessee's wild plant communities.

Dues are \$8 for the calendar year (\$5 for students and senior citizens, \$15 for institutions, and \$150 for life memberships). Membership privileges include a subscription to the TNPS Newsletter. Dues may be sent to the Tennessee Native Plant Society, Department of Botany, the University of Tennessee, Knoxville, TN 37996-1100.

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Letters to the editor or correspondence about the Newsletter should be addressed to: TNPS Newsletter, P.O. Box 856, Sewanee, TN 37375.

## From the President's Notebook

*On Issues of Membership and Mutual Concerns*

Several people have suggested that TNPS is at an organizational crossroads.

To this point TNPS has been primarily an association of field botanists, studying Tennessee wildflowers and other native plants in their natural habitats—bogs, forests, cedar glades, bluffs, fields, and even sinkholes. To us, the natural areas of Tennessee have been our "garden."

Inevitably, as habitats of native plants have become increasingly threatened, TNPS has expanded its focus beyond field botany to include efforts to protect the wildflowers we have come to love, particularly endangered species. As a member of the Environmental Action Fund, TNPS helped pass Tennessee's "Rare Plant Protection and Conservation Act" of 1985 as well as other legislation aimed at protecting Tennessee's environment. We have also been instrumental in having the protection of the "rare plant" legislation extended to the pink lady's slipper, a wildflower threatened not by diminishing habitat but by commercial exploitation.

As the need for greater protection of Tennessee's native plants has increased, so too has our frustration with the relative weakness of our voice in the political sphere. Too few of us have seen the beauty of wildflowers on the hills and in the forests to capture sufficiently the attention of lawmakers and allocators of the state's resources. As a consequence, full protection of Tennessee's native plants has been beyond our grasp.

And, so, the crossroads TNPS faces: should we make an all out effort to increase our membership?

- If so, would that not require broadening the organization's focus beyond field botany to include others, such as home gardeners, who also have an interest in wildflowers?

- Would an increased number of members interested in field botany have an adverse impact on those plants growing in especially fragile environments and, if so, how could that impact be avoided or minimized?

- Most fundamentally, do we have sufficient energy and commitment to nurture and maintain an expanded organization?

Recall the last time you marvelled at Tennessee's "vanishing garden" and ask whether we can possibly make any other choice.

—Mary Martin Schaffner



## VANISHING GARDEN—Continued

in the shade of cedar trees, but there isn't enough light there, so *Astragalus* persists at the edge of woods and of clumps of shrubs, compromising on both light and moisture to survive.

There is *Oxalis priceae*, a delicate yellow-flowered ground cover; two species of *Petalostemon*, the most abundant of which is the procumbent Gattinger's petalostemon or prairie clover, with masses of rose-purple flowers in early June; and, flowering at about the same time, populations of Gattinger's lobelia, with spikes of sky-blue flowers. There is *Talinum calcareum*, the glade fame-flower, first described in 1966 by a Vanderbilt graduate student, who named it for the calcareous rock in whose small pot-holes and rocks it finds a foothold. There is the pink Tennessee cone flower, recently rediscovered and known from only two small populations, that blooms throughout most of the early summer. Three other species, a delightfully fragrant small mint, *Satureja glabella*, a somewhat awkward but curiously-shaped tall herb, *Onosmodium molle*, and the small shrubby *Hypericum sphaerocarpum*, var. *targidum* complete the known list of endemics to Tennessee cedar glades.

The flower garden aspect is enhanced by species not restricted to glades, but occurring there abundantly and becoming rarer as each potential wild habitat is destroyed. Among these are two very abundant early spring species, the white-flowered sandwort, *Arenaria patula*, and the succulent crowfoot, *Sedum pulchellum*. These share dominance on shallow soil in early spring with the glade cress in the species *leavenworthia*. *Verbena canadensis*, *Delphinium virescens* and the golden groundsel, *Senecio obovatus* are also part of the spring scene, as well as the prickly pear cactus, *Opuntia humifusa*, that has beautiful yellow and orange flowers.

During the summer, the wild rose and blackberry lilies are conspicuous, as is the tall shrub *Hypericum frondosum*, when it is covered with dozens of large, fluffy yellow blossoms. Two species, found only occasionally now, the delicate spring-flowering *Anemone caroliniana* and a summer-flowering orchid, are near extinction in cedar glades, although, fortunately, they survive in other parts of the world.

It is not just the rare species that make glades important or the beauty of the glades in the spring—significant as these features are—but the balanced ecosystem of which all are a part. An ecosystem that through the ages developed checks and balances which have allowed it to endure the forces that formed the Central Basin and the disruptions of two centuries of human misuse deserves better than the extinction that threatens it. Why? What's so great about a barren, rocky glade that won't even grow trees well and that looks so desolate most of the year?

Let me try to explain. It is the only natural ecosystem remaining in the Central Basin that is intact enough to demonstrate how balanced systems can develop in spite of rigorous environments. It is the only place in Middle Tennessee, and one of the few in North America, where we know all the recently evolved plant species still occupy their place of origin—evolution, in fact is still in progress among some groups of endemic species. It is a place where adaptation of species to severe habitats can advantageously be studied.

Among the balancing factors in the glade ecosystem are organic chemicals produced by certain species that prevent germination of seed of others. We need to learn how these operate, how widespread their effects are in natural ecosystems, and how they affect the composition and structure of those ecosystems. Cedar glades are natural ecological laboratories, *par excellence*. What more can you ask?

*Rare species, seasonal beauty, and scientific significance.* What more is required to deserve continued existence? Can we not set aside some of the remaining glades as natural areas to learn fundamental biological principles from?

—Dr. Elsie Quarterman

Dr. Quarterman, emerita professor of botany at Vanderbilt University, is an honorary life member of TNPS.

## OMNIUM GATHERUM

TNPS members were in the spotlight of an Earth Day article in the April 21 issue of the Nashville *Tennessean*. The occasion was the fourteenth annual Wildflower Pilgrimage at Cedars of Lebanon State Park.

The story mentioned efforts to encourage the growth of the rare white Stones River mustard (*Lesquerella stonensis*) and, more broadly, concern with human encroachment into the cedar glades.

Named in the story were Ruth and Mack McMillin, Sharen Bracy, and Steve Somers.

• • •

Earlier this year the announcement was made that Interstate 840 by-pass east of Nashville was being repositioned to avoid cutting across Sunnybell Glade.

The thin, limestone soil of the glade may seem somewhat barren except for intermittent islands of cedar trees. But each spring the five-acre Sunnybell Glade is covered with thousands of the rare sunnybell (*Schrenolirion croceum*).

A key tract of Sunnybell Glade is owned by the Nature Conservancy.

• • •

Carol Ritchie's column, Assignment Earth, in the *Nashville Banner* (May 4) revealed a three-year program of the State Transportation Department to propagate wildflowers along sections of Tennessee highways.

Several TNPS members are involved at least in encouraging this effort. The August issue of the *TNPS Newsletter* will include articles by Andrea Shea and Ed Clebsch about wildflowers along highways.

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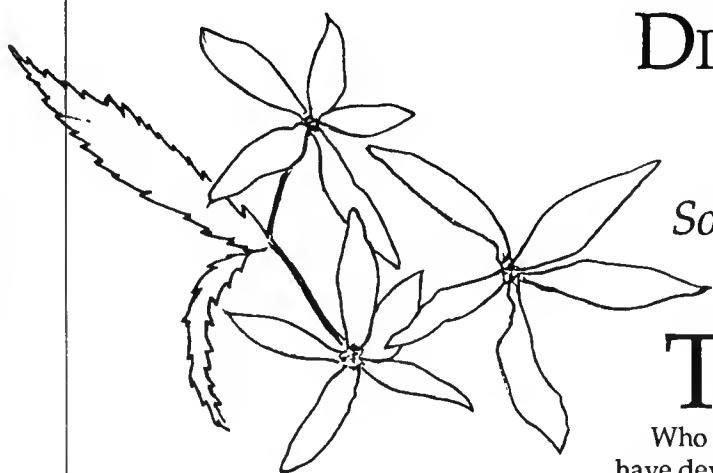
For a free bibliography of native plant uses, send a self-addressed envelope with first-class postage to National Wildflower Research Center, 2600 FM 973 North, Austin, TX 78725-4201.

• • •

TNPS member Bertha Chrietzberg is leading a wild orchid hike for Tennessee Trails Association at South Cumberland Recreation Area on August 10. For more information, call Bertha at 615/896-1146.

# DISCOVERING TENNESSEE FLORA

## *Some Notes on Augustin Gattinger*



## OBSERVATIONS IN WEST TENNESSEE

*Following are excerpts from the section about West Tennessee from Augustine Gattinger's book, The Flora of Tennessee and a Philosophy of Botany (1901).*

... From distance already, before crossing the Tennessee River, we are in sight of towering cypresses. While a thousand miles east from here they yet occupy the shore line of the Atlantic, here the shore line has receded to the Gulf and left the cypress behind. Their dimensions are truly enormous. The far-spreading roots emerge like sharp-backed ridges from the brownish lagoon, gradually creeping up and girding with buttresslike projections the many-angled column. A perpendicular shaft ascends to a height of from 120 to 150 feet and then spreads in a flat or hemispherical crown.

Such I have seen in 1864-70 near Johnsonville. Cypress swamps are along both big rivers and many other extensive swamps, and swampy lands are along every water course—the most, perhaps, along Big Sandy. It may, therefore, be expected that a great many more aquatic species and such as inhabit marshy lands exist in this region than in either East or Middle Tennessee. . . .

In the cypress swamps and boggy lowlands we find the planer tree, or water elm (*Planera aquatica*);

**T**he name Augustin Gattinger kept appearing in my reading. I saw it first in one botanical book and then another. I became, as the term goes, curiouser and curiouser.

Who was this man? A medical doctor, I discerned, but one who must have devoted all his spare time (or more) to the pursuit of plants. His name invariably appears in botanical footnotes about Tennessee, accompanied by dates like 1871 and 1886. A bit of research might reveal something, I thought. It revealed, as a matter of fact, an amazing character.

Dr. Gattinger was a German emigré who arrived in America with his wife in 1849. How they happened to come to America and how they happened to find their way to the secluded East Tennessee village of Cave Spring is a story in itself. Most interesting is that Gattinger brought with him a love of plants. As he strove to build a medical practice and as he rode horseback through the Tennessee hills and mountains to visit his patients, he would pause to investigate the flora, some familiar from his Bavarian botanical studies, some not.

When the Civil War started, Gattinger lost his position with the mining company at Duck Town. Soon afterward he became a surgeon for the Union Army but because of malaria was unable to continue. Then a bit of good fortune. He was named state librarian by Gov. Andrew Johnson. As librarian, a post he held for five years, Gattinger could travel by train at will and without charge anywhere in the state. He used the privilege to continue even more ambitious botanical expeditions. I should note that Gattinger also studied and collected minerals and on more than one occasion was commissioned by the state to publish his research.

By 1870 the Gattinger family settled into a community of scholars close to the University of Nashville. He practiced medicine, established a garden of native plants, and continued to enlarge his herbarium. He was so meticulous and thorough that he attracted the attention of other botanists, like the famous Asa Gray, with whom he corresponded at length.

The position he gained as an authority on Tennessee flora is well illustrated by events at the meeting in 1877 in Nashville of the American Association for the Advancement of Science. Gattinger was asked to prepare a catalogue of plants or flora of Tennessee. To overcome any reluctance he might have, he was assured the work would be enthusiastically received by "all American botanists."

Apparently unable to assume a task halfheartedly, Dr. Gattinger undertook the project with characteristic diligence and in 1883 published a "systematic enumeration" of 1,708 species. The book was printed at Dr. Gattinger's expense and distributed gratuitously among the schools of the state and interested patrons of botany. Other editions were to follow, including his final book, *The Flora of Tennessee and a Philosophy of Botany* (1901).

His *Flora of Tennessee* served to introduce Gattinger to many other botanists. In addition, his collections were in demand for exchange. As he explained, "They contained many novelties and were well prepared." One of his discoveries, made near Tullahoma, was sharp-leaved goldenrod (*Solidago arguta*).

In addition at least seven plants were named for him by other botanists, including *Lobelia Gattingeri* by Asa Gray and *Clematis Gattingeri* by J.K. Small.

At various times he served as state botanist and held several special appointments, usually to prepare books or exhibits of Tennessee plants.

—Continued on Next Page

His collection of dried plants, carefully mounted and identified, became the second largest herbarium in the South, containing more than 4,000 species. The collection was eventually given to the University of Tennessee in Knoxville.

In many respects Dr. Gattinger is the father of botanical science in Tennessee. He recognized how fortunate he was to live at a time when the state was still unexplored territory botanically. "I claim the honor of being the pioneer in this field," he wrote.

Such a short study as this cannot really do justice to Gattinger's broader vision. He was intrigued by plant physiology and geography. He had a strong interest in the economic value and use of plants, but he also felt passionately about ecology long before it became the fashion. And he was one of the first to work for the protection of the Smoky Mountains, an effort that eventually led to the creation of the national park.

On the frontispiece of his 1901 book, *The Flora of Tennessee*. . . , is a quotation from Horatio. The quotation applies nicely to the life of Augustin Gattinger:

*Not by Force, By Frequent Fall Alone  
A Drop in Time Carves Out a Stone.*

—Latham Davis

## SEED COLLECTING—

*Continued*

pod—they should be sown immediately or stored in moist (not wet) sphagnum moss in a plastic bag and refrigerated until you are ready to sow them. Seed that are dry can be sown immediately or kept in a plastic or paper bag in a dry place. If they are to be kept for several months, all seed should be stored in the refrigerator.

Seed may mature at different times on the same plant, necessitating a selective approach. These same flowers likely will not hold their seed for very long. We must be alert.

Some plants have unique methods of scattering their seeds as soon as they mature. For example, wild geranium (*Geranium maculatum*) slings its seed several feet from the plant with tiny catapults that look as if they were designed by Leonardo da Vinci. The seed heads of Indian pink (*Spigelia marilandica*) virtually explode, scattering tiny seeds in all directions and usually out of the reach of seed collectors.

There are tricks to compensate. With Indian pink, for instance, try tying pieces of panty hose around the flower heads soon after the petals drop. When the pods explode, you have mature seed in a handy little bag.

Although collecting seed from some plants is easy, germination may offer special problems. Trillium and lady's slippers are just two genera that require study and special conditions for propagation.

For most of us, the more plentiful species offer challenges and rewards just as satisfying. And with many species—Maryland golden aster, compass plant, iron weed, and many more—the season hasn't even begun. Remember to leave enough seed for the next generation.

For extra reading on propagation try: *Growing and Propagating Wild Flowers* by Harry R. Phillips; The University of North Carolina Press, Chapel Hill, 1985.

*Growing Wildflowers* by Marie Sperka; Charles Scribner's Sons, New York, 1973.

