



# NATIVE PLANT SOCIETY OF NORTHEASTERN OHIO

Founding Chapter Of

THE OHIO NATIVE PLANT SOCIETY

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*On the Fringe*

THE JOURNAL OF THE OHIO NATIVE PLANT SOCIETY

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Volume 6

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No. 2

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## DUES ARE DUE!!!

Thanks to all of you who responded so generously and so promptly. TO THE REST, **PLEASE SEND IN YOUR DUES!!!** I do not want to have to spend the time and long distance funds to call each of you to remind you. **SIT DOWN RIGHT NOW AND WRITE THAT CHECK!!**

## IMPORTANT NOTICES

MEMORIAL WEEKEND, FRIDAY, MAY 27 THROUGH MONDAY, MAY 30, **OHIO NATIVE PLANT SOCIETY SPRING WEEKEND**, SPONSORED BY CINCINNATI CHAPTER. We will be going to Adams County to see a number of very rare prairie plants. Accommodations will be at Woodland Altars, in dormitory style quarters. Motels are available nearby for those who wish them. Meals and lodging through Sunday will cost \$36.00 total. Those wishing to stay into Monday will go to the Cincinnati Nature Center and have a personally guided tour of the wonderful Cincinnati Zoo and Botanical Gardens. I can recommend this area very highly. Additional information will be coming soon from the Cincinnati Wildflower Society directly to you.

**OHIO NATIVE PLANT SOCIETY TRIP TO THE BRUCE PENINSULA, SATURDAY, JUNE 18-25.** We will be leading a field trip to the Bruce Peninsula to see orchids, birds, and marvelous scenery. This trip is open to the whole state group, so if you are interested, call **338-6622** as soon as possible. The cost will be no more than \$300.00 American, and possibly less. We will be staying at Red Bay Lodge, and all room, food, tax and gratuities, guide fees, and boat trip to Flowerpot Island are included. We will have five guides at our disposal. Most of you know about the Bruce, and many have been there. This is a marvelous opportunity. Details can be gotten by calling the above number.

Many of you have written or called to point out that for some time the numbering of the Journal has been erroneous. The Journal is done entirely on a volunteer basis and takes considerable time. The copy is proof-read carefully, but it must be admitted that the minor details often get overlooked. The newsletter is issued six times a year, so I am sure that you can go back and correct the errors. This issue is correctly numbered, Volume 6, Number 2.

### PROGRAMS AND EVENTS:

**March 6 (Sunday) Dayton Chapter** - Field trip to be announced.

**March 11 (Friday) Cincinnati Chapter** - Northern Hills Fellowship Church. **6:30 p.m.** Annual Dinner - **8:00 p.m.**, Dr. D. DeJong will speak on "Galapagos Islands."

✓ **March 19 (Saturday) Cleveland Chapter** - **1:00 - 4:00 p.m.** - Museum of Natural History.

**March 19 (Saturday) Wilderness Center** - **1:00 - 4:00 p.m.** - Field trip to Doughton Gorge for ferns, mosses and liverwort. Meet at Wilderness Center.

✓ **March 21 (Monday) Columbus Chapter** - **7:30 p.m.** - Sharon Woods Metro Park. "The Origin and Ecology of Ohio's Endangered Plants" by Guy Denney.

✓ **March 21 (Monday) Dayton Chapter** - **7:30 p.m.** - Cox Arboretum - Dr. Valerie Pence of the University of Cincinnati will discuss "Tissue Culture of Rare Plants."

✓ **March 24 (Thursday) - Cleveland Chapter** - **7:30 p.m.** - Holden Arboretum in the Thayer Building - Allison Cusick of the Division of Natural Areas and Preserves will give a slide lecture on "The Edge of the Prairie." In Ohio, the Prairie Peninsula blends with the Eastern Deciduous forest to produce a complex community with eastern and western elements. We'll survey Ohio's grasslands, looking at its origins, present day distribution, and its future. As always, Allison is a dynamite speaker and most knowledgeable.

**April 2 (Saturday) Cincinnati Chapter** - **9:30 a.m.** - John Bryan State Park - Field trip for Hepaticas and spring wildflowers.

**April 3 (Sunday) - Dayton Chapter** - **1:30 p.m.** - Field trip to Spring Grove Cemetery.

✓ **April 5 (Tuesday) Cleveland Chapter** - **7:30 p.m.** - Rocky River Reservation Nature Center - Dr. David Klarer, Chief Biologist of the Old Woman Creek National Estuarine, and Gene Wright, Manager at Old Woman Creek, will give a joint lecture on "Plants of the Estuarine, From Phytoplankton to Emergents." They will cover the microscopic algae and diatoms through the vascular plants. Using a 20,000 power electron microscope, you will see plants you never dreamed existed. This is a joint lecture with the Western Cuyahoga Audubon Society. **\*Note change of day.**

✓ **April 9 (Saturday) Wilderness Center** - **2:00 - 4:00 p.m.** - Field trip to Spangler Park, Wayne County for early spring flowers.

✓ **April 9 (Saturday) DNAP (Div. Natural Areas & Preserves)** - **1:00 p.m.** - Wildflower walk at Stage's Pond Preserve.

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**April 9 (Saturday) DNAP - 10:00 a.m.** - Birds and wildflowers walk at Shallenberger Preserve.