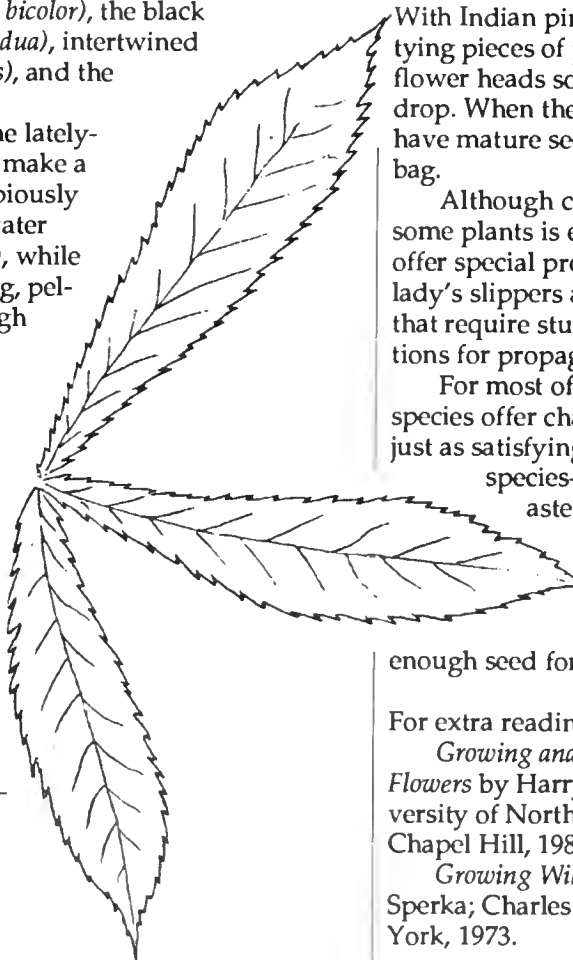
## OBSERVATIONS —Continued

the cypress (*Taxodium distichum*), the stateliest of our timber trees; the swamp locust (*Gleditschia monosperma*); the tupelo gums (*Nyssa sylvatica* and *Nyssa aquatica*); the mountain sweet pepper bush (*Clethra acuminata*), so frequently in the mountains of East Tennessee, but rare in Middle and West Tennessee; the swamp white oak (*Quercus bicolor*), the black alder (*Ilex verticillata*), the swamp holly (*Ilex decidua*), intertwined with the climbing bittersweet (*Celastrus scandens*), and the supple-jack (*Berchemia volubilis*). . . .

One of the showiest shrubs of this region, the lately-discovered *Hypericum lobocarpum*, which would make a splendid adornment of every garden, grows copiously around Hollow Rock. In the swamps float the water shields (*Brasenia peltata* and *Cabomba Caroliniana*), while the water chinquapin (*Nelumbo lutea*) rears its big, peltate foliage and large sulphur-yellow flowers high above the brownish waters of the lagoon.

Of other frequent aquatics I may only mention *Limnanthemum lacunosum*, *Ranunculus multifidus*, *Utricularia biflora*. Species of *Lemna*, *Wolffia*, and the neat *Azolla* cast a green veil over the quiet pools. The Indian rye (*Zizania aquatica*), a tall grass, which the Indians used to harvest, using the grains for meal, is here in its proper sphere, and its tall heads look down upon patches of sword lilies, *Iris cupera*, and *Iris hexagona*; and all the swampy flats are filled with *Scirpus debilis*, *Carices*, and *Rhynchosporas*. . . .

Editor's Note: *The Latin names used by Dr. Gattinger have, in some cases, been changed since the 1901 publication of this material. We chose not to alter Gattinger's usage, but Dr. Harry Yeatman was able to pinpoint the changes in three manuals, including Gray's New Manual of Botany.*



## THE TREASURES OF OLD STONE FORT

Several TNPS members (including Allen and Susan Sweetser of Powell, Bill and Cherrie Hall, Mary Schaffner, and Miriam Weinstein of Nashville, Ruth Ann Henry of McMinnville) and several local park visitors braved intermittent showers to hike the Chumbley Woods park trail.

Spring flora in bloom included wild comfrey, two trillium (*T. grandiflorum* and *T. cuneatum*), Solomon's seal, yellow mandarin, blue phlox, purple phacelia, Greek valerian, sweet shrub, flowering dogwood, Virginia bluebells, bellwort, crested dwarf iris, stonecrop, several violets (*V. papilionacea*, *V. triloba*, *V. stricta*, *V. pennsylvanica*), Jack-in-the-pulpit, yellow stargrass, star chickweed, rue anemone, toothwort (*D. diphylla*), pennywort, squawroot, wild geranium, violet wood sorrel, bluets, spring beauty, wild ginger, white baneberry, foamflower, wild chervil, early saxifrage, ragwort, blue cohosh, and garlic mustard.

Most out-of-towners also were able to hike the park's more accessible (and scenic) trails along the Little Duck and Duck rivers. Additional flora in bloom included robin's plantain, wood vetch, spring cress, wood betony, shooting star, wood anemone, virginia spiderwort, fire pink, green dragon, wild columbine, false Solomon's seal, dwarf larkspur, one-flowered cancer root, and blue phlox (white color form).

—Jack Carman



## THE ELUSIVE KENTUCKIENSIS, AND THOSE SOGGY TRAILS

Sunday, May 26, eleven TNPS members participated in the trip in the Big South Fork National Recreation Area ostensibly to see the giant Southern lady's slipper, *Cypripedium kentuckiense*. Unfortunately, they did not see it for a number of reasons, but primarily because it was too late. Everything has bloomed two or three weeks earlier than usual this year.

On Thursday, May 16, Ed and I scouted this trip and realized we should have changed our previous plans. We had seen the plants in several locations four or five years ago along the river trail. We had hoped to park cars or a shuttle car at the Station Camp Parking Area near the river. That way we could hike down the Big Island trail into the river gorge and upstream to Station Camp, then drive up and out. However, that Thursday the Station Camp Road was essentially impassable beyond the Big Island trail. We met the operator of a bull-dozer who said that the road would probably not be open 10 days later, especially with all the rain we were having.

So we parked our car beside the road and hiked in on the trail to Big Island. Much of our walk was on the horse and pedestrian trail, and after stopping through the horses' quagmires and a thunderstorm, we found two populations of the lady's slippers, a few flowers in full bloom, others well past. We did not go on to a third population which we remembered but started back on the steep climb out of the gorge by the same route. We got caught and thoroughly soaked in another storm.

The following week we called a ranger who assured us the road would not be open, even for four-wheel-drive vehicles. But he told us of two other populations, both within a mile of Leatherwood Ford, although he was fairly sure they would no longer be blooming.

So the TNPS group voted to try the two easier hikes. But we never found lady-slippers. We even went back a second time, thinking we should surely spot the foliage which had been there three days earlier. On the basis of that, we could say the trip was a failure, but oh! we saw so many other things.

A few of the species seen were spiderwort (*Tradescantia subaspera*), Indian pink (*Spigelia marilandica*), goatsbeard (*Aruncus dioicus*), hairy skullcap (*Scutellaria elliptica*), three viburnums (*acerifolium*, *dentatum*, and *alnifolium*), green dragon (*Arisaema dracontium*), three kinds of ginger (including *Asarum canadense* and *Hexastylis arifolia*), and whorled loosestrife (*Lysimachia quadrifolia*).

Some not in bloom but often plentiful were Allegheny spurge, wild yam, bearsfoot, yellowroot, pale Indian plantain, blue cohosh, and yellow mandarin.

We sampled sweet cicely seeds and wild licorice (*Galium circaezans*). We saw many varieties of ferns but did not stop to identify most of them. They included New York, wood, and lady ferns, but also maidenhair, climbing fern, and a beautiful specimen of purple cliff-brake.

So the trip was not a failure, and we should recommend another one next year, though perhaps a week or so earlier, although we cannot forecast the weather.

—Ed and Shirley Nicholson

## TNPS NATIVE PLANT NOTE CARDS

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## URBAN WILDFLOWER ARTICLE

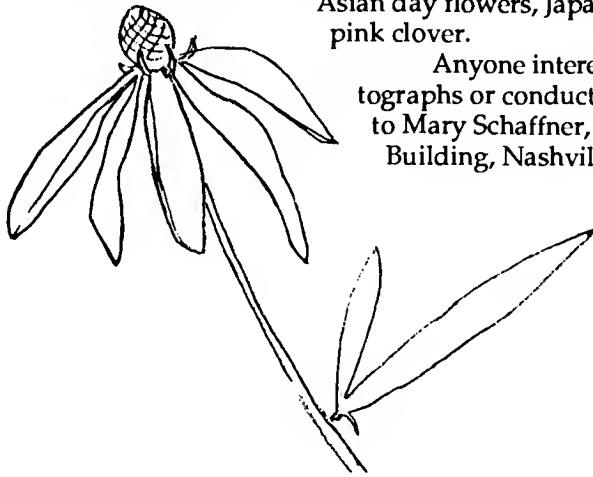
The Nashville *Tennessean* has asked the help of TNPS in producing a full page of material about urban wildflowers for its weekly school section. In turn Mary Schaffner, TNPS president, is asking for your help.

Mary says the idea is to focus the page on flowers that students may see as they walk home from school, rather than feature rare plants school children have never seen. If a dandelion can be made to seem fascinating, perhaps children will be eager to learn more about other wildflowers.

Photographs of wildflowers in obviously urban settings are needed. Research into interesting facts about various urban wildflowers is also needed. For example, how did the dandelion get its name?

The page is scheduled to run in May of 1992. Suggested wildflowers include, besides dandelions, Queen Anne's lace, sunflowers, chicory, thistle, Asian day flowers, Japanese honeysuckle, and pink clover.

Anyone interested in providing photographs or conducting research may write to Mary Schaffner, Court Square Building, Nashville, TN 37201-1107.



## FRIENDS ON A SMOKIES TRAIL

Every trip in search of plants, whether afternoon hike or four-day expedition, seems to have its disappointments but also always its special rewards. The TNPS hike April 28 after the Smokies Wildflower Pilgrimage was no exception.

After an initial gathering at Sugarlands, Dennis Horn, TNPS vice president, led one group of about 40 enthusiasts (members of TNPS and the Georgia Botanical Society) to a trail at Collins Creek, east of Newfound Gap.

Later Dennis expressed disappointment that the Collins Creek hikers were turned back by a swollen creek and heavy undergrowth. Nevertheless, several fascinating species were located, including Clinton's lily or white-bead lily (*Clintonia umbellulata*) and Canada mayflower (*Maianthemum canadense*). The conversations were just as fascinating, e.g. the unpredictable change in gender of Jacks from one season to the next. Among the hikers were Mary Schaffner, TNPS president; Scott Ranger, president of the Georgia Botanical Society; and several other Georgians, including Tom Patrick, formerly of Tennessee.

Ranger missed his own introduction (albeit informal) because he was stooped over an adders tongue fern in the Collins Creek picnic area. The unusual little fern (*Ophioglossum vulgatum*) had chosen to settle beside and under a cement table, which was later occupied by unwary picnickers when the hikers returned to their cars. That was reminiscent of seeing that same day several showy orchises at the edge of the Chimneys campground.

Other special finds at Collins Creek were Fraser's sedge (*Cymophyllum fraseri*), Indian cucumber root (*Medeola virginiana*), painted trillium (*Trillium undulatum*), large flowered trillium (*Trillium grandiflorum*), and putty root (*Aplectrum hyemale*), with last year's dry pods still standing. The shrubs, vines, and trees included running strawberry bush (*Euonymus obovatus*), buffalo nut, Dutchman's pipe, and striped maple.

## A TREK TO THE CANEY FORK BLUFFS JULY 27

An interesting July field trip without much hiking will take TNPS members to the bluffs along the Caney Fork River below Center Hill Dam in Dekalb and Putnam counties.

Everyone is asked to meet Dennis Horn, society vice president, at 10 a.m. July 27 at the picnic shelter at the base of the dam near the intersection of state routes 96 and 141.

If you are traveling I-40, leave the interstate at Exit 268 and drive south on state highway 96, which soon is joined by highway 141. Where 141 leaves 96 at the dam, turn right on 141. The picnic area is on the right.

Everyone is urged to bring lunch and a camera.

Climbing vines are especially prolific at these bluff sites. Besides Harper's umbrella plant and Price's potato-bean, members are expected to see tall bellflower (*Campanula americana*), snail seed or Carolina moonseed (*Cocculus carolinus*), creeping cucumber (*Melothria pendula*), bur cucumber (*Sicyos angulatus*), and American ampelopsis (*Ampelopsis cordata*).

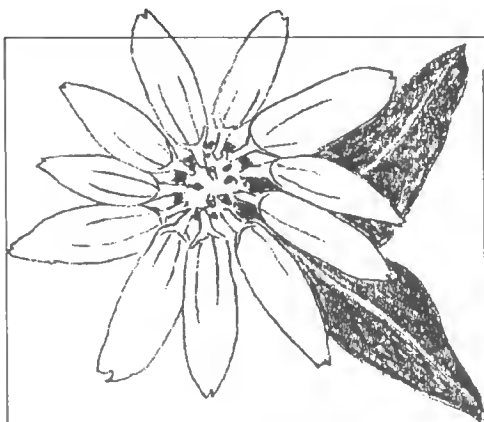


## PLAN SEPTEMBER TRIPS EARLY

It's not too early to plan for one or all of the September TNPS field trips.

The first is the Naturalist Rally at Roan Mountain on Sept. 7 with Ed Schell (615/282-6125).

Two other trips will be held in connection with the TNPS board meeting (all members welcome) at Chickasaw State Park. The first trip will be to Millstone Mountain in Tipton County Sept. 21. The second will be to the nine acre Carroll Cabin Glade in Decatur County on Sept. 22. Our contact is Paul Somers (615/385-3482 at home or 742-6549 at his office).



## Flora 2001

Supporters of Tennessee Flora 2001 are now focusing on 1992 in the State Legislature. In the next few months, TNPS leaders hope to better inform legislators and the public about the project.

With public and private support, we hope to publish a photographically illustrated book on native plants, compile a county atlas of vascular species, and publish a complete guide to vascular flora of the state.

## Field Trip to Native Gardens August 24

**M**eredith and Ed Clebsch have extended a special invitation to society members to visit Native Gardens near Greenback on August 24. Everyone is asked to arrive at 1 p.m. eastern time.

Both Ed and Meredith are active in field botany and native plant conservation, and over several years, they have built Native Gardens into a profitable native plant nursery.

Meredith says: "Visitors will see our propagating facilities and greenhouses along with stock beds—most colorful in summer—and other container growing areas. There should be plenty of 'meadow' plants like *Coreopsis*, *Rudbeckia*, *Salvia*, *Helianthus*, *Aster*, *Eupatorium*, *Liatis*, etc., along with some moist meadow species like *Lobelia*, *Chelone*, *Vernonia*, *Eupatorium*, etc.

"Hummingbirds and other birds, butterflies, moths, bees, wasps, dogs, and cats abound.

"We will likely be busy with seed collection and storage at that time."

Also Native Gardens will have a variety of plants available for purchase.

Most members will approach Native Gardens by taking the state highway 95 exit (Lenior City) off I-75 a few miles south of the I-75, I-40 junction. Proceed on 95 beyond Lenior City and across Fort Loudon Dam and the Tellico Canal Bridge. A sign to Greenback indicates a sharp turn to the right on 95. Soon afterward at a church sign to Axley's Chapel, turn right. Go only 0.1 mile (past the first house), turn right, and Native Gardens is less than a mile down that road on the right.

Contact the Clebsches at Route 1, Box 494, Greenback, Tennessee 37742 or call 615/856-3350.

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## Tennessee Native Plant Society Newsletter

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# TENNESSEE NATIVE PLANT SOCIETY NEWSLETTER

Volume 14, Number 4

August 1991

## PROTECTING RARE PLANT SPECIES

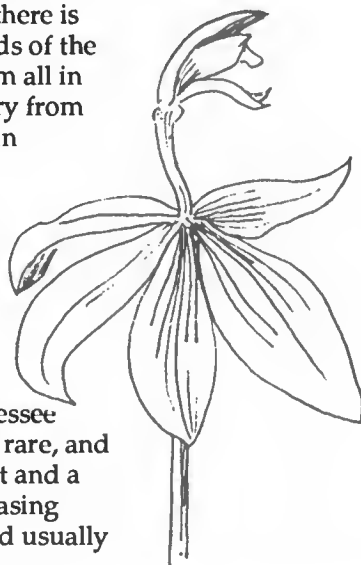
WITH SPECIAL REFERENCE TO  
THE WILD ORCHIDS OF TENNESSEE

*The first of June, then the lady's slipper and wild pink have come out in sunny places on the hill-side, when the summer is begun according to the clock of the seasons.*

Thoreau: *Summer*, 1884

The most spectacular family of flowering plants in the world is the orchidaceae. Although primarily known for the cultivated tropical epiphytes, the temperate zones have a number of terrestrial species which are less flamboyant but often still very beautiful in their own way. Tennessee is better represented than most states in its number of different orchids, having roughly 50 (more if you are listening to a "splitter," fewer if told by a "lumper"—herbarium dwellers tend towards the former, and experienced field botanists generally favor the latter).