**April 16 (Saturday) DNAP - 1:00 p.m.** - Wildflower wald on Rim Trail at Conkle Hollow Preserve.

? **April 18 (Monday) Columbus Chapter - 7:30 p.m.** - Sharon Woods Metro Park - Dick Moseley, Chief of DNAP, will talk on "Wildflowers of the State Nature Preserves."

**April 18 (Monday) Dayton Chapter - 7:30 p.m.** - Cox Arboretum - Jo Apple will talk on "Propagating Woodland Wildflowers."

? **April 23 (Saturday) DNAP - 1:00 p.m.** - Wildflower walk in Conkle Hollow — perfect time of year and in area where wildflowers are at solid carpet on floor of Hollow.

**April 23 (Saturday) Cincinnati Chapter - 9:30 a.m.** - Field trip to Ault Park to see a Beech Woods plant community.

**April 29 to May 1 (Friday to Sunday) Wilderness Center** - Botanizers field trip weekend to Black Hand Gorge and Licking County. Call Marvin Smith for details.

✓ **April 30 (Saturday) Cleveland Chapter - 9:30 a.m.** - Bedford Reservation - Meet at Egbert picnic area, east end of park. Jay Beswick will lead us on a walk to find the plants of Bedford Reservation. This is one of Jay's favorite haunts and he knows where all the secret places are, including Trailing Arbutus. Jay is always fun to be with.

**April 30 (Saturday) Cincinnati Chapter - 9:30 a.m.** - Field trip to Mary Gray Audubon Sanctuary in Connersville, Indiana.

**April 30 (Saturday) DNAP - 8:00 a.m.** - Conkle Hollow - Migration of warblers, tanagers, ovenbirds, waterthrush and others in Conkle Hollow.

✓ **May 7 (Saturday) Cleveland Chapter - 10:00 a.m.** - Black Hand Gorge - Dr. Jeanne Willis, who gave us a lecture on Black Hand Gorge in 1987, will lead us on a field triip of this state nature preserve. Jeanne knows every nook and cranny, and is aware of the geologic as well as botanic characteristics of this unusual area. **Reservations to 338-6622. It is imperative I have an idea of how many by 4/25.** You may want to plan to go down Friday evening and we can give you motel suggestions.

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Athens	-	Dr. Scott Moody	-	614/593-2360	Day
Cleveland	-	Tom Sampliner	-	216/932-0670	Eve.
Cincinnati	-	Jim Innis	-	513/385-0670	Eve.
Columbus	-	Jim Stahl	-	614/882-5084	Eve.
Dayton	-	Ellen Fox	-	513/897-8139	Eve.
Natural Areas	-	Switchboard	-	614/265-6453	Day
Toledo	-	Denise Gehring	-	419/535-3058	Eve.
Wilderness Center	-	Marvin Smith	-	419/869-7575	Eve.

**The Sessile Trilliums**

The sessile trilliums, subgenus **Phyllantherum**, comprise a large and confusing group of American trilliums. Most are less showy of flower than those of the pedunculate group, but all hold interest for the gardener. In this group, the "leaves," really enlarged bracts on the flower scape, possess, in Eastern species, varying degrees of mottling in green tones and underlying bronzes. Even without the flower, they are worthy of cultivation as accent plants. The flowers differ from those of the pedunculate group in that the petals and sepals stand directly upon the leaf-bracts (i.e., they are sessile). Except in one species, the petals are erect and somewhat connivant, rather than spreading to reveal the reproductive organs within. Petal colors run mostly into maroon or bronzy reds with varying degrees of green and brown intermixed. Yellow and green flowered species occur, and albino, partially albino and pallid color forms abound.

Sessile species occur only within the continental United States and adjacent Canada.

The most recent taxonomic treatment (and in my opinion, the most accurate and useful treatment so far) by Dr. John D. Freeman, appeared in **Brittonia**, Vol. 27, no. 1, pp. 1-63, January-March, 1975. Serious students and gardeners must consult Freeman's work to gain insights into the nature of the "species" in this section, for all previous works badly confuse populations and forms.

Some species in this subgenus appear less distinct from one another than do species in subgenus **Trillium**.

Freeman divides the sessile subgenus **Phyllantherum** into three somewhat informal "species groups." These, he says, are groupings of species which he feels show affinities with each other. The groups do not represent taxonomic sections in the usual sense.

<b>The Eastern Sessile Trilliums</b>		
<b>Group I</b>	-	The <b>Trillium recurvatum</b> group
		<b>T. recurvatum</b>
		<b>T. lancifolium</b>
<b>Group II</b>	-	The <b>Trillium sessile</b> group
		<b>T. sessile</b>
		<b>T. decumbens</b>
		<b>T. underwoodii</b>
		<b>T. decipiens</b>
		<b>T. reliquum</b>
		<b>T. discolor</b>
		<b>T. stamineum</b>
<b>Group III</b>	-	The <b>Trillium maculatum</b> group
		<b>T. maculatum</b>
		<b>T. foetidissimum</b>
		<b>T. cuneatum</b>
		<b>T. luteum</b>
		<b>T. ludovicianum</b>
		<b>T. gracile</b>
		<b>T. viride</b>
		<b>T. viridescens</b>

## Group I - *Trillium recurvatum* Beck

The aspect of this species is tall and lanky, but the plant varies considerably depending upon its vigor, the local race, and the type of soil on which it grows. The species ranges from northern Alabama to extreme southwestern Michigan, and from Ohio and Kentucky west into Iowa, Illinois, Missouri, and to northern Louisiana. It can be locally abundant or very rare in various parts of its range. Its common names include prairie trillium, toad trillium, and perhaps most imaginative of all, "bloody noses," a folk name in parts of Missouri.