From late March (the southern twayblade, *Listera australis*) until early November (the yellow nodding ladies' tresses, *Spiranthes ochroleuca*) the wild orchids of Tennessee bloom in overlapping sequence, each individual species having roughly a two-week anthesis (some more, some less) upon the stage and sometimes sharing the spotlight with several others. In Florida this "parade" never stops, but it becomes compressed into a few days near the Arctic Circle. For Tennessee there is always some orchid in bloom for fully two-thirds of the year, making it theoretically possible to see them all in one long season. In actuality, however, they vary from the common and ubiquitous rattlesnake plantain (*Goodyera pubescens*) and cranefly orchid (*Tipularia discolor*) to those which are almost never seen in Tennessee such as long-bracted orchid (*Coeloglossum viride*) and northern slender ladies' tresses (*Spiranthes lacera* var. *lacera*). Others such as small whorled pogonia (*Isotria medeoloides*) and spotted coral root (*Corallorhiza maculata*) are extremely rare but have been found in small numbers. Still, most of the Tennessee orchids may be classified between unusual and rare, and finding all of them requires a great deal of effort and a considerable amount of time and luck. To increasing numbers of people this challenge of finding (and usually



Continued on Page 2

## NATIVE PLANT CONFERENCE IN BIRMINGHAM

The second Central South Native Plant Conference will be held October 25-26 at the Birmingham Botanical Gardens.

Featuring noted southern authors, botanists, and horticulturists from a five state area, lectures will follow the theme "Knowing, Growing, and Showing the Natives."

With sessions beginning at 8:30 a.m. on Friday and continuing until noon on Saturday, the conference will also include a social hour and opportunities to tour the gardens and review video tapes of concurrent sessions.

The registration fee will be \$35, and participation will be limited to 275 people.

An overview of the types of topics to be presented are as follows: history and aims of the native plant movement; how botanists get to know plants; natural heritage inventories of the central south; backyard wildlife habitats; public roadways and their use of native plants.

Others include: progress on the flora of Alabama and middle Tennessee; still wild natives for landscape uses; selecting and growing native plants of promise; propagating native woody plants; commercial production of native trees; home grown native plants; and native azaleas.

Other sessions will highlight: gardening with native wildflowers; natural environments and human nature; landscapes as ecological

Continued on Page 3

# TENNESSEE NATIVE PLANT SOCIETY NEWSLETTER

August 1991  
Volume 14, Number 4

This Newsletter is a publication of the Tennessee Native Plant Society and is published six times a year, generally in February, April, June, August, October, and December.

The Tennessee Native Plant Society (TNPS) was founded in 1978. Its purposes are to assist in the exchange of information and encourage fellowship among Tennessee's botanists, both amateur and professional; to promote education of the public about Tennessee flora, and wild plants in general; to provide, through publication of a newsletter or journal, a formal means of documenting information on Tennessee flora and of informing the public about wild plants; and to promote the protection and enhancement of Tennessee's wild plant communities.

Dues are \$8 for the calendar year (\$5 for students and senior citizens, \$15 for institutions, and \$150 for life memberships). Membership privileges include a subscription to the TNPS Newsletter. Dues may be sent to the Tennessee Native Plant Society, Department of Botany, the University of Tennessee, Knoxville, TN 37996-1100.

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Letters to the editor or correspondence about the Newsletter should be addressed to: TNPS Newsletter, P.O. Box 856, Sewanee, TN 37375.

# PROTECTING RARE SPECIES —Continued



photographing) rare plants has become great sport, and therein lies the origin of a dilemma which is increasingly being debated (as was done at the TNPS annual meeting this year).

If all of our orchids were as common as, for example, small green wood orchid (*Platanthera clavellata*) there would be less fear of trampling them to death or destroying their habitat through visitation damage than currently exists with spectacular endemic species such as white fringeless orchid (*Platanthera integrilabia*) or color variants of southern lady's slipper (*Cypripedium kentuckiense*). People have come to Tennessee from all over the world to see these magnificent wildflowers, and no matter how careful they are, there is always some site

alteration such as soil compaction.

Of perhaps greater potential danger is the threat of collection for sale, transplantings, or herbariums. Collectively, these and other fears for the safety of certain plants have resulted in widespread efforts to safeguard site-specific information, with the degree of secrecy usually being proportionate to the rarity and desirability.

For some species, such as crested coral root (*Hexalectris spicata*), site-specific data is of little or no help in

finding them, because their appearance in Tennessee is completely sporadic and unpredictable, seldom being found again at the same location in subsequent seasons. Unfortunately, several of the Tennessee orchids are both rare and fairly reliable at certain sites, such as snowy

orchid (*Platanthera nivea*) and Loesel's twayblade (*Liparis loeselii*) This combination spells deep trouble because it sets up a struggle between those who (for various academic or personal reasons) want to observe the plants and those who endeavor to shield the stations from destruction. As a general rule, the less attractive a rare plant is, the less vulnerable to human interference it becomes; but in the case of orchids even the plainest of species are now being sought just because they are orchids.

Of course, the greatest threat of all to rare plant populations is loss of habitat through development. Although development is a serious problem in Tennessee, it is nonetheless not as rampant as it is in Florida or in many other states. One result of these losses has been to increase the pressure for maintaining secrecy regarding the ever-decreasing inventory of remaining rare plant locations.

Thus far the attempts at restricting information have generally consisted of trying (usually unsuccessfully) to confine site-specific knowledge to only a small number of individuals with a common interest, normally between fellow professionals and conservationists or among dedicated "networking" amateurs. But this is not easy to do. It contradicts human nature, and even runs into a legal problem in some places where tax-exempt status requires access by the public (to both the land and what's on it that is being protected).

Oftentimes in the past, professionals in the biological sciences have tried to confine information among themselves and away from amateurs, and the reverse is becoming evermore frequent where there is fear of specimen-taking or the likelihood of causing a site owner to panic. An example of the latter was a population of rare orchids in North Carolina that was immediately bulldozed by the site owner when he was told of their presence on his property by

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*The greatest threat of all to rare plant populations is loss of habitat through development.*

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representatives of a conservation organization. He had never felt that his plans for development were threatened by disorganized amateurs having knowledge of the presence of rare plants on his property, but professionals with access to legal staffs and enforcement agencies were an entirely different matter.

A philosophical question also arises whenever someone is kept from seeing something by someone else, regardless of the claimed purity of motives: is it right to get what you want and then piously restrict another person from doing the same? Obviously, if a population disappears forever then nobody benefits, but it can also be argued that hiding it will reduce its real worth and may even increase its chances of destruction from development or natural causes, such as habitat evolution.

In past centuries the rate of suitable site evolvment was in balance with its loss, but at present almost all preservation activity is directed towards sites with extant (often remnant, disjunct, or both) populations rather than areas which will or can become viable hosts in the future. For long-term recovery, however, site restoration or even creation will be necessary.

Until rare plants are successfully propagated for sale and for reintroduction to extirpated and even physically restored sites, one answer to the present dilemma might be the designation of certain places for visitation by study groups, photographers, wildflower groups, experimentalists, etc. The idea is to encourage seekers of a particular wild plant to do so at a specific station set aside for that purpose, preferably complete with telephone contacts who can also serve as guides and thus minimize exploration damage to the site.

Consider, for example, yellow fringed orchid (*Platanthera ciliaris*) which is very rare in Michigan and Ontario because it is at the edge of its range and therefore ekes out a tenuous existence wherever found there. In Tennessee, by contrast, there are many places where it is numerous and robust (and therefore much more photogenic) in tough sites which can handle large numbers of people without significant damage. The downside of this scheme is that the northerners would have to travel here to see it, but the travel time loss is compensated by knowing that it is up, in bloom, and photogenic, in a definite location that they can go right to without wasting time trampling other delicate plants while looking for it.

Conversely, showy lady's slipper (*Cypripedium reginae*) occurs in only a few sites in the South which are generally very fragile wet limestone seepage slopes that crumble and fall under foot and are thus being completely destroyed by those who become privy to its "secret" locations. From Minnesota to Newfoundland, however, this gorgeous orchid can occur in large numbers even along roadsides, becoming much more attractive than the smaller short-lived blooms at its hot southern stations. Clearly, a reciprocal agreement could have potentially enormous advantages.

Not every sought-after plant will have a few resilient candidate sites for designation, but many of them will, which would be enough for a test of the workability of the concept. Also, getting such a scheme going would require some simultaneous coordination between regions. Native plant societies might be ideally suited for such a task. Anything new has growing pains, but the ability to see the plants now and into the future is worth it. To do nothing is to lose them.

—Chuck Wilson

Chuck Wilson is an orchid consultant to the American Association of Field Botanists. He is also a charter member of TNPS.

We should emphasize that Chuck welcomes comments on the ideas expressed in his article. Letters may be sent to the TNPS Newsletter or directly to Chuck at 4201 Gann Store Road, Hixson, TN 37343.

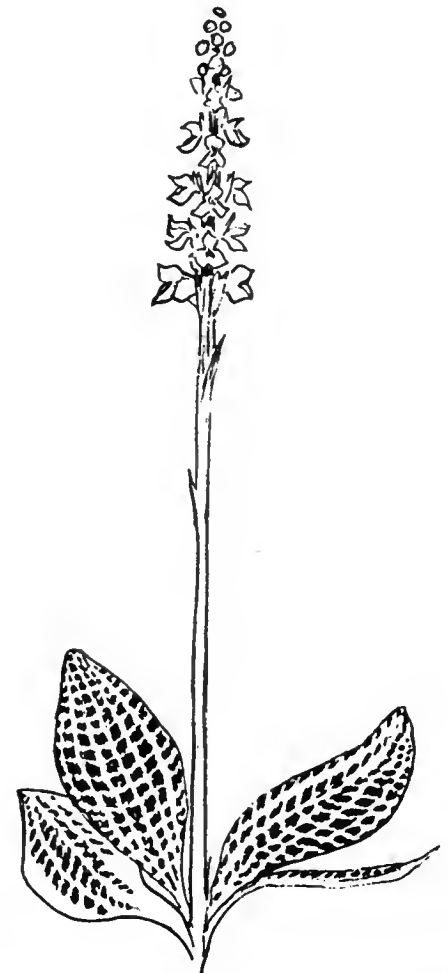
## SYMPOSIUM —Continued

museums; photography of native plants; native ferns and flowers in public places; local wildernesses and their roles in the community; and virtues of the native flora.

For more information on the conference, write to Shelley Lindstrom, Birmingham Botanical Gardens, 2612 Lane Park Road, Birmingham, Alabama 35223, or call 205/879-1227.

## HOW TO BE A FRIEND OF NATIVE PLANTS

- Learn about the native plants in your area
- Join and be active in TNPS and other conservation organizations
- Support legislation that protects native flora and habitats
- Talk to friends and neighbors about the importance of plants, and instigate educational programs



## SOME PRACTICAL BENEFITS OF NATIVES IN THE LANDSCAPE

The use of native plants in landscaping and gardening has a very practical purpose. The rewards are worth counting and sharing with friends.

As TNPS members know, there are many attractive native plants that rival the grandest and most expensive hybrids. We can find indigenous vascular wildflowers, shrubs, trees, vines, and grasses for almost any need or situation in the home landscape.

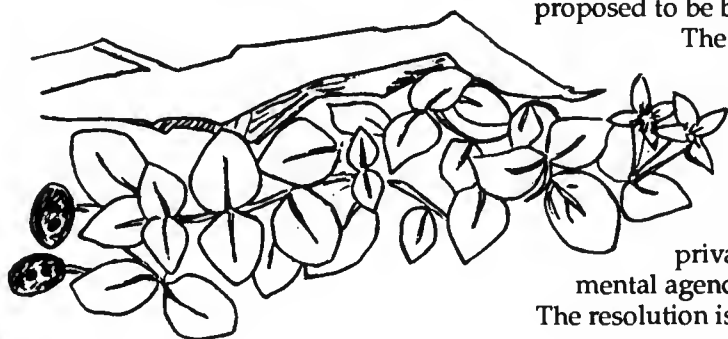
Properly used, natives do not require the intensive watering and fertilizing required by many exotics and hybrids. They better resist insect pests and diseases and, therefore, allow gardeners to reduce the use of pesticides and fungicides.

Because they have evolved as part of the indigenous ecological system, native plants are likely to benefit wildlife better than exotics, and, similarly, natives may benefit from symbiotic relationships with other surrounding natives.

By using native plants instead of exotic species, gardeners and landscapers reduce the risks of introducing or spreading dangerous fungi and pathogens carried by exotics to native plant populations. Use of natives also reduces the dangers of introducing potentially invasive exotics into natural areas.

Finally, members of TNPS should be particularly interested in maintaining biodiversity and in preserving the heritage of our native landscapes. Urging homeowners and developers to use native species and avoid exotics is an important part of

*Continued on Page 5*



# NATIVE LANDSCAPING TO PROTECT TENNESSEE'S NATURAL HERITAGE

In the autumn of 1990 the Tennessee Native Plant Society adopted "A Resolution Promoting Environmentally Responsible Landscaping Practices." The resolution addresses the threat to native plant populations caused by the introduction of invasive exotic plant species into the Tennessee landscape and promotes a land ethic recognizing the inherent value of a biodiverse native landscape. It focuses attention on protecting our natural heritage through responsible landscaping practices by endorsing the use of native plants and by emphasizing that invasive exotics should not be planted.

The need has never been greater to educate others about the problem. This resolution is an important vehicle to raise awareness among environmental and professional organizations, resource managers, and others concerned with preserving the integrity of Tennessee's native plant populations.

Invasive exotics used in landscaping threaten nearby native plant populations. It is important to realize that plants located outside the boundaries of a natural area can significantly impact the plant communities inside a preserve. Invasive exotics are highly successful in dispersing propagules; seed production is usually massive; and vectors (i.e. birds) carry seeds indiscriminately across boundaries. Once invasive exotics are established, encroachment ensues, and biodiversity is significantly reduced. Removal is costly and, in some cases, virtually impossible.

Although most exotic (non-native) plant species in Tennessee are considered innocuous, it is preferable that native plants be used whenever possible; particularly when landscaping occurs near native plant communities. The presence of escaped exotic species, whether invasive or not, changes the composition of native plant communities. Also, today's neutral species could become tomorrow's invasive species. For example, Japanese honeysuckle (*Lonicera japonica*) was introduced into the region in 1803, but it was not identified as part of the flora in a manual or flora until the 1880s (Sather, 1988). Presently, in the late twentieth century, Japanese honeysuckle has become notoriously invasive.

The widespread distribution of pestiferous plants has largely been facilitated by their use in landscaping. Landscaping also includes the wide-scale use of invasive exotics by governmental agencies for purposes of (1) wildlife habitat improvement (2) reforestation (3) soil conservation (4) windbreaks, and other highway plantings. Kudzu (*Pueraria lobata*) and multiflora rose (*Rosa multiflora*) are two examples of invasives used in the past. Today, Autumn olive (*Elaeagnus umbellata*), an invasive exotic shrub, is propagated, distributed, planted, and promoted throughout the state. It was once used in Illinois similarly as it is used today in Tennessee. It is now listed by the Illinois Nature Preserves Commission as an exotic invasive species that has been proposed to be banned under Illinois Exotic Weed Law. (Sternberg, 1988).

The wholesale distribution of exotics state-wide is particularly threatening to neighboring natural areas, Nature Conservancy preserves, and other unprotected areas where native plant populations are found. The use of native plants for landscaping on public lands would certainly represent a progressive change and a step in the right direction. We must lead by example. How can private landscapers be asked to make changes, when governmental agencies are using exotic species for conservation purposes. The resolution is a mandate for change and represents a consensus of

these other organizations that have adopted it: Tennessee Recreation and Parks Association, Friends of Warner Parks, Tennessee Environmental Education Association, Tennessee Citizens for Wilderness Planning, Environmental Action Fund, Tennessee Trails Association, Tennessee Scenic Rivers Association, The Nature Conservancy Tennessee, Tennessee Ornithological Society, and Tennessee Conservation League. Further support is expected in the near future.

—Brian Bowen

Brian Bowen is a naturalist and restoration coordinator at Warner Park Nature Center in Nashville. More information about this effort can be obtained by writing to him at the Nature Center, 7311 Highway 100, Nashville, TN 37221.

## SOME ESPECIALLY INVASIVE AND TROUBLESOME EXOTICS

The resolution promoting environmentally responsible landscaping practices specifies thirteen exotics that are especially disruptive and should be avoided. These are:

- Kudzu vine (*Pueraria lobata*)
- Purple loosestrife (*Lythrum salicaria*)
- Japanese honeysuckle (*Lonicera japonica*)
- Shrub honeysuckle (*Lonicera maackii*, *L. tartarica*, and *L. X. bella*)
- Autumn olive (*Elaeagnus* spp.)
- Common privet (*Ligustrum sinense*, *L. vulgare*)
- Creeping euonymus (*Euonymus fortunei*)
- Burning bush (*Euonymus alatus*)
- Tree of heaven (*Ailanthus altissima*)
- Multiflora rose (*Rosa multiflora*)
- Vinca (*Vinca minor*)
- Sawtooth oak (*Quercus acutissima*)
- Lespedeza (*Lespedeza cureanta*, *L. bicolor*, *L. striata*, *L. stipulacea*)



## PRACTICAL BENEFITS

—Continued

this preservation effort.

Of course, native-plant landscaping does not create a truly natural eco-system. We must continue to support efforts to protect undeveloped natural areas.

Darrel Morrison, dean of the School of Environmental Design at the University of Georgia, provided an appropriate caution in an article in the spring, 1990, edition of *Garden Design*: "The reality is, you can't duplicate a natural plant community. But you can capture the essence. As long as people understand [that a restoration] is not a substitute for natural areas, it's okay."

## WHAT A WELL- MANNERED GUEST SHE USED TO BE

From a clipping sent our way recently we observed:

"Some \$4000 worth of purple loosestrife seedlings were confiscated by the Illinois Department of Conservation law enforcement officers from a Chicago area grower. The seizure was the first ever made under the Illinois Exotic Weed Act which prohibits sale and planting of this species."

Purple loosestrife (*Lythrum salicaria*), first brought to America from Europe, is an attractive spring and summer bloomer and prized by many gardeners. However, the plant has in stages invaded low meadows and marshes, smothering out natives along stream banks and clogged ditches and drainage systems. It has become a scourge to farmers, conservationists, and city utility officials alike.

Incidentally, as a closing footnote, lythrum's trimorphic flower was of special interest to Charles Darwin and assumed an important place in his theory of the origin of species.

Take heed; one person's flower is another's weed.

## SYMPOSIUM ON DISTURBANCE AND RESTORATION

The Kentucky Native Plant Society has extended to TNPS members an invitation to attend its Symposium on Disturbance and Restoration of the Kentucky Landscape.

The symposium will be held October 4-6 at the Kentucky Leadership Center, Faubush, Kentucky.

Activities, mainly on Saturday, October 5, will include lectures, slide shows, workshops, and hikes covering various topics dealing with the disturbance and restoration of the Kentucky landscape.

Because of similarities between Tennessee and Kentucky, most of the program will relate significantly to efforts in Tennessee. Talks will address the effects of natural disturbance (fires, treefalls, etc.), how to recognize a disturbed landscape, effects of invasive species, effects of mining and timbering, and how to restore wetlands, prairies, and forests of the eastern, central, and western parts of the state.

These restoration talks will be aimed at both large and small-scale operations—for example, how can some of the extensive wetlands in western Kentucky that have been lost be restored to their pre-disturbance form; or how can homeowners recreate in their backyards original bluegrass landscapes or Kentucky prairies.

KNPS also is seeking to present talks on how to recognize exotic species and their effects on the original vegetation—how much of the observed vegetation is not natural, was not there 300 years ago. The symposium will help participants select species for restoration plantings to help the return of native plants and the natural plant communities.

Reservations for the symposium must be made by September 20 through KNPS. The registration fee is \$7 per person. Lodging is \$16 per person for a double room. Meal prices vary. Interested persons may contact Tom Bloom, 900 Keenon Road, Harrodsburg, Kentucky 40330. (A telephone number was not included with the registration form.)



## ON THE BLUFFS OF THE CANEY FORK

The day was hot, the bluffs dry, but we did find most of the plants we had come to see.

Nineteen of us visited the river bluffs about two miles below Center Hill Dam in the morning. As we approached the area, the first attraction was a fine display of dayflowers (*Commelina erecta*). High upon the cliffs were scattered stems of the rare umbrella plant (*Eriogonum longifolium* var. *harperi*).

Working our way along the road, we found huge clumps of alumroot (*Heuchera villosa*), meadow parsnip (*Thaspium pinnatifidum*) past flowering, western wallflower (*Erysimum capitatum*) with a few orange flowers still hanging on, spiderwort (*Tradescantia subaspera*), and tall bellflower (*Campanula americana*), both well past their prime, and horse gentian (*Triosteum angustifolium*) with orange-red fruits forming.

The bluffs were rich with vines. Those we saw included Dutchman's pipe (*Aristolochia tomentosa*), a grape ally American ampelopsis (*Ampelopsis cordata*), and three members of the moonseed family, moonseed (*Menispermum canadense*), snailseed (*Cocculus carolinus*), and cupseed (*Calycocarpum lyoni*).

One of the vines we had hoped to see, Price's potato bean (*Apios priceana*) had already bloomed because of the dry weather. We did find well developed bean pods as evidence that flowering had occurred.

After lunch at the shelter below Center Hill Dam, we caravanned to the I-40 rest area just past the Caney Fork River bridge. There we found nice specimens of the Harper's umbrella plant along the bluffs. These plants were at eye level and, therefore, more cooperative for photographing.

—Dennis Horn

## THE CENTER FOR PLANT CONSERVATION

One of the key organizations working for the protection of native plants is the Center for Plant Conservation in St. Louis, Missouri.

The center's goal is to create a systematic, comprehensive national program of plant conservation, research, and education within existing institutions, as a complement to the preservation of genetic diversity through habitat protection.

Its major resource is the National Collection of Endangered Plants, a living collection of endangered native flora of the United States, maintained under protective cultivation at 21 regional gardens from Massachusetts to Hawaii.

The center is an independent non-profit corporation with headquarters located at the Missouri Botanical Garden.

# CEDAR GLADES TRIP OFFERED INTERESTING CONTRAST TO SPRING WOODLAND HIKES

The large group, perhaps thirty-five members, who gathered for the cedar glades expedition June 15, experienced first-hand some of the rigors of the rocky glades—rising temperatures, sparse shade, and little water. (“I thought you were bringing the canteen.”)

The growing respect for our glade species was punctuated by a wonderful display of Tennessee and yellow or prairie coneflowers (*Ratibida pinnata*) at the entrance to the farm of John and Hester Lane. An additional treat was the presence of the white form of *Echinacea tennesseensis*. Paul Somers led the way to the farmhouse and introduced the Lanes, who allowed the group to wander the pastures and rocky slopes of the farm.

More *tennesseensis* were located where cattle had munched their tops, but judging by the number of plants in bloom and the number of recently germinated juniors, the population of *tennesseensis* seems to be maintaining itself.

Other species identified on the glade were Gattinger’s prairie clover, Gattinger’s lobelia (*Lobelia appendiculata* var. *gattingeri*), Nashville breadroot (*Psoralea subacaulis*), glade petunia (*Ruellia*), glade phlox (*Phlox bifida*), a morning glory (*Evolvulus pilosus*), and a magnificent antelope-horn milkweed (*Asclepias viridis*), identified and introduced to the group by Milo Pyne. Fragrant sumac (*Rhus aromatica*) and Carolina buckthorn (*Rhamnus caroliniana*) were among the woody glade plants that were seen.

Many of the group also ventured several miles to a second site, which was located in 1989 by a Vanderbilt University graduate student working for the Heritage program of the State Conservation Department. At this pristine glade, clear of all-terrain-vehicle tracks and trash, the *tennesseensis* was even more stunning.

Among other plants seen at these glade sites were *Monarda fistulosa*, *Matelea carolinensis* (a viny milkweed), glade savory (*Calamintha glabella*), Tennessee milk vetch (*Astragalus tennesseensis*), and false garlic (*Nothoscordum bivalve*).

A number of these plants were mentioned in Dr. Elsie Quarterman’s article about the cedar glades in the June issue of the *TNPS Newsletter*. Another good source of information about the cedar glades is a book by Thomas E. Hemmerly, *Wildflowers of the Central South* (Vanderbilt University Press, 1990). Dr. Hemmerly is a professor of biology at Middle Tennessee State University and is a member of TNPS.

## Stay in Touch

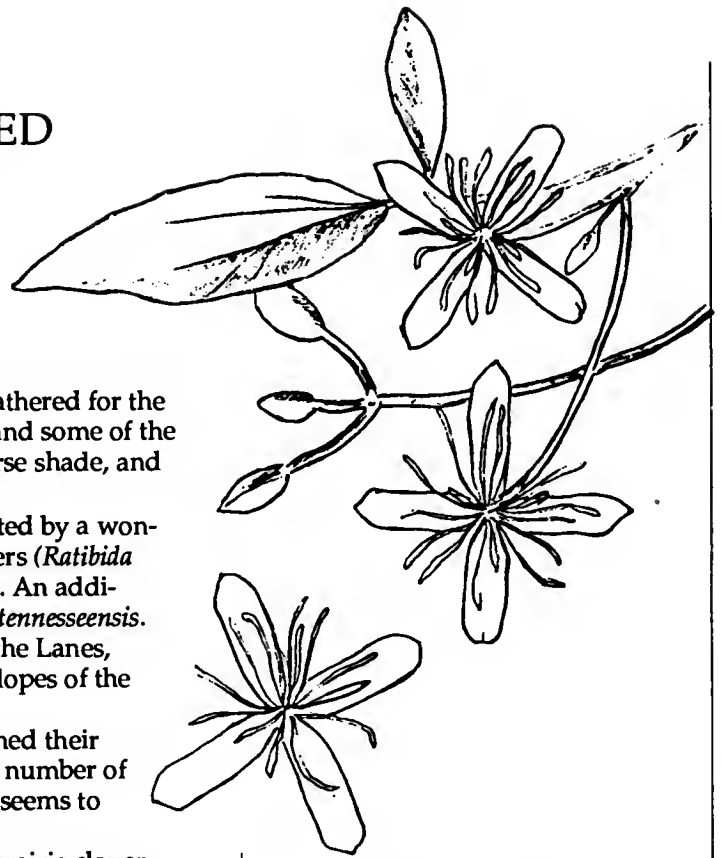
We have fallen a bit behind on our TNPS Newsletter schedule. To get back on schedule and have the October issue in the mail before October 1, we should have all material in hand by September 15.

Okay, so we’ll probably be a little late. But if you have material or information you would like to see published, please help us meet deadlines. The December issue will have a final deadline of November 15.

Keep those cards and letters coming.

Original articles, book reviews, personal observations, tributes—these and more—are most welcome. We can publish photographs, too.

The TNPS Newsletter address is P.O. Box 856, Sewanee, TN 37375.



## ROAN MOUNTAIN NATURALISTS’ RALLY

All TNPS members are invited to join Ed Schell for the Roan Mountain Naturalists’ Rally September 6-8.

The rallying point and programs will be held at Cloudland Elementary School on Highway 143 at Roan Mountain.

A brief schedule includes:

Friday (September 6)

Registration, 4:00 to 6:30 p.m.

Dinner, 6:30

Program by Dr. Robert I. Bruck, 7:30 (Dr. Bruck is professor of plant pathology at North Carolina State University and is a leading authority on acid rain.)

Saturday (September 7)

Field Trips, 8:30 a.m.—(The field trips will cover a variety of natural history areas, including trees, wildflowers, medicinal plants, fish, birds, geology, etc.)

Program by Dr. James Caponetti, 7 p.m. (Dr. Caponetti teaches botany at the University of Tennessee and will speak on the effects of poisonous and medicinal plants.)

Sunday (September 8)

Botanical Field Trip, 8:30—

## TNPS MEETING AT CHICKASAW

All TNPS members are invited to gather at Chickasaw State Park September 20 and 21 for the society board meeting and two field trips.

Three park cabins, each with accommodations for six persons (in three bedrooms), plus room for sleeping bags, have been reserved. Cabin kitchens will be useful since the park restaurant will be open only for supper on Saturday.

To reserve a cabin space, call Andrea Shea in Nashville at 615/333-2867 (home evenings) or 615/742-6550 (office). Andrea said the cost will be less than \$20 a person per night—payment due at the meeting. She must have your reservations before September 13.

Chickasaw State Park is located west of Henderson on Highway 100.

Campsites are available through the camp office at 901/989-5141.

## WEST TENNESSEE IS TARGET FOR SEPTEMBER FIELD TRIPS

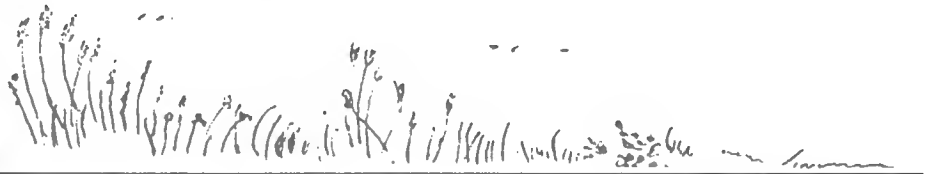
Two West Tennessee field trips have been organized in conjunction with the September TNPS board meeting at Chickasaw State Park.

On Saturday, September 20, everyone is invited to visit Millstone Mountain, a site along the Hatchie River in Tipton County owned by Dudley and Jeanette Bowden. The group will meet first at 11 a.m. at Bowden Industries on Highway 54 just east of Covington. For those driving from Memphis, Bowden Industries is 2.5 miles east of the railroad tracks on Highway 54. (Anyone who loses the way may call Bowden Industries at 901/476-1813.)

Millstone Mountain provides views of both bottom land and rich upland habitats. Several rare plants may be seen.

On Sunday members will visit Nine-Acre Glade, a silurian limestone hill glade in Decatur County. Everyone is asked to meet at 10 a.m. at the Decaturville Courthouse off Highway 100.

Several rare plants are expected to be seen here as well, including *Liatris cylindracea*, *Onosmodium molle* ssp. *occidentale*, and *Salvia azurea* var. *grandiflora*.