Structurally one of the most distinctive of the sessile trillium species, *T. recurvatum* plants are tall, with strongly petiolate leaves up to six inches long, heavily to rather obscurely mottled. The sepals recurve to become adpressed to the scape below the leaves, a feature found (to a lesser degree) in only one other sessile trillium. The petals, usually rather ovate-lanceolate are acute at the tips, condensed into an almost stalk-like claw at the base and are about one to one and one-half inches long. Their color is a dark maroon red to purple, fading to a brownish red with age and varying in color forms to greenish brown, maroon or even pure yellow.

The very clear colors make particularly desirable subjects for garden use.

The rhizomes of this plant are rather narrow, elongated, and brittle and must be handled with care. The plant is completely winter hardy.

In most of its habitats it grows in a heavy clayey or limey soil. Riverbank or low woodlands constitute favored situations northward.

In my garden, the plant is prone to form small offsets which, in my sandy soil, are slow to mature.

The open growth habit and darkly mottled leaves make this an interesting, if not terribly showy plant. It is common enough over most parts of its range that reasonable collections for horticulture ought not in any way to injure wild populations. Wildflower dealers from Indiana westward to the Great Plains may occasionally offer this species to the trade.

## *Trillium lancifolium* Raf.

*Trillium lancifolium* appears to be poorly known, but its narrow segments, its almost wire-thin petals, and its rather delicate proportions make the plant a most desirable contrast plant in the wild garden.

The lance-leaved trillium ranges from eight to eighteen inches tall, with somewhat drooping sessile, narrowly lanceolate-elliptic mottled leaves. With narrowly linear, crepe-paper textured, crinkled, purplish-green petals one to two inches long, the plant is one of the most distinctive of all sessile trilliums. The entire aspect of the plant, scape, leaves, and petals, is one of narrowness.

Found from South Carolina to Alabama, especially in areas adjacent to the Cumberland Plateau in Alabama and Georgia, it seems not to have a generally distributed population, occurring instead in local areas with wide gaps between colonies. Besides the localities bordering the Piedmont, it occurs in the vicinity of Lookout Mountain Tennessee, and much farther south in Georgia and Florida in areas bordering the Chatahoochee River.

The colonies I have seen grew on clayey floodplains and adjacent streambank soils in mature woods which, in that area, are somewhat brushy and rank. The plant is both local and unobtrusive where it occurs. Until one is experienced, locating the plant in the wild is not easy.

The narrow, linear white rhizomes grow just below the surface of the heavy soil, and break easily. Digging the plant, therefore, is difficult, but pieces of broken rhizome soon produce small plants.

The generally delicate aspects of this species seems to imply that the plant might lack hardiness. This seems not to be so, for it has survived seven winters, some of them very open and bitter, in central Michigan.

**T. lancifolium** seems to be unknown to most gardeners, at least in the North. This is a pity, for it is quite unlike any other species. I prize it highly, and am trying to find a ready means to propagate my plants for distribution.

#### Group II - *Trillium sessile* L.

**Trillium sessile**, the toad trillium, enjoys a wide range, from western Virginia westward about to the Indiana-Illinois state lines. It is largely absent from Illinois, but abundant again in Missouri and northern Arkansas. Northward it reaches to southwestern Michigan where it is very rare, all of Ohio, and eastward into southwestern Pennsylvania and barely into southern New York. Southward, it ranges into central Kentucky and Tennessee, with a few outlying stations in Alabama and North Carolina. It grows in a great variety of woods, thickets, and even in fence rows and hog pastures. It prefers a rich, fairly heavy, limestone soil.



*Trillium lancifolium*

Horticulturally, a much misunderstood species, most plants illustrated in magazines as **T. sessile** do not represent this species, but rather either **T. cuneatum** or one of the western species formerly lumped by horticultural writers into "**T. sessile californicum**."

True **T. sessile**, is a plant of low stature, rarely more than ten inches tall, with relatively broad, obscurely mottled, broadly sessile leaves. The sepals spread but do not reflex. The inch long petals, widest at the middle, and tapering without a claw to their base, range in color from

rich maroon-purple to dingy liver brown or greenish yellow.

One of the most tolerant of trilliums, its chief value horticulturally lies in its great adaptability to most climates and soils, and to its early blooming period. It deserves a place in the garden even though it is not as showy as some. Plants offered as *T. sessile* by many dealers may prove to be other species.

In Kentucky, west of Louisville, *T. sessile* intergrades at times with *T. recurvatum*. Intergrades possess narrower leaves than *T. sessile*, with varying degrees of the petiole condition. Their petals, too, vary between the conditions found in both species.

### **Trillium decumbens Harbison**

If I had to choose but one sessile trillium for the rock garden, it would be this species. It is almost unbelievable in growth habit. Truly decumbent, its great, strikingly mottled leaves spread flat upon the forest litter and rocks among which it grows. The first time we found it in the wild, we were amazed; we could not escape the impression that the plants resembled ancient oil lamps with the four-inch petals the red, glowing lamp fires. The fact that this species often grows in large patches accentuates its striking manner of growth.

*T. decumbens* arises from a stout, deeply buried rhizome. The five to eight inch scape literally bends and lies along the ground. The sessile leaf cluster, up to eight to ten inches in diameter on robust plants, bears at its center relatively short green sepals, but very erect, slightly twisted, lanceolate three to four inch dark red-maroon petals. When sunlight strikes these large petals the "ancient lamp" effect is stunning.

This species appears very early in the season, but blooms from mid to late season. Long before the buds open, the highly colored, mottled leaves draw attention in the garden. As fruits develop following flowering, the stem elongates somewhat, but remains decumbent. The leaves are short-lived and soon dry up or rot away leaving the scape and fruit to mature over the summer.

A natural rock plant, we find the decumbent trillium in sloping rocky woods, talus below shaley ledges, and at the bases of massively weathered tufa-like limestone boulders. Typically, the plant forms colonies of hundreds of plants neatly spaced so that the leaf tips just touch. We have seen the plant growing in very mature woods where dense shade develops early, and in open, second-growth woods of oak and maple, where sufficient light prevails to allow some grasses to grow.

*T. decumbens* occurs in a narrow band from northwestern Georgia, to Tuscaloosa, Alabama, mainly in foothills of the Cumberland Plateau and the Ridge and Valley Provinces. *T. decumbens* is not present in every available habitat within its range as some species of trillium are: rather large colonies occur somewhat sporadically.

Rock gardeners ought to make every effort to get this species into cultivation, for it is truly an outstanding plant. Although it can be locally abundant, (Freeman, 1975), its range is limited. Alabama conservationists have expressed special concern

(Freeman, et al. 1979) that it might be collected excessively. It should be propagated by nurseries or botanical gardens and offered to the trade, not heavily collected from the wild. It is not, to my knowledge, offered commercially at present.

Planted in a well drained, slightly acid loam, this species has not only wintered well for me, but has seeded in my garden. Its manner of snuggling up to the contours of the garden ledges or against a rock is unlike that of any other species. Those who have seen it, desire it.

### **Trillium underwoodii Small**

I have found Underwood's trillium in the wild only once in my experience with it is therefore limited.

A trillium of medium stature, it stands from five to 10 inches tall with sessile, lanceolate leaves. The leaves bear conspicuous mottlings in shades of light and darker greens. According to Freeman (1975), the mottling varies from colony-to-colony. The sepals, lanceolate to ovate, and one to two inches long diverge or spread. The oblanceolate to narrowly elliptic petals are one and one half to three inches long. Color as in nearly all the sessile species varies from dark purple or maroon to brownish purple, or greenish yellow. This variation is influenced both by the genetics of the individual plant and the age of the flower; most sessile species losing the rich reddish maroon tones with age and developing a liver-brown, less attractive color.

In **T. underwoodii**, the stamens bear very short filaments and lateral pollen sacs on a connective which extends a millimeter or two beyond the pollen sacs. Stigmas are very short and recurved upon the ovary.

Although this species is very closely related to and like **T. decipiens** in many aspects, Freeman (1975) asserts that they can usually be distinguished in the field readily. **T. underwoodii**, apparently, does not grow in mixed populations with its closest kin. Its short, erect scape permits the drooping leaves (at flowering) to touch the substrate (not so in the taller **T. decipiens**).

Within its range **T. underwoodii** blooms from mid-February to April. It occurs from Mobile, Alabama, across north Florida to western Georgia, extending northward onto the Piedmont, especially in Alabama.

We found Underwood's trillium growing along the base of ravine slopes near a small stream, in a very rich beech and oak woods. Soil was slightly sandy and rich in humus. Plant companions at this station were acid-soil species.

Plants we observed in John Lambert's arboretum collection at Mena, Arkansas, were particularly rich in both leaf and flower coloring.



Trillium discolor



## **Trillium decipiens Freeman**

The epithet 'decipiens' means "deceiving," and refers to the similarity between this species and **T. underwoodii**. A much taller plant, with stiffly spreading leaves, the scapes attain heights of up to one foot. The broadly lanceolate petals range from greenish brown to maroon, the maroon tones fading to liver brown with age. The strongly mottled, lanceolate leaves often with a light band of pale green along the midrib and almost maroon tones below the greens would render the plant striking in the garden if it never bloomed. At blooming time, the flowers are large in proportion to the leaves, making them appear quite conspicuous for this type of trillium.

We have seen this trillium growing in a very robust form in acid woodlands in Alabama, and on limestone soils in woods and along stream banks near Marianna, Florida. It grows in much the same situations as do both the sessile and prairie trilliums farther north, preferring the lower slopes of wooded bluffs along streams.

A few of the Florida plants have survived one severe, open winter here at Saginaw. This past spring we collected a few rhizomes from plants farther inland in Alabama which may prove to be even more hardy. Our experience with widely ranging Coastal Plain and Piedmont plants found from the Mobile Bay area eastward into the Carolinas has been that populations from Alabama tended to be more winter-hardy than those from farther east.

One disturbing note on collecting this plant: in Florida, we found a whitish fungus destroying the leaves and fruits of a great many plants of some populations. Persons collecting this species from the wild ought to take great care not to introduce disease to their gardens or to introduce this disease to new areas where it might spread to other species.