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## Tennessee Native Plant Society Newsletter

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# TENNESSEE NATIVE PLANT SOCIETY NEWSLETTER

Volume 14, Number 5

October 1991

## XYRIS TENNESSEENSIS ADDED TO ENDANGERED LIST

ITS STORY PROVIDES A GLIMPSE  
AT MATURING CONSERVATION EFFORTS

**T**ennessee yellow-eyed grass (*Xyris tennesseensis*) was recently named to the list of endangered species by the federal Fish and Wildlife Service. The late flowering perennial is believed extant at only eight sites, five in Tennessee, two in Georgia, and one in Alabama. All sites occupy less than an acre of land.

According to the Wildlife Service report, prepared by Cary Norquist, "three previously known populations of *X. tennesseensis* have been lost and four of the remaining populations have declined in recent years because of habitat modification associated with agricultural and silvicultural uses, road construction/maintenance, over-collecting, and succession."

### Morphology and Physiology

*Xyris tennesseensis*, a member of the family *Xyridaceae*, can grow to more than three feet in height. Plants arise from a fleshy bulbous base and typically occur in clumps. Leaves are basal, the outermost scale-like, the larger ones linear, twisted, and deep green. The inflorescence consists of brown conelike spikes, which occur singly at the tips of long slender stalks. The flowers, which are pale yellow in color and 0.2 inches long, unfold in the late morning and wither by mid-afternoon. The flowering season is from August through September.

Extensive surveys for *Xyris tennesseensis* were conducted by Robert Kral, professor of botany at Vanderbilt University. It was Professor Kral who first identified *X. tennesseensis* as a distinct species. Kral's report first listed seven extant populations, five in Lewis County, Tennessee, and the other two in Bartow County, Georgia, and Franklin County, Alabama. A more recent discovery has located the species in Whitfield County, Georgia.

"These isolated remnants are located over three different physiographic provinces, the Cumberland Plateau of Alabama, the Western Highland Rim of Tennessee, and the Valley and Ridge Province of Georgia (Kral 1990)."

Kral reported that most populations are found on private land; however, plants extend onto a state highway right-of-way in Alabama and onto the Natchez Trace Parkway in Lewis County.

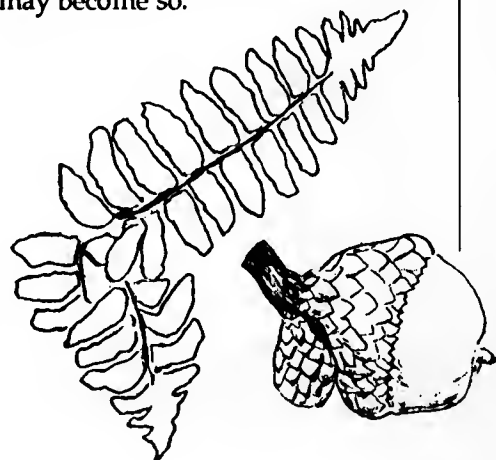
The *Xyris* habitat is along seep slopes, in springy meadows, or on the banks of gravelly shallows of small streams. As with all *Xyris*, the habitat is open or thinly wooded, and the soils are moist to wet year-round. *Tennesseensis* differs from other members of the genus, however, in being found in areas where calcareous rocks are at or near the soil surface. Thus, its soils are circumneutral to basic instead of acidic.

## EXTINCTION AND BIODIVERSITY

The Center for Plant Conservation located in Massachusetts predicts that 680 plant taxa in the United States will be extinct by the end of the century.

Extinction, however, is only one indicator of problems in ecological systems. Deborah B. Jensen, writing in *Fremontia*, the journal of the California Native Plant Society (April 1991), made the following statement:

"Extinction is not the only significant measure of the loss of biodiversity. Extinction is the sum of the losses of many populations; each population lost is a loss of genetic diversity and contributes to the loss of ecosystem diversity. Species extinction receives the most attention because it is the end of the line. Too often agencies address only species extinction and overlook population loss, allowing more species to approach extinction before protective measures are taken. Although CNPS, through its rare plant inventory, tracks many of the rare or threatened populations, no one is monitoring the species that are not yet rare but may become so."



Continued on Page 2

# TENNESSEE NATIVE PLANT SOCIETY NEWSLETTER

October 1991  
Volume 14, Number 5

This Newsletter is a publication of the Tennessee Native Plant Society and is published six times a year, generally in February, April, June, August, October, and December.

The Tennessee Native Plant Society (TNPS) was founded in 1978. Its purposes are to assist in the exchange of information and encourage fellowship among Tennessee's botanists, both amateur and professional; to promote education of the public about Tennessee flora, and wild plants in general; to provide, through publication of a newsletter or journal, a formal means of documenting information on Tennessee flora and of informing the public about wild plants; and to promote the protection and enhancement of Tennessee's wild plant communities.

Dues are \$15 for the calendar year (\$10 for students and senior citizens, \$20 for institutions, and \$150 for life memberships). Membership privileges include a subscription to the TNPS Newsletter. Dues may be sent to the Tennessee Native Plant Society, Department of Botany, the University of Tennessee, Knoxville, TN 37996-1100.

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Latham Davis, Editor

Letters to the editor or correspondence about the Newsletter should be addressed to: TNPS Newsletter, P.O. Box 856, Sewanee, TN 37375.

## XYRIS TENNESSEENSIS —Continued

### Effect of Listing

The action by the Fish and Wildlife Service provides certain protections to *Xyris tennesseensis* under the Endangered Species Act of 1973, as amended. These protections apply primarily to activity of federal agencies or to activity on federal land. An important section of the act prohibits the sale of listed plants in interstate commerce, though *Xyris tennesseensis* is not considered commercially significant. Another provision adds federal violations to state trespass law. However, the Endangered Species Act does not protect any plant from the action of owners of the land on which the plant exists.

Under the circumstances, the most important aspect of the listing may be the attention that is focused on the species and information compiled in the study. Of particular interest is the discussion in the Wildlife Service report of factors that have led to the decline of this and other species. In addition, the process through which a plant moves onto the list of endangered species is a process likely of interest to all plant enthusiasts.

### Process of Selecting Species

The process through which *Xyris tennesseensis* passed on its way to being named an endangered species began in 1980. In December of that year a notice of review was published in the Federal Register. *Xyris tennesseensis* was listed at that time as a category 1 species, meaning that sufficient biological information existed to support a proposal that *X. tennesseensis* be listed for consideration as endangered or threatened. Various revisions followed.

In 1983 *Xyris tennesseensis* was included in notices as a category 2 species. These species are those for which listing as endangered or threatened species may be warranted but for which substantial data on biological vulnerability and threats are not currently known or on file.

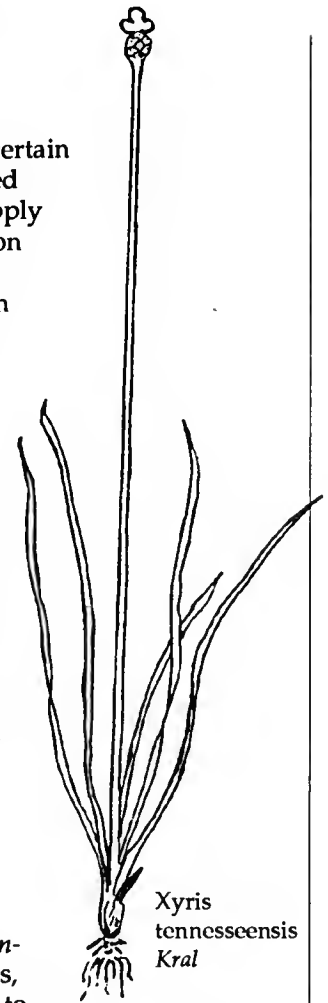
In 1988 the Fish and Wildlife Service contracted a status survey. Field surveys were carried out in 1988 and 1989, and a final report was received and approved by the service in the spring of 1990. The data demonstrated a limited distribution and continuing threats to the species, and on February 15, 1991, the service published a proposal to list *Xyris tennesseensis* as an endangered species.

A species may be determined to be an endangered or threatened species due to one or more of five factors:

1. The present or threatened destruction, modification, or curtailment of its habitat or range,
2. Disease or predation,
3. Overutilization for commercial, recreational, scientific, or educational purposes,
4. The inadequacy of existing regulatory mechanisms, and
5. Other natural or manmade factors affecting its continued existence.

### Factors Damaging to *Xyris tennesseensis*

According to the Wildlife Service report, "*Xyris tennesseensis* has been and continues to be threatened by the destruction or adverse modification of its habitat for additional populations. Kral (1990) noted that similar habitat had been impacted or lost due to agricultural or silvicultural practices. Many of the larger stream bottoms, which were once seep meadows or springs, have been dammed for ponds, drained and converted to pasture or row-crops, or



—Continued Next Page

developed for housing. A site in Gordon County, Georgia, that once supported a population of this *Xyris* is now a soybean field (Kral 1990). Other areas surveyed had been adversely affected by timber operations. . . .

"Habitat for the Alabama population has been disturbed by timbering and gravel quarrying (for use in the adjacent highway). Since 1982 the number of plants at this site have significantly declined (from hundreds to less than a hundred) due to these disturbances and the use of herbicides in right-of-way maintenance. Highway construction caused the destruction of a second population in Georgia (Bartow County)."

The report notes that "over-collecting (presumably for scientific purposes) has resulted in a significant decline for one population in Tennessee."

Regarding the inadequacy of existing laws, the reports says that "this *Xyris* is considered endangered in all the States where it occurs; however, it is currently afforded legal protection in only Tennessee. Tennessee legislation (Rare Plant Protection and Conservation Act of 1985) prohibits taking without the permission of the landowner and regulates commercial sale and export." The report notes, however, that neither this nor a Georgia statute, "provide protection against habitat destruction, which is the principal threat."

The Tennessee Department of Conservation and the Tennessee Chapter of the Nature Conservancy have several voluntary protection agreements with landowners, but the report points out that these agreements, "while very useful in protecting the plants, have no legal authority."

In considering other natural and manmade factors, the report describes the vulnerability of *Xyris tennesseensis* to the growth of woody plants and the diversion of ground water. Kral noted that water tables are dropping throughout the critical areas, resulting in the loss of many seeps and springheads. The report states that proper management is needed to address these aspects of species biology.

Contacted at her Jackson, Mississippi, office, Cary Norquist said the next step is to develop a recovery plan to try to recover enough *Xyris tennesseensis* and its habitat to allow the species to exist without protection.

Given the general direction of biological degradation, one wonders when that glorious day will come.

—Latham Davis

## GOING THE WAY OF THE RED MAN

The following letter was written by Dara Chernicky of Tracy City who is a member of a citizens group opposing the licensing of wood chip mills along the Tennessee River near South Pittsburg. The letter was published in the newsletter of TAGER (Tennesseans, Alabamans, Georgians for Environmental Responsibility). The situation described in the letter illustrates a "double whammy" that vascular species are suffering as a result of human incursion and exploitation.

While on a trip recently to Cumberland County, I met the owner of a flourishing wild herb and root business. He extracts and sells wild herbs, roots, and bark used for medicinal purposes. He also buys from other dealers in this region of the Cumberland Plateau. In fact, he estimates that 90 percent of the wild herbs in the United States used for medicinal purposes come from this region.

This herbalist has been in business for fourteen years. The demand has been so great that he has made this his full-time occupation for the last four years. He says the demand is increasing at an unbelievable rate. He sends his products throughout the entire country to individuals, cosmetic companies, and pharmaceutical companies.

I discussed the chip mill threat with him, and he expressed many concerns. The area from which he and others retrieve their herbs and roots is in the targeted sourcing area. He confirmed that logging decimates this fragile vegetation. Once an area is logged, he knows he will not see that specific root or herb there again in his lifetime—if it ever reappears. He expressed how we all feel about this proposed exploitation: Once it's gone, it's gone.



spike of  
*Xyris*  
*tennesseensis*  
Kral

## THE BATTLE FOR A RARE ARENARIA

The narrow-leaved water stitchwort (*Arenaria fontinalis*) has been drawn into a battle between Nashville public works officials and opponents of the Bells Bend landfill.

The small sandwort, which grows at the landfill site, is on the state list of rare plants and is a candidate for the federal list of endangered species, but public works officers are unimpressed.

Metro Nashville's public works director said in a *Tennessean* interview: "We are exempt from the requirements of the state list because it exempts private property owners and public works projects.

"There's nothing to keep a property owner from plowing this flower under, and that goes for public works projects too."

In the same article, Jim Widlak, endangered species specialist with the U.S. Fish and Wildlife Service in Cookeville, said: "We recommend that whoever is conducting a project implement methods to take steps to avoid impacting those species. That's the best we can do."

In another newspaper article, Robert Kral of Vanderbilt University confirmed that he found the species in Bells Bend in 1982.

"It's not a pretty plant," Kral said. "But if it goes, it's another little piece out of the total circuitry that's gone, and we really don't understand the whole circuitry."

The landfill might still be located close to but outside the range of the water stitchwort, but landfill opponents are not so sure that the moist habitat required by the plant won't mean trouble for the landfill or lead to other problems for *A. fontinalis*.

# FOREST SERVICE AWARENESS OF NATIVE PLANT CONSERVATION

(A note reprinted from the May-June issue of Flora of North America Newsletter)

The U.S. Forest Service has a rapidly expanding program for the conservation of threatened, endangered, and sensitive plants.

The 156 National Forests and Grasslands include 191 million acres (almost 9 percent of the entire U.S. land mass) in 42 states and Puerto Rico. There are now 65 permanent, full-time professional botanists (the majority have an M.S. in botany) and many more non-permanent personnel working in the land management branch of the agency. This is double the 1989 total.

These botanists have considerable local floristic knowledge; they are a great resource for the wider botanical community. The Forest Service plant conservation program is particularly strong in California, the Pacific Northwest, and parts of the South; most National Forests in those regions have at least one botanist.

The botanists work closely with the State Natural Heritage programs and other cooperators, such as the Center for Plant Conservation and the Nature Conservancy.

There are several job opportunities for professional botanists and a real shortage of good botany students for summer, field-oriented jobs. Continued program growth is anticipated, and additional botanists will be needed in the future. We encourage universities to train students with appropriate taxonomic, ecological, quantitative, and field-based skills to provide land managers with talented staff.

More information is available from Chris Topik, National Endangered Plants Program Manager, U.S. Forest Service, Wildlife and Fisheries, P.O. Box 96090, Washington, D.C. 20090, 202/453-8206 or from your local National Forest botanist.

## BLUE BOTTLES BY THE LAKE

### A DISCOVERY OF *GENTIANA ANDREWSII*

I believe it was about four Septembers ago; my young daughter and I walked along a lake shore near our home, watching for frogs among the cattails, those little frogs whose calls all summer had floated up to our screened porch and open windows. During that walk we also admired the black-eyed Susans and asters. We spotted cardinal flower along the bank almost at the water's edge—or where the water had been before retreating in the late-summer drought.