## **Trillium reliquum Freeman**

This very rare and limited trillium has a peculiar distribution. It grows along the Savannah River near Augusta, Georgia, and in adjacent South Carolina, and also disjunctly in southwestern Georgia near the Chattahoochee River. In both localities it grows in mature hardwoods with oaks and beeches, on bluff summits and slopes to the flood plain.

This species, like **T. decumbens**, has scapes which can be semidecumbent, although, in my experience, not so strikingly so as the description of the species by Freeman implies. The scapes, with a slight S-shaped bend stand out over eight to 10 inches tall. The sessile, bluntly tipped leaves show beautiful mottlings of light and dark greens underlain with some maroon tones. The flowers are somewhat nondescript, with lanceolate-ovate, maroon purple petals about one to one and a half inches long. Yellow petaled forms occur.

**T. reliquum** blooms from mid-March to late April in the wild. In my mid-Michigan garden, it blooms in mid-late May, being one of the later trilliums here. Although it is winter hardy (Augusta, Ga. plants) it does not grow well nor flower well for me. A deep forest species, its leaves are extremely sensitive to windburn. It is not, there-

fore, particularly desirable horticulturally.

As the rarest of the sessile trilliums in the East, it deserves designation as an endangered or threatened species and should be left in the wild.

### **Trillium discolor Wray ex Hooker**

After **T. decumbens**, this species would be my choice as the best sessile trillium for the rock garden. It is a small plant, with leaves held close to the ground, rarely growing six inches tall in cultivation, but growing occasionally to eight or ten inches tall in the wild.

The sessile leaves, richly blotched in dark green over a softly mottled background, and broadly ovate-elliptic, appear very early in spring. In its native haunts, the plant blooms early, but in my northern latitude the leaves and buds appear, followed by a period of several weeks of waiting. Finally, when most of the other trilliums begin to fade, the delightful lime to lemon colored flowers appear. The short, wide, tapered petals show greenish veins and are distinctly apiculate. The flowers last long but slowly fade to a light straw color. Fresh blooms are spicy-fragrant.

This trillium is restricted almost entirely to the upper tributaries of the Savannah River system in the Piedmont of Georgia and South Carolina and the Blue Ridge Mountains valleys of North Carolina. Although it grows in a variety of woods, it prefers small flats along mountain streams where thickets of **Leucothoe**, **Kalmia** and **Rhododendron** occur. In such localities, the most vigorous plants grow in bright, open areas under tall trees.

The small size, late blooming, distinctive lemon coloring, full hardiness, and attractive leaves all season make this a truly outstanding plant for the rock garden. It is, however, a very local species. If it is not yet designated for protection under the endangered species act, it probably will be, for a large part of its originally limited range has been destroyed through the building of power dams and impoundments. Efforts by some botanical gardens or qualified horticultural societies to obtain and propagate the plant for release commercially would undoubtedly take pressure off the remaining wild populations, and should be undertaken.

I have grown this plant in Michigan for almost twenty years; it is beginning to seed around the parent colony. I will attempt to make seed available through the ARGS seed exchange.

### **Trillium stamineum Harbison**

A large and distinctive species, **T. stamineum** is practically unknown to gardeners outside its range. It is the only trillium with spreading, corkscrew twisted petals borne directly atop the obscurely mottled leaves. The aspect of this plant is like no other trillium.

Scapes stand twelve to twenty inches tall, with the leaves variably lanceolate to ovate-elliptic, usually fairly broad for their length and weakly mottled to plain green. The petals are short, one to one and a half inches long, twisted, and dark maroon in most forms, although I have a form with pale yellow petals overlain with pink. Clear

yellow forms have been reported. In this species, as in **T. discolor**, the petals are apiculate. The stamens are massive, erect, clustered into a conspicuous ring, almost more apparent than the petals to a visiting insect.

**T. stamineum** is too tall for the usual rockery, never-the-less one should grow it for its distinctive flower. A place at the back of the rock garden or in a woodland setting would be best.

This species grows natively in a north-south band from northern Alabama and Mississippi into Tennessee. Within this area it is locally abundant in rich woods, on ledges and on slopes above and descending onto flood plains. We have found it growing with **T. recurvatum** but have seen no evidence that they hybridize.

**T. stamineum** is completely winter hardy with me in central Michigan. It is illustrated in color in the Time-Life book on Wildflower Gardening (Crockett, et al., 1977).

### **Group III - Trillium maculatum Raf.**

This large and quite showy trillium ranges across the middle and outer Piedmont and Coastal Plain of South Carolina, Georgia and Alabama, and locally south into the panhandle of Florida.

Plants range in height from a foot to almost two feet tall, with sessile, elliptic to broadly elliptic leaves. The leaves may be obscurely to strongly mottled. In the best forms we have seen (near Augusta, Ga.) the leaf markings were especially prominent, with light, medium and dark bronzy green blotches, some underlain with a deep maroon red. The petals, distinctly spatulate, broadest beyond the middle and stiffly divergent/erect, are rich maroon-red to a dark garnet red. The color does not fade to the dull liver tones of so many of the sessile trilliums. The spotted trillium, therefore, is a colorful and particularly desirable garden plant.

**T. maculatum** blooms very early in the season, both in the wild and in the garden. It grows in a variety of rich woodlands of both upland and floodplain. We have seen it on acidic and limestone soils.

As in most of the sessile trilliums, bicolored yellow and purple petaled and pure yellow petaled forms occur, but we have not seen them.

This trillium has been much confused by botanists with other Coastal Plain and Piedmont species. Much of the literature prior to Freeman's treatment (1975) may refer to other entities so one cannot rely upon stated characteristics or distributions in the older works.

Despite its deep south distribution, plants from near Augusta, Ga. have proved completely hardy here for many years. Recently we obtained a few plants from west Florida. These were relatively taller, with smaller leaves and flowers than those from Augusta. It remains to be seen how they prosper.

In leaf and flower color, this is almost more desirable as a garden plant than the larger and more vigorous **T. cuneatum** which is of similar aspect. **T. maculatum**

is not, to my knowledge, offered in the trade.

### **Trillium foetidissimum Freeman**

The fetid trillium quite strongly suggests **T. sessile** in its general size and habit. Its leaves, however, are far more strongly mottled, and are carried at a slightly different angle. One gets the impression, in the field, that the leaves are carried at a precise right angle to the stem and droop less at the tips than do those of **T. sessile**.

While the ranges of **T. foetidissimum** and **T. sessile** do not overlap, specimens of either from horticultural sources could easily be mistaken for the other species.

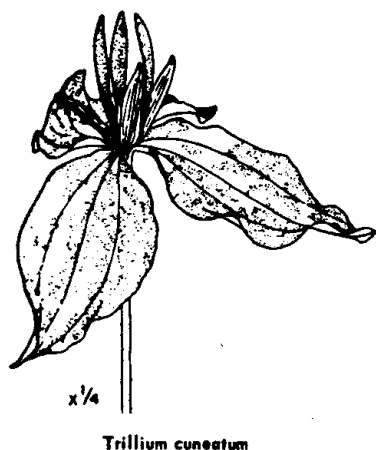
In **T. foetidissimum**, the leaves are more conspicuously mottled with more varied tones, the ovary is not distinctly six-winged, the stigmas are usually not as long as the ovary (at flowering). The scent of the flowers in **T. sessile** is spicily unpleasant, while those of **T. foetidissimum** have, according to Freeman, a "strong, nearly stifling, carrion odor."

**T. sessile** occurs in the midland states mostly north of Tennessee and Arkansas. **T. foetidissimum** occurs east of the Mississippi and that portion of Louisiana which lies east of the Mississippi River.

We found this species growing in low woods along a small river in rather trashy thickets, and also in more attractive cover on lower ravine slopes near the headwaters of small rills. It grew on open forest floors in leaf mold, and occasionally on low rocky outcroppings. Plants were mostly scattered, with little tendency to form clumps.

Freeman (1975) says that **T. foetidissimum** inhabits floodplains, river bluff forests and ravine slopes under beech, magnolia, and pine.

This is an attractive plant, particularly in leaf. If it proves to be sufficiently winter hardy for northern gardens, it will be very useful in the rockery. If it proves not to be hardy, it is sufficiently like **T. sessile** so as not to be badly missed.



### **Trillium cuneatum Raf.**

**Trillium cuneatum**, also widely known as **T. hugeri**, is one of the plants frequently illustrated as "**T. sessile**," especially in European articles. A large trillium, it is worthy of a featured spot in the wildflower garden.

Plants stand one to two feet tall and bear large, chordate-ovate acuminate leaves which possess strong mottlings in light and dark green with some maroon undertones. These leaf markings fade and blur somewhat during the season, but the plant remains a good accent until it dies

down at season's end. In the best garden forms, two to three inch, cuneate (wedge-shaped), heavy textured, inch wide maroon-purple to bronzy purple petals stand upon the leaves. Petal bases are not narrowed or thickened into a claw in this species. The narrower sepals may be green or with strong maroon purple coloring on their upper surfaces.

An early emerger and bloomer, **T. cuneatum** remains in bloom for weeks. When fresh, the flowers have a faint, pleasant scent. Older blooms lack odor and fade to the usual liver-brown undertones, which, to my mind, detract somewhat from the plant's beauty.

Last spring, we found plants in Tennessee which developed undertones of orange as the flowers aged. Some of these plants now grow in my garden where we will observe them. If they still show promise, we will attempt to self-pollinate them and work toward the possibility of producing orange trilliums.

**Trillium cuneatum** grows natively on Ordovician limestone soils in Southern Kentucky, Tennessee, western North and South Carolina, Georgia, Alabama and northern Mississippi, occurring farther south into the Piedmont and Coastal Plain as one moves toward the Mississippi River. It occurs in a variety of woods and thickets, from very mature beech and oak forests to dry scrubby oak wood. Plants from Georgia and Alabama which we have observed have smaller, narrower petals of darker purple-maroon than those from Tennessee and Kentucky. The largest plants we have ever seen grew near Huntsville, Alabama in a mature beech woods. They stood fully two feet tall, with immense leaves and four inch petals.

As with most of the maroon purple sessile flowered species color forms occur with brown, liver, greenish yellow, lemon yellow petals, or bicolors with dark bases and green or yellow extremities. We grow a beautiful, clear light green form from the hills of northern Georgia. It is not a very large form, but it is very attractive.

Despite its being rather closely associated with specific limestone soils in the wild, the plant is extremely easy to cultivate in almost any garden soil. Even in my very unsuitable sandy acid soil seedlings appear regularly.

Appalachian wildflower nurseries offer the plant (often listed as **T. sessile**) and it is well worth growing.