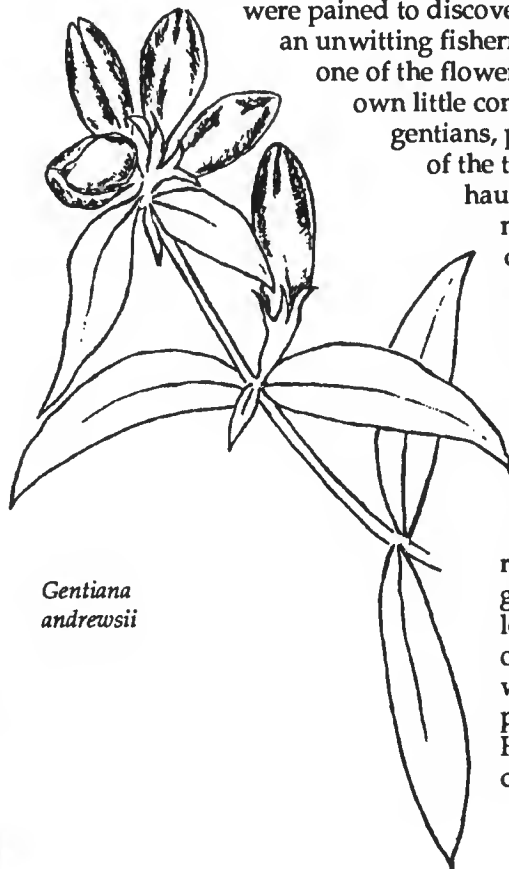
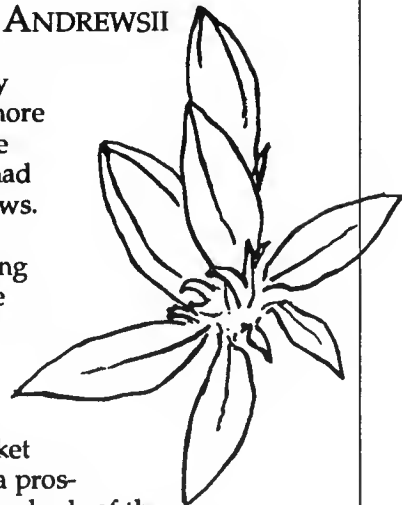
We walked along the strip of lake bed and were about to climb again to the road when my daughter spotted a flash of blue in the grassy thicket near the bank. We looked more closely. There on a prostrate branch were what appeared to be a half-dozen buds of the purest blue I thought I had ever seen. Before the day was over I had retrieved my field guide and identified our wonderful find. It was closed gentian (*Gentiana andrewsii*). My daughter likes the quaint name, bottle gentian.

Though we paid another visit to our blue gentian that year and entered a note in the margin of the field guide, we might have forgotten about it in the seasons that followed. But the next August or early September, walking along the lake bank and tossing sticks into the water for our Airedale, we once again spotted the gentian. This time, however, we saw three plants in an area of no more than two square feet. Each was in bloom, and as before, the brilliant blue and the symmetry of the corolla gave us a sense of wonder.

The following year we remembered our *Gentiana andrewsii* and made a special trip to the lake solely to seek the blue bottle-shaped flowers. We were rewarded with the discovery of at least a dozen plants and were pained to discover that someone before us, perhaps an unwitting fisherman, had stepped on and crushed one of the flower heads. We had already begun our own little conservation project for the bottle gentians, pulling some honeysuckle vines out of the thicket and picking up trash. We hauled a fallen tree branch into one

natural entrance to the thicket to discourage other careless fishermen. At the end of the season, we collected seed from the brown heads and scratched them into the grassy soil.

We also studied the structure and habits of our wild gentians, sometimes squatting in the thicket with a hand-lens, sometimes in the evenings sitting at our kitchen table, where most of our botanical research is done. As do the other gentians, *Gentiana andrewsii*, we learned, prefers moist soil with a bit of sun if possible. It is perennial, which explains, of course, its reappearance in our lake-side thicket. However, its seed have wings that can catch an autumn breeze and sail



*Gentiana andrewsii*

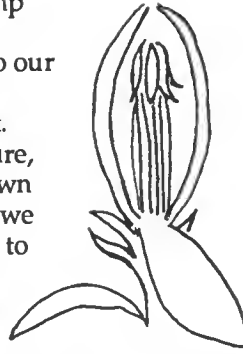
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to another shore or, perhaps, another lake or seep or damp meadow.

We learned another term—proterandrous—applied to our bottle gentian. That means that the anthers mature and spread their pollen before the stigma is ready to accept it. What in heaven's name for, we asked each other. To insure, we learned next, cross pollination, which nature has shown creates the strongest progeny. I will not argue. But how, we wondered, does the pollen find its way out of the bottles to another plant? Finally, Blanchan told us in a copy of *Nature's Garden* (Doubleday, 1901). We can credit bumblebees, attracted by nectar and guided by the white marks at the tip of the corolla. Of course the bumblebee has to force its way between the five overlapping petals, but when it has taken all the nectar, it backs out, carrying with it a generous supply of pollen, which is carried to flowers with mature stigmas. The closed floral cup of *andrewsii* has its own special function: it protects the pollen from rain and insects not adapted to its needs.

This year we returned to our gentian thicket, and our wonder was not diminished. Forty, perhaps fifty, bottled gentians had spread along the lake bank and to the limits of its protected area. How could anyone, even a bass-eyed fisherman, fail to see this wondrous grove. We gathered a few seed for ourselves, perhaps, we thought, to scatter upon another bank or another moist corner of our world.

—J Windsor



## NATIVE PLANTS ALONG THE NATCHEZ TRACE

The Historic Natchez Trace Parkway, the nation's longest linear park administered by the National Park Service, commemorates the 500-mile Natchez Trace network of aborigine, Native American, and pioneer trails from Natchez, Mississippi, to Nashville. After the Trace was designated the U.S. mail route in 1800, postal service via the Trace served as the first step in binding the turbulent frontier to the infant republic and ultimately led to the development of America's vast interior.

Citizen efforts begun in 1909 resulted in the beginning of parkway construction in 1938 and completion of almost 425 miles of the 450-mile parkway from Natchez to its present terminus at Pinewood Road near Leiper's Fork. Current NPS projections estimate a 1995-1996 completion of the scenic roadway to its northern terminus at Pasquo, Davidson County.

The Trace passes through the six Tennessee counties of Wayne, Lewis, Hickman, Maury, Williamson, and Davidson. Since 1971, while promoting parkway completion and preservation of historical and natural landmarks, the Natchez Trace Association of Tennessee has been collecting data on native wildflowers and plants growing in the Trace corridor.

One of the Association's founding members, Trace activist and historian Ilene Cornwell of Nashville, has thus far compiled a partial listing of vascular and woody plants along the Trace. She asks TNPS members who know of unusual native plants growing in the Trace corridor to please share the names and locations with her. Send unique flora sightings to Ilene Cornwell at 5632 Meadowcrest Lane, Nashville, TN 37209.

## ENVIRONMENTAL ACTION FUND

The Environmental Action Fund, of which TNPS is a member organization, is celebrating its fifteenth anniversary with a party to raise money for its lobbying activities at the Tennessee legislature.

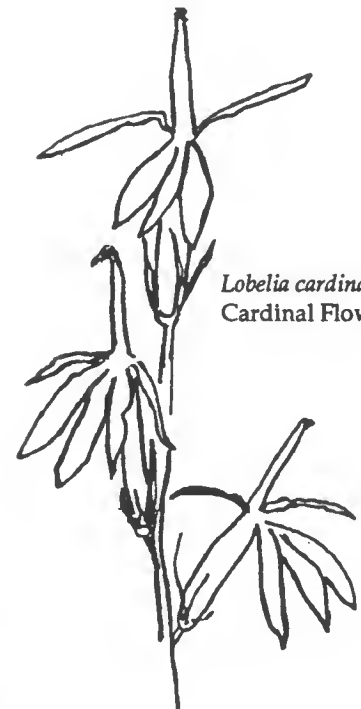
The fund-raising event will be held at the American Center, 3100 West End Avenue, Nashville, from 6 to 8 p.m. on Friday, November 22. The admission charge is \$30 per person. Tickets will be available at the door. Nature photographs will be on display and for sale.

This annual fund-raiser is critical to EAF's financial ability to employ a lobbyist. More than half of EAF's budget is raised through this event.

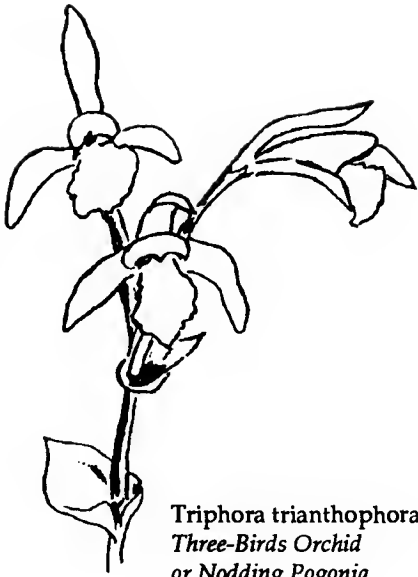
In 1991 EAF successfully supported legislation to fund the acquisition of land for parks and natural areas and legislation to beef up the state's environmental regulatory programs by hiring 350 additional employees in the Department of Environment and Conservation.

EAF is also responsible for drafting and lobbying the Tennessee Rare Plant Protection and Conservation Act of 1985 and could be instrumental in securing legislative support for Tennessee Flora 2001.

If you cannot attend the annual fund-raiser, you may send a contribution to EAF, P.O. Box 22421, Nashville, TN 37202.



*Lobelia cardinalis*  
Cardinal Flower



*Triphora trianthophora*  
Three-Birds Orchid  
or Nodding Pogonia

## A NEW BOOK ON MISSISSIPPI WILDFLOWERS

Although its focus is upon the Magnolia State, Tennessee flower lovers will find an abundance of interesting material in S. Lee Timme's book *Wildflowers of Mississippi* (University Press of Mississippi, 1991).

In 298 pages, Timme has included 523 full-color photographs and descriptions of the diverse species of Mississippi's native and naturalized flowering plants. The author also describes the ten physiographic regions of the state and includes an index.

A conspicuous plus is the quality of the photographs, which are precise and artistic and perhaps as true in color as we have seen.

If you cannot acquire a copy at a bookstore, orders may be sent to the University Press of Mississippi, 3825 Ridgewood Road, Jackson, MS 39211. Cloth-bound copies are \$40, paper \$21.95, plus a shipping charge of \$3.

Ordered 12-22-91

# A VISIT TO MILLSTONE MOUNTAIN

THE PRIVATE PRESERVE OF DUDLEY  
AND JEANETTE BOWDEN OF COVINGTON

Whether we join occasional field trips or simply enjoy a private stroll along wooded paths and fence rows, we all hope to meet new acquaintances as well as see familiar faces.

There was a balance of both on the September trip into West Tennessee. Millstone Mountain and the surrounding bottom lands and river banks offered up such diverse natives as three-birds orchid, creeping spot-flower, and pepper-vine.

The excursion to Millstone Mountain, along dusty roads beside fields of ripe cotton, was led by its owner, Dudley Bowden. Even before Millstone Mountain was in view, however, Dudley would halt the caravan of cars and jeeps to point out unusual vines and herbs, usually at locations where previously he had taken the trouble to cut pathways to these special specimens.

Therefore, hardly had we reached our destination than we began to regard Dudley Bowden with some fascination. This rural businessman and farmer grew up in the cotton country. Only later in life did he begin to realize that Millstone Mountain was something special and its flora worth protecting. He invited two Memphis State University botanists to come to his farm and compile a plant survey. He paid them for the work, and in the process Dudley learned the names and faces of hundreds of indigenous species.

With his list of plants in hand, we began our climb of Millstone Mountain, an unusual geological protrusion from the plain that borders the Hatchie River only about fifteen miles from the Mississippi.

In the group were not only Dudley but botanical experts like Milo Pyne, Larry Wilson, and Tom Heineke. Within an hour they were able to add 10 to 20 species to the plant list and at every turn provided bits of information about surrounding flora.

Millstone is made of a conglomerate rock covered with a loess soil. The flora seems varied but at one time must have been even richer—in past centuries before it was cut over. We climbed the steep slopes in the bed of a deep erosion ditch, now home to regenerated trees and vascular taxa.

We saw fruit of jack-in-the-pulpit (*Arisaema triphyllum*), late blooms of *Tradescantia subaspera*, fruit of goat's beard (*Aruncus dioicus*), which is rare east of the Tennessee River, and many solidagos, including *S. caesia* and *S. ulmifolia*. Of course, it was the season for eupatorium, mistflower (*E. incarnatum*) and white snakeroot (*E. rugosum*), which was abundant.

Near the summit we found the saprophyte Indian pipe (*Monotropa uniflora*) and not far off northern false foxglove (*Aureolaria flava*), semi-parasitic on oak roots. Down the north slopes, in a dry ditch, Dudley Bowden showed us a small colony of blooming three-birds orchids (*Triphora trianthophora*). He said they had appeared each season for several years. We also spotted nodding ladies' tresses (*Spiranthes cernua*) and pale gentian (*Gentiana villosa*). Among the ferns seen were fragile, grape, and rattlesnake, as well as Christmas fern.

The slope ended at the edge of cotton and soybean fields where we spotted creeping spot-flower (*Spilanthes americana* aka *Acmella oppositifolia*) and wild comfrey (*Cynoglossum virginianum*) with large leaves that clasp its hairy stem.

After a short hike along a flood plain where bald-cypress grow, we came upon the muddy Hatchie. Along the mudbanks in the alluvial zone, we saw the halberd-leaved mallow, *Hibiscus laevis*, *Bidens discoidea*, *Lindernia dubia*, *Physalis angulata* (a lesser-known ground cherry) and *Stachys tenuifolia* or hedge nettle, which prefers the damp open grounds. We also saw an unusual grass, *Paspalum fluitans*, and *Penthorum sedoides* or ditch stonecrop, especially recognizable because its inconspicuous flowers crowd themselves onto one side of the divergent stems. We saw monkeyflower (*Mimulus ringens*) in bloom and lady's eardrops (*Brunnichia cirrhosa*) in fruit.

We saw water elms and pawpaw and hazel nut trees, and before we left, Dudley showed us a giant cedar elm, or what he believes to be a cedar elm, which would be just beyond the established range of this beautiful tree. The height was 80 feet or more.

Dudley Bowden is due our thanks for his efforts at Millstone Mountain.

(Compiled from the notes of Milo Pyne, Andrea Shea, and Latham Davis)



Dudley Bowden guides TNPS members to interesting taxa around Millstone Mountain.

## SCOUTING THE BARRENS OF THE WESTERN HIGHLAND RIM NINE-ACRE GLADE

The second day of West Tennessee trips brought TNPS members together in Decatur County. The two targets sites were Nine-Acre Glade and Carroll Cabin Barrens, both on the Western Highland Rim almost in sight of the Tennessee River.

Milo Pyne led the short hikes across these limestone gravel hillsides that were like islands in the dense hardwood growth of surrounding hills.

Along the fringes of Nine-Acre Glade were found *Liatris aspera* (cupped, pink and glabrous bracts), *Liatris cylindracea* (appressed green bracts), and *Liatris squarrosa* (bracts pointing away from the axis of the flower head).

Others identified in flower were *Solidago rigida*, fruit of *Manfreda* (*Agave*) *virginica*, *Silphium trifoliatum* var *latifolium*, *Silphium terebinthenaceum*, *Gaura filipes*, and a beautiful blue sage, *Salvia azurea*.

Jagged and stunted red cedars stood along the slopes where members paused to sort tiny fossils from the crumbling rock shelves. Because of the slightly higher ponderance of flora over parts of this glade, Milo Pyne suggested that the Nine-Acre site might more accurately be called a barren.

## CARROLL CABIN GLADE

At Carroll Cabin Glade, the group saw many more *Liatris cylindracea* in better flowering condition. In surrounding, non-glade areas members saw *Liatris scariosa* (pubescent stem, with rounded bracts folded back from the head) and western silvery aster (*Aster pratensis*).

Additional thanks for these trips is due Andrea Shea, TNPS corresponding secretary, who did much of the organizational work, and Mary Martin Schaffner, TNPS president, who is rarely seen without her camera but this time gave her camera a break.

(Compiled from the notes of Milo Pyne)

## TNPS BOARD RE-ELECTS TWO MEMBERS AT CHICKASAW MEETING

Kay Jones of Columbia and Sally Mirick of Knoxville were re-elected to the Board of Directors during a meeting of the TNPS board September 21 at Chickasaw State Park.

A third place on the board, held by Lois Lord of Jackson, was left vacant until the next meeting. Board members serve two-year terms.

The brief board meeting also included a discussion of plans for the 1992 Annual Meeting, scheduled for March 27-29; the society's application for non-profit classification, and membership promotion. TNPS President Mary Martin Schaffner said she would reserve time at the next board meeting to discuss membership in greater depth.

## 1992 DUES TO INCREASE

TNPS members should keep in mind that dues will be increasing for the calendar year 1992.

Individual and family memberships will be \$15; student and senior-citizen dues will be \$10; institutional memberships will be \$20; and life memberships \$150.

The new dues structure was approved at the Annual Meeting last March.

Anyone wishing to pay 1992 dues a little early may send a check to the Tennessee Native Plant Society, Department of Botany, University of the Tennessee, Knoxville, TN 37996-1100. Our treasurer is Karen Yarbro of Knoxville.

## ANNUAL MEETING SCHEDULED FOR MARCH 27-29

The TNPS Annual Meeting will be held March 27-29 at Indian Creek Camp on Center Hill Lake east of Nashville. Begin making your plans now.

Kay Jones of Columbia, who is in charge of planning and registration, said members will have a choice of accommodations this year, including cabins, motel rooms, and camping facilities.

Additional plans and fees will be announced in the next issue of the newsletter.



*Xyris tennesseensis* joins Guthrie's ground plum, *Astragalus bibullatus*, as the most recent additions to the list of endangered species in Tennessee. See lead story on page 1.

# TENNESSEE FLORA 2001

## PLANNING HAS BEEN RENEWED

Efforts are being organized anew in support of the Tennessee Flora 2001 project.

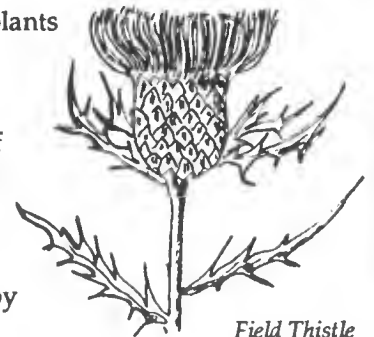
Paul Somers, TNPS Conservation chairman, said funding is needed and may be sought in a combination of grants, individual gifts, and an appropriations from the state legislature. An effort to obtain state funding failed during the 1991 session of the General Assembly.

However, as funding possibilities are explored, Somers said, planning on the 2001 publications is progressing.

Tennessee Flora 2001 includes plans to publish three flora references:

- 1) A popular, photographically illustrated book on native plants of the state;
- 2) A county atlas of known flora vascular plants based on a computerized inventory of state herbaria, published records, and new observations;
- 3) A guide to the complete vascular flora of the state that would provide keys for identification, and descriptions of diagnostic features, habitats, and the range for each species, plus illustrations of selected species.

Plans call for the completion of all phases by the year 2001.



*Field Thistle*

Vol. 14, No. 5; October, 1991

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## Tennessee Native Plant Society Newsletter

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# TENNESSEE NATIVE PLANT SOCIETY NEWSLETTER

Volume 14, Number 6

December 1991

*The following article has been published previously in the UT Agriculture magazine and the Tennessee Alumnus (Fall, 1991). We thank the editors of those publications, as well as the author, J. Laurie Byrne, and the artist, Hugh Bailey.*

## Where Have All the Wildflowers Gone?

*Carl and Frank are vital links in the multimillion dollar business that has markets all over the United States and Canada. The business is rooted (literally) in the heart of Tennessee, stretching along the rocky precipices of the Cumberland Plateau. The product is wildflowers. Carl and Frank (not their real names) make their livings trying to satisfy the steadily increasing demand, even though some flowers are becoming endangered.*

by J. Laurie Byrne

Carl, a congenial mountain man reared in the Beersheba Springs area of Grundy County, got into the business 40 years ago when a buyer asked if he could supply a large number of plants. The answer was yes, and today he ships more than one million plants a year. He hires professional diggers who are paid per plant uprooted from the wild.

Frank supplies many Middle Tennessee wholesale nurseries with dug wildflowers from his Bledsoe County operation in Pikeville. He recently called on Andrea Sessions, co-owner of Sunlight Gardens in Andersonville, to find out how the Anderson County nursery is able to successfully grow wildflowers in pots.

"He said that if I wanted 10,000 dwarf crested iris tomorrow, he would have his diggers get them today," said Sessions. "His family has been in the business for generations, and he is very angry with the move against collecting wildflowers."

The demand for wildflowers, though, may be threatening to make some Tennessee species extinct, says Dr. Brian Corr, UT Extension floriculture specialist.

"Many Tennessee wildflowers are becoming endangered because people are digging them up from the wild or stealing them from landowners and parks," Dr. Corr says.

Walt Jones, rare plant protection coordinator with the Tennessee

*Continued on Page 2*

## SUPPORT GROWS FOR FLORA 2001

The Tennessee Flora 2001 Project of TNPS has become one of the four priority issues of the Environmental Action Fund.

EAF, a principal environmental lobbying organizations in Nashville, made the Flora Project one of four issues to support during the 1992 Tennessee legislative session.

Although private funding will be needed for the project, state support is considered vital to its success. Tennessee Flora 2001 includes plans to publish three flora references, beginning with a photographically illustrated book on vascular plants of the state.

As a TNPS member you can assist with efforts to gain state support by calling or writing to your state senator or representative about the importance of the project. While many states have published flora references in recent years, no such reference has been published by Tennessee since the State Legislature authorized Augustin Gattinger's book, *The Flora*

*Continued on Page 3*

### ELSEWHERE IN THIS ISSUE

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# TENNESSEE NATIVE PLANT SOCIETY NEWSLETTER

December 1991  
Volume 14, Number 6

This Newsletter is a publication of the Tennessee Native Plant Society and is published six times a year, generally in February, April, June, August, October, and December.

The Tennessee Native Plant Society (TNPS) was founded in 1978. Its purposes are to assist in the exchange of information and encourage fellowship among Tennessee's botanists, both amateur and professional; to promote education of the public about Tennessee flora, and wild plants in general; to provide, through publication of a newsletter or journal, a formal means of documenting information on Tennessee flora and of informing the public about wild plants; and to promote the protection and enhancement of Tennessee's wild plant communities.

Dues are \$15 for the calendar year (\$10 for students and senior citizens, \$20 for institutions, and \$150 for life memberships). Membership privileges include a subscription to the TNPS Newsletter. Dues may be sent to the Tennessee Native Plant Society, Department of Botany, the University of Tennessee, Knoxville, TN 37996-1100.

## TNPS OFFICERS

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Latham Davis, Editor

Letters to the editor or correspondence about the Newsletter should be addressed to: TNPS Newsletter, P.O. Box 856, Sewanee, TN 37375.

## WILDFLOWERS—Continued

Department of Conservation, met a digger who supplied a wholesale outlet with 125,000 of one wildflower species in a single order. He is aware of 70 to 80 such diggers statewide who conservatively generate \$1.5 million annually. But, Dr. Corr says, there may be twice that number of commercial wildflower diggers in Tennessee.

The diggers represent the front end of a distribution system that eventually puts the plants in the hands and lawns of home gardeners. Prices received by the digger range from a low of 15 cents per plant to \$1 tops. The average price is between 30 and 50 cents, Sessions says.

The wholesale nursery then adds its profit margin and, in turn, sells the plant to nursery catalog companies that advertise nationwide. The consumer will pay between \$2 and \$5 per plant.

Paul Somers, a botanist with the Tennessee Department of Conservation, said the wholesalers are making "a good rural income."

A lot of the nurseries are on the Cumberland Plateau where the economy is sagging and there isn't much open land. "They're turning to the woods and going through the hills and hollows and digging these plants and selling them, not to nurseries per se," Somers says.

"They may call themselves nurseries, but they're not propagating much. They're just warehousing dug bulbs, putting them in crates and shipping them out to buyers. They often don't send their diggers out until they have an order for, say, 5,000 pink lady's slippers. They know where they are, and they go out and pillage these plants."

Tennessee suffers a disproportionate amount of such activity, according to Somers.

"We're one of the top states, if not the top one, for the wholesale marketing of wildflowers," he said. "Our trafficking dwarfs other states' trafficking. Warren County, Grundy County—those parts of Tennessee are where people from all over the country are coming to."

The Cumberland Plateau, which stretches in a band from Campbell and Scott counties in the north to Franklin and Lincoln counties in the south, harbors much of the state's wildflower trade. The plateau typifies Tennessee's topographical diversity, Jones says—mountains, rocky outcroppings, coves and ravines with very cool areas year around, areas with a lot of moisture, and others that are extremely dry.

It's an environment where many of the approximately 2,650 species of plants in the state are found. Many northern plants reach their southern terminus and southern plants reach their northern limits within Tennessee's borders.

Four-hundred-twenty native plant species are designated as endangered, threatened, or of special concern in the state. According to Jones, Tennessee ranks fifth or sixth nationally in numbers of endangered plant species.

Habitat destruction is the major factor in this trend, says Dr. Ed Clebsch, UT botany professor. Three of the top-ranked wildflower-producing states—Hawaii, California, and Florida—have experienced tremendous development over the past several years.



Taken from a drawing by Hugh Bailey

—Continued Next Page

"For the flora that's alive on the face of the earth now, no question about it, human activities are the biggest threat," said Clebsch. "Natural extinctions take place but, at the present time, man is overwhelmingly the biggest force both in extinction and modification of natural habitat."

Commercial wildflower diggers are most likely to cross the line of legality in two instances. One involves digging plants on Tennessee's endangered list or on the federally endangered list. The Rare Plant Protection and Conservation Act of 1985 specifies that one may not possess these plants without a permit.

Diggers also violate the law if they don't have the written permission of the landowner from whom the wildflowers are taken. Digging on a landowner's property without permission is criminal trespassing. The landowner, however, may remove any plant on the state endangered list as long as it isn't sold across state lines.

Nursery farmers may export from the state or sell certain endangered wildflower species with a license. The license allows these nurseries to take a maximum of 10 plants of any one species into their possession from the wild each year. The hope is that the rootstock, seeds, or buds will be used to propagate rare plants.

Nurseries that propagate wildflowers are at a serious pricing disadvantage because of competition from the commercial diggers.

"It takes about 10 times as much as they sell them for for us to produce and market a plant with any margin of profit," explained Clebsch, whose wife, Meredith Clebsch, owns and operates Native Gardens in Greenback.

A major concern, according to Sessions, is that nurseries that obtain wildflowers from the wild use language in their catalogs and advertising that is "misleading and very deceptive."

"They might say, 'Woodland wildflowers commercially grown.' They are wild collected, but they put them in pots or grow them in nursery rows for a few months; then they're considered nursery grown, which is misleading. Nursery grown is very different from nursery propagated," she said.

Jones said the most effective means of protecting wildflowers is through education of the consumer.

"It's the person who wants to plant these flowers in the backyard that creates the market; if there were no market, there would be no digging," he said.

"Wildflowers and other native plants are part of our heritage," added Clebsch. "Once one of them becomes extinct, it will never be back. It's lost." □

*J. Laurie Byrne is a writer for the Agricultural Extension Service. She originally wrote this article for UT Agriculture magazine.*

## WORDS TO THE WISE ON WILDFLOWERS

How do you know what you're buying?

Specifically ask the seller, "Was this plant collected from the wild or was it nursery propagated?"

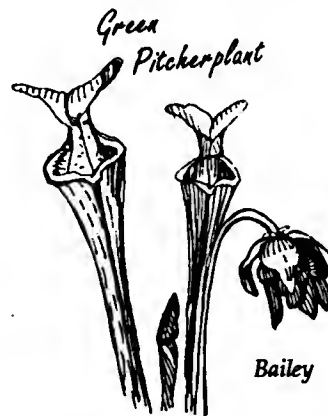
- Be suspicious of certain kinds of plants. Most orchids and trilliums, for example, have likely been dug from the wild.
- Low prices should be viewed with skepticism. Expect to pay within the same price range for a wildflower that you'd pay for a potted perennial plant.
- If the plant is sold in a pot, look at the potting medium. If it looks like a commercial mix, that suggests that the plant was grown in the pot. If it has dirt around it or if the plant was potted off center, that suggests that it was dug from the wild.
- Join a conservation organization, native plant society, or wildflower garden club, such as the Tennessee Native Plant Society, the Eastern Native Plant Alliance, or the American Association of Garden Clubs.
- Write to national nursery companies to protest commercially dug wildflowers offered for sale through their catalogs.

## FLORA 2001—Continued

of Tennessee, published in 1883, revised in 1901.

The Tennessee Legislature will begin 1992 with a special session on January 14, and the Flora Project could be considered as early as February.

TNPS president, Mary Schaffner, is the TNPS representative on the EAF board, while Paul Somers, also a TNPS member, represents Tennessee Citizens for Wilderness Planning. EAF has selected Pam Wolfe of Nashville as its lobbyist this year.



## NATIVE PROPAGATORS OFFER A GREAT ALTERNATIVE

TNPS endeavors to support nurseries that propagate native plants. These nurseries now offer a wide range of species for the gardener. By their very existence, as well as their hard work and love of plants, they expose "nursery diggers" for what they are—plunderers of our natural heritage.

The three Tennessee native plant propagating nurseries, all members of TNPS, are:

Natural Gardens  
4804 Shell Lane  
Knoxville, TN 37918

Native Gardens  
Route 1, Box 494  
Greenback, TN 37742

Sunlight Gardens  
Route 1, Box 600-A  
Andersonville, TN 37705

## THE GENUS ASTRAGALUS

A close cousin of Guthrie's ground plum is the much more common Tennessee milk-vetch (*Astragalus tennesseensis*), mentioned in the report from the U.S. Wildlife Service.

Tennessee milk-vetch, like Guthrie's ground plum, occurs at the edge of cedar glades. Differing mainly in the color of its flowers, *A. tennesseensis* has cream-colored, pealike flowers that form a raceme two to three inches long. The leaves are hairy-pinnate.

Altogether, the genus *Astragalus* contains some 375 species, which, according to Professor Tom Hemmerly (*Wildflowers of the Central South*, 1990, Vanderbilt) are mostly western species, understandable, since these are primarily prairie plants.

Peterson (1968 guide) calls the genus large and confusing, requiring technical manuals to separate the species.

Hemmerly mentions one other species known in our area—Rattle-vetch (*A. canadensis*), which has yellow flowers. Some members of the genus are also called locoweeds, though locoweeds are most often members of the genus *Oxytropis*. The reason is a toxic substance produced by the plants that affects the muscular control and vision in grazing animals, causing them to jump over small objects and bump into things. Some species are also called "poison vetch."

The Audubon Field Guide (*The Audubon Society Field Guide to North American Wildflowers, Eastern Region*, 1979, Knopf) says "the toxicity appears to vary with soil conditions, but the decaying plants are believed to pass on their toxicity to other forage crops."