### **Trillium luteum (Muhl.) Harbison**

Except for flower color and petal shape, the general description for **T. cuneatum** might serve also for **T. luteum**. In **T. luteum**, the somewhat narrower, lanceolate petals range in color from pale lemon yellow to a strong clear darker yellow in wild plants. However, some of these darker yellow forms, transplanted to my garden, consistently yield paler, greener tones at this latitude.

Flowers of **T. luteum** emit a pleasant lemon scent, those of **T. cuneatum** a spicy, musky or faintly fetid odor.

**T. luteum**, an excellent garden plant occurs naturally in western North Carolina,

and then, more abundantly in eastern Tennessee, where it is the only sessile trillium in Great Smoky Mountain National Park (Freeman, 1975) and thence northward and westward it occurs into south-central Kentucky. In the vicinity of Gatlinburg, Tenn. the blooming plants literally light up the forests and roadsides with a soft yellow glow.

It prefers to grow in rich, moist, rocky woods and lower hillsides, often on lower slopes above a small streambed. Unlike some sessile species, however, it is not confined to river drainage situations.

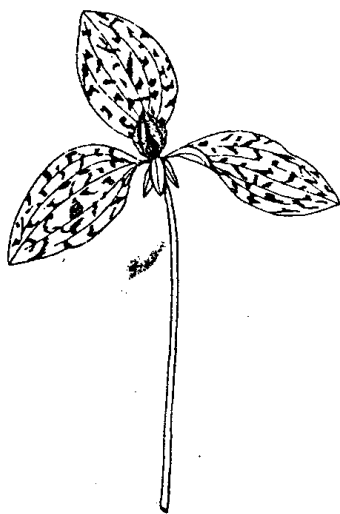
In southern Kentucky *T. luteum* and *T. cuneatum* occur in the same woodlots, a situation seldom seen elsewhere. In such stations obvious hybrids and intergrades abound.

Authors prior to Freeman frequently lumped *T. luteum* with *T. viride* Beck, or with various pallid color forms of other species. Consequently, the confusion in the literature about its range and characteristics is considerable. Freeman's treatment (1975), seems to me best to reflect the situation which exists in nature.

### **Trillium ludovicianum Harbison**

Louisiana trillium stands about six to twelve inches tall. The bracts or leaves are sessile, lanceolate to broadly ovate, and from three to five inches long. The leaves are mottled distinctly, but not so strongly as in *T. decipiens* or *T. underwoodii*. Petals are linear-oblongate, one and one-quarter to two and one-quarter inches long, somewhat divergently erect. In color they are green, merging into purplish at their bases. In this species the lower portion of the petal is narrowed and somewhat thickened into a claw-like base. Flowers have a distinctly bicolored appearance. The ovary is six-angled.

This species, according to Freeman (1975), is somewhat intermediate between the species found in Missouri Arkansas and the Texas-Louisiana border country, and the sessile species found farther east.



*Trillium recurvatum*

We have not seen this species in flower yet, but we have seen the plant and collected it in the wild in central Louisiana. Because our time was very limited, we were able to visit only one small station. Here, under beeches, magnolias, and a scattering of pines, on small ravine bluffs along a stream, Louisiana trillium grew in heavy leaf mold at the bases of trees and about old rotten logs. In this woods, which had been recently pastured, plants were not common. Freeman (1975), however, avers that the plant is locally abundant in central Louisiana. He gives its range as "Upper Coastal Plain of Louisiana (west of Mississippi River) and eastward

into Mississippi." It is very local in Mississippi and is said to intergrade there with **T. cuneatum**.

Since we have just obtained this species this past summer (1980) we cannot yet comment on whether or not it will prove hardy.

Except for the avid collector, this species, like several others from the Gulf Coast region, is not essential to gardeners, for its horticultural differences from other, thoroughly hardy and readily obtainable species is minimal.

### **Trillium gracile Freeman**

**Trillium gracile** is another sessile species with which I am only slightly acquainted. We found it growing abundantly on floodplain alluvium of tributary streams to the Sabine River system in extreme western Louisiana. The plants we found had been completely inundated, and while covered with dry mud, were in full bloom.

Stems (scapes) of this species stand eight to twelve or more inches tall. The sessile, elliptic or elliptic-ovate leaves (bracts) are only two and one-half to three and one-half inches long, the apices of those we saw bluntly rounded. Color was a dull bluish green with some darker spotting, but lacking the dramatic coloration of some of the more southern sessile trilliums found farther to the east.

The petals are linear-elliptic, fairly short, one to one and one-half inches long, their tips acute or rounded. Freeman gives the color as either dark purple or yellow. Those we saw were exclusively dark purple. Because of the flooding, the plants we observed at first hand were deteriorating; we observed no characteristic odor. Freeman likens the odor of graceful trillium to that of the morel mushroom (*Morchella*).

**T. gracile** grows in open to dense pine and hardwood forests on slopes, stream-banks and alluvium. While Freeman says that the soils where it grows are usually sandy, where we collected our plants the soil was distinctly clayey.

**T. gracile** ranges from extreme southeastern Texas eastward into Louisiana where it occurs primarily on the upper Coastal Plain of counties bordering on the east Texas boundary.

We have yet to see how this species winters in central Michigan. Like **T. ludovicianum** and **foetidissimum**, if it fails to survive here, it is not sufficiently distinctive horticulturally to be deeply mourned. If it is hardy, then from the collector's viewpoint — hurrah!

### **Trillium viride Beck**

In northeastern Missouri and southern Illinois, in counties close to the Mississippi River grows a trillium which until recently, was much confused with **T. luteum**. This plant, **T. viride**, the green trillium, seems to be quite distinct.

A moderate plant, **T. viride**, stands ten to eighteen inches tall, with elliptic leaves either dark green or only very faintly mottled. Leaves are somewhat blunt tipped and exhibit numerous stomata on their upper surface (Freeman, 1975, page

44), a feature generally not found in other sessile species. The petals are narrow, spatulate to linear, up to two inches long, and somewhat clawed (narrowed basally). Petal color is frequently dark purple at the base, becoming green to yellowish green distally. All purple and all green forms occur. In my plants there is a tendency for the petals to be divergent spreading and somewhat twisted.

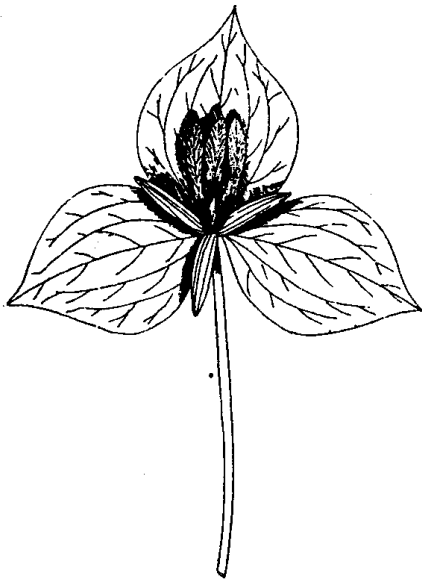
**T. viride** grows in rich woodlands, rocky, but damp hillsides, and slopes above river flats within its range, often on limestone soils. We were surprised to find it at its best in very thin open sites often quite brushy and grassy, with a minimum of tree cover overhead.

Plants from Missouri have proved difficult to grow and even more difficult to flower here. This may be because of the sandy, dry, acidic nature of my soils, but in any case it is unfortunate, for the dark leaves and green flowers make this a desirable garden plant.

### **Trillium viridescens Nutt.**

This Ouachita-Ozarkian Mountain species bears a close relationship and physical similarity to **T. viride**. It grows somewhat taller, to over eighteen inches, with broader leaves which end in acuminate tips. Mottling of the leaves may be absent or obscure. Leaves tend to be carried at right angles to the scape. The narrowly linear-spatulate petals stand erect with a gently graceful single twist. Petal color is a clear green above a dark maroon base. (See color photograph, Crockett, et al., 1977). As with the other sessile species, yellowish, green, and all purple forms occur.

**T. viridescens** occurs in southwestern Missouri, all of western and northwestern Arkansas, and eastern Oklahoma, with a few stations known from extreme southeastern Kansas and northeastern Texas. Its habitat is rich soil on slopes, bluffs, talus and river alluvium under mature trees. Magnificent native colonies grow in John Lambert's Mountain Fork River Arboretum near Mena, Arkansas, often in surprisingly heavy floodplain soils among canebrake.



*Trillium viridescens*

A handsome species, well worthy of cultivation, **T. viridescens**, like **T. viride** had proved difficult for me. It is prone to a leaf dieback here, so early in the season as to interfere with food manufacture. Consequently plants linger but do not store sufficient food to flower well. Perhaps my sandy, acid soil is the problem.

From the standpoint of interest and the collector, there is no such thing as a "bad" trillium species. All evoke uncommon interest, many present a real challenge to those who search for them, some possess great grace and beauty. Surely they are among the loveliest of American wildflowers and a noble contribution to the world's forests



and gardens.

## A PERSONAL POINT OF VIEW

In this day of high interest in and concern for endangered species, I am sure that some readers will feel that one ought not to discuss or to encourage the growing of any "rare" species. True, some trilliums are rare and local, but within their ranges, all but about two or three species are really quite common. Wise collection, coupled with propagation and nursery availability is quite feasible, and should, in my opinion, be undertaken. It will not endanger any species if approached properly.

I sit on the Technical Advisory Committee on Endangered Plants for the Michigan Department of Natural Resources. It is our function to review, recommend, and establish the rarity status of our native Michigan plants. I also speak before many types of garden clubs and conservation organizations. I have heard all kinds of statements and arguments relating to the conservation of our native plants. Many are irrationally overzealous and some, such as the frequently heard statement that picking trilliums kills the plant, are simply untrue.

Endangered species laws seek to protect rare wild plant populations, or prohibit commercial exploitation of wild plants. The purpose of such laws is not to totally prohibit the growing of these species or the sale of horticulturally propagated stock.

I believe that a most worthy function of plant societies, arboreta, and botanical gardens is to obtain, propagate, and disseminate stock of even rare or endangered species to gardeners and nurserymen. Such organizations, working carefully with conservation departments, can monitor and grow with continuity from generation to generation many horticulturally desirable rare plants. By introducing selected horticultural forms these institutions and organizations can help to satisfy the demands of collectors and gardeners, thus taking pressure off wild populations through illicit collecting and black market trading, which, unfortunately, will exist so long as no other source of plants is available to the inveterate collector.

From seed\*, or from rhizome divisions and offsets, trillium propagation is quite easily accomplished. In my opinion, wise and carefully monitored collection and dissemination should be undertaken. It can be done without endangering any species, and it can add new dimensions