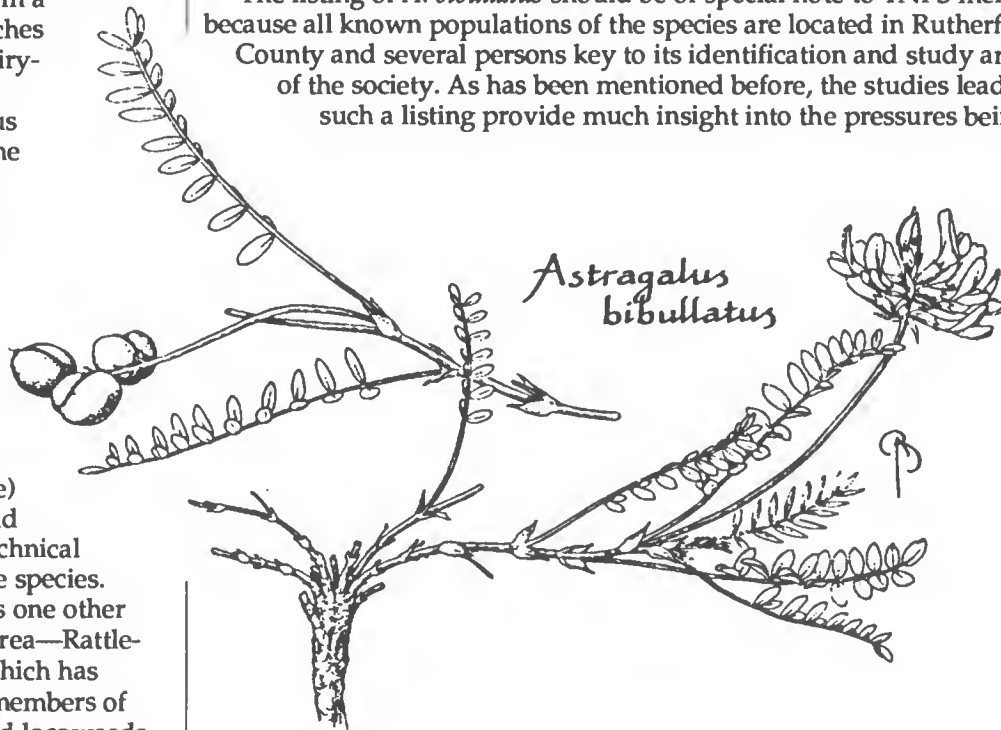
## GUTHRIE'S GROUND PLUM ADDED TO ENDANGERED SPECIES LIST

### ASTRAGALUS BIBULLATUS IS UNIQUE TO TENNESSEE

**A**s was mentioned but briefly in the October issue, Guthrie's ground-plum (*Astragalus bibullatus*) was named this fall to the federal list of endangered species.

Notice of the action was sent out from the Asheville, North Carolina, office of the U.S. Fish and Wildlife Service.

The listing of *A. bibullatus* should be of special note to TNPS members because all known populations of the species are located in Rutherford County and several persons key to its identification and study are members of the society. As has been mentioned before, the studies leading up to such a listing provide much insight into the pressures being felt not



simply by the rare plants but by a great majority of our native species.

The following information is excerpted from the Wildlife Service report prepared by Robert Currie, field supervisor at the Asheville office.

**G**uthrie's ground-plum is a perennial member of the pea family (*Fabaceae*). The plant has short stems (two to six inches) that arise from a tap root. Each stem supports five to ten leaves, which are two to four inches long and are composed of about twenty-four small leaflets. The inflorescence is a raceme supporting ten to sixteen purple flowers. The plants flower in April and May.

The fruits are fleshy pods that usually mature in May and June. At maturity the pods are colored red above and yellow below.

*Astragalus bibullatus* superficially resembles the widespread *A. tennesseensis*. However, *A. tennesseensis* can be readily distinguished by its yellow rather than purple flowers, its yellow-brown rather than reddish-topped fruits, and the copious number of hairs found on the plant (Somers and Gunn 1990).

Specimens that would now be assigned to *A. bibullatus* apparently were

—Continued Next Page

first collected in about 1861 by the early Tennessee botanist, Augustine Gattinger. For over 100 years this material was assigned to *A. crassicaarpus*, which is a related but morphologically and geographically distinct species.

The Rutherford County type locality for the species was rediscovered in 1980 by Milo J. Guthrie. Milo is also known to TNPS members as Milo Pyne, now with the Tennessee Department of Conservation and Environment. Botanists familiar with the genus *Astragalus* determined that the plants found by Guthrie represented a new species.

Guthrie's ground-plum is endemic to the cedar glades of Middle Tennessee. All sites are associated with the thin-bedded, fossiliferous Lebanon limestone outcroppings that support the unique cedar glade communities found in Tennessee's central basin. The species grows only along glade margins with deeper soil or in areas within the glades that are partially shaded.

Cedar glades are typically wet in winter and spring and dry and very hot in summer and fall (Somers and Gunn 1990, Quarterman 1986).

Each of the three extant populations has one to two colonies, the largest containing about 200 plants. Each population is within a short distance of Murfreesboro. Residential, commercial, and industrial development associated with this growth threatens to destroy or adversely modify the remaining habitat for the species.

All of the known *A. bibullatus* site locations are threatened by the encroachment of more competitive herbaceous vegetation or woody plants, such as cedar, that overshadow the species and compete for limited water and nutrients. Active management to reduce or eliminate this encroachment is required to ensure that the species continues to survive at all sites. Both the species and its habitat are vulnerable to livestock grazing, and this factor is a threat to all populations. Direct destruction of habitat for commercial, residential, or industrial development, intensive right-of-way maintenance activities, off-road-vehicle traffic, and trash dumping are the most significant threats to the species at this time. (Somers and Gunn 1990; Horn, *in litt.*, 1990).

Each of the populations is located on private property. In addition, about a mile from one colony is a group of about 100 plants, located on a glade owned by a wildflower enthusiast. This colony was apparently established with seed collected from the nearby natural population. Another colony located in Davidson County, and identified by plant collections in 1948, has apparently been extirpated. The main site is now under the water of Percy Priest Reservoir, and adjacent glades have been badly abused by vehicle travel.

The federal action adds protection of the Endangered Species Act of 1973 to the Tennessee Rare Plant Protection and Conservation Act of 1985. One result of the new ruling is that additional protection is provided when the species is threatened by the action of federal agencies. Sale of the plant in interstate commerce is also prohibited. Another provision adds federal violations to state trespass law. As noted before, the Endangered Species Act does not protect any plant from the action of owners of the land on which the plant is located.

The Wildlife Service report notes that the owners and managers of all the known populations of *Astragalus bibullatus* have been made aware of the plant's location and the importance of protecting the plant and its habitat. □



Inflorescence of *A. bibullatus*

## THE ECOLOGY OF GUTHRIE'S GROUND PLUM

The Tennessee cedar glades, in which Guthrie's ground plum is found, create conditions hostile to most plant species of our area. These glades exist on thin-bedded limestone outcrops where eastern red cedars cling to the rock and persist to an ancient age.

While meaning death to forest and most prairie species, such conditions, as we know, offer opportunities to a few plants that are able to adapt.

In his book, *Wildflowers of the Central South*, Professor Tom Hemmerly of Vanderbilt University said, "Winter temperatures in open glades are similar to those of adjacent forests. However, summer maximum temperatures at the soil surface often register 10° to 30° F above those measured in nearby protected habitats. Thin glade soils generally remain waterlogged during much of the wet winter and early spring months, but rapid drying occurs during the warm months of the year, resulting in a virtual desert."

Hemmerly goes on to explain that like desert plants, glade plants have special ways of coping with hot, dry summers.

"Many glade species, such as the glade stonecrop, flower early in spring and set seed before conditions become unfavorable. Others survive by having long roots that tap water from soil beneath the rock (Tennessee coneflower) or by storing water in succulent leaves (limestone fame flower)."

Scattered glades are found in East Tennessee and some surrounding states, but the most extensive glades, with the largest number of endemic species, are in Rutherford County and the adjacent counties of Wilson and Davidson. Hemmerly points out, however, that these "are populous, rapidly growing counties, and many glades have already been destroyed or are threatened by the encroachment of civilization."

## BOTANY QUIZ— THE QUESTIONS

Check your answers against the answers on the facing page.

1. Approximately how many plant species are native to North America?
2. How many vascular species have been identified in Tennessee?
3. How many of these species in Tennessee are alien—were introduced or naturalized in the wild?
4. How many plant species are presently known to be rare or endangered in Tennessee?
6. Approximately what proportion of modern prescription medicines are derived from wild plants?
7. What percentage of the Plant Kingdom has been investigated for biotechnical applications in medicine and pharmacology?

---

### **Wildflowers Delivered to Your Doorstep**

One of a handful of Tennessee nurseries that sell only native plants that are nursery propagated

Send \$2 for a catalogue containing information about plants and their cultivation.

### **Native Gardens**



Meredith Bradford-Clebsch  
& Ed Clebsch  
Route 1, Box 494  
Greenback, TN 37742  
615/856-3350

A TNPS member advertiser

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## YOU CAN HELP SAVE ROADSIDE WILDFLOWER PROJECT

**T**he Tennessee Department of Transportation is currently funding a three-year program through Tennessee Tech's Department of Agriculture to research the feasibility of landscaping with wildflowers along major highways.

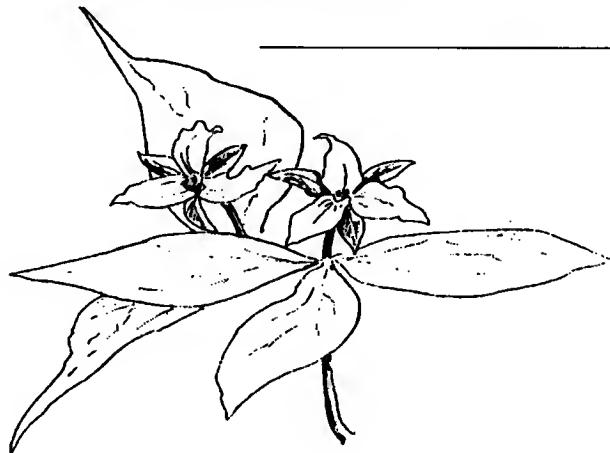
The researchers have six experimental plots seeded in all regions along the interstates. But the contract will end in June of 1993, and people close to the project believe the Transportation Department may not continue to pursue wildflower landscaping.

There is a federal law that one quarter of one percent of federal funds expended for landscaping projects be used to plant native wildflowers; however to date no projects have been completed using the money.

The Tennessee legislature also passed a bill in January of 1990 that directed the Transportation Department to institute a pilot project for wildflower preservation and propagation. It is very important that letters be sent to the commissioner of transportation to encourage this pilot project and an extended wildflower research program. The letters need to emphasize saving our natural heritage and saving taxpayers dollars with an effective landscaping maintenance program. Letters should be mailed before January 15.

Please write to:

Commissioner Jimmy Evans  
Tennessee Department of Transportation  
Suite 700  
J.K. Polk Bldg  
Nashville, TN 37243-0349



### **Botanical Data Needed on *Cypripedium* and *Trillium***

**W**hile many rare and endangered native plants have been well studied, little is known about even the basic biology of a large number of common, widespread wildflowers. This ignorance is a real handicap in assessing potential damage from digging wild plants for horticultural or medicinal use.

Now a working group within the Eastern Native Plant Alliance is seeking to develop data on the life cycles of species in two widely distributed genera, *Cypripedium* and *Trillium*, with special emphasis on the impact of wild collection. If you know of relevant studies, completed or in progress, please send information about them to Edward Clebsch, Department of Botany, University of Tennessee, Knoxville, TN 37996-1100.

# PLANS FOR THE ANNUAL MEETING

## TNPS JOINED BY AAFB

The latest plans for the TNPS Annual Meeting will bring together TNPS and the American Association of Field Botanists.

Members of both organizations will gather for programs, meals, and general discussions, though business meetings will be separate.

Bus Jones, AAFB president (also a TNPS member), said he thinks the joint meeting will be interesting for everyone.

The annual meeting is scheduled for March 27-29 at Indian Creek Camp on Center Hill Lake east of Nashville. Most activities will be schedule for March 28.

Kay Jones of Columbia, who is in charge of reservations and registration, said members will be able to reserve either cabins or motel rooms at a very reasonable rate. More details about accommodations and meals and their costs will be published in the February issue of the this newsletter.

Although activities for the annual meeting are still being organized, one speaker has been schedule. He is Dr. Hal Horwitz of Richmond, Virginia, a botanists and photographer, who will provide a multi-media program on wildflowers.

**Mark your calendars for March 27, 28, and 29.**

## AAFB A SISTER ORGANIZATION

Some TNPS members are also members of the American Association of Field Botanists, which has been known to send members deep into the Rockies, to the edges of arctic tundra, and even to New Zealand.

AAFB is open to persons interested in wildflowers. Members receive a bi-monthly newsletter and, on occasion, have a chance to meet for trips to unusual wildflower habitats. The president is James I. (Bus) Jones of Hixson, Tennessee.

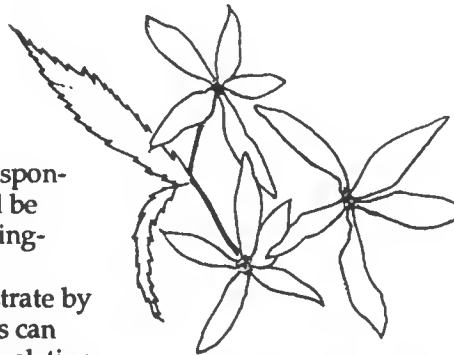
The AAFB aims are: To enjoy searching for and identifying wildflowers; to exert every effort toward the protection of wildflowers and the preservation of their natural habitats; and to encourage the exchange of information among members. Dues are \$10 per person and may be sent to Evelyn T. Gabor, 4441 Comet Trail, Hixson, TN 37343.

## Seminar in Kingsport

An urban landscaping seminar, sponsored by Clean Kingsport, will be held all day, February 20, in Kingsport, Tennessee.

The aim of the seminar is to demonstrate by example that businesses and developers can increase profits, encourage community relationships, and positively affect the environment by maintaining desirable landscapes. The cost is \$35 for admission and lunch.

To obtain a brochure and more details, call Laura Rhea at 615/229-9422, or write Clean Kingsport, P.O. Box 1403, Kingsport, Tennessee 37662.



## BOTANY QUIZ — THE ANSWERS

1. According to the Center for Plant Conservation, between 18,000 and 20,000 plant species are extant in North America.
2. According to the *Checklist of the Vascular Plants of Tennessee* compiled recently by the University of Tennessee, 2,750 species have been identified in the state. This includes pteridophytes and gymnosperms, as well as angiosperms (true flowering plants).
3. According to the *Tennessee Checklist*, 526 of the 2,750 species in Tennessee are introduced species.
4. Presently ten Tennessee species are listed as endangered by the U.S. Fish and Wildlife Service. Tennessee's rare plant list includes 56 other taxa that are candidates for federal listing, meaning they are still under evaluation or awaiting the writing of a formal listing proposal.
6. According to a statement by Dr. Peter Raven in the *National Geographic Magazine* (August, 1990), about 25 percent of prescription medicines are derived from plants.
7. Less than 10 percent of wild plants have been tested for possible applications in modern medicine.

re re re

### A GREAT SOURCE OF WILDFLOWERS FOR YOUR GARDEN

Choice, hardy, reliable, showy.  
From our nursery to your garden  
be it woodland, rock, moist, or dry

Send \$2 for illustrated,  
descriptive catalog or SASE for list  
of wildflowers, hardy ferns, and  
perennials.

## Sunlight Gardens

Rt. 1, Box 600-A  
Andersonville, TN 37705

A TNPS Member Advertiser

# Holiday Greetings



Have a  
Wonderful  
1992

## MEMBERSHIP RENEWAL TIME

**I**t's time once again to renew your membership in TNPS, which asks that dues be paid by the calendar year.

In accordance with a motion passed at the annual meeting last March, dues are increasing for 1992. It is hoped that additional revenue will allow the society to undertake special projects for the study and protection of wildflowers and other plants indigenous to Tennessee.

Whether you are a professional botanist or an amateur with a fascination for wild plants, you are not only encouraged to join but welcome to participate in the Tennessee Native Plant Society. Thanks for joining us.

I am a new member                       renewing member

Name \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

**Membership Categories:** Regular \$15, Student and Senior \$10;  
Institutional \$20; and Life \$150.

**Mail to:** Tennessee Native Plant Society, Department of Botany,  
University of Tennessee, Knoxville, TN 37996-1100.

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### Tennessee Native Plant Society Newsletter

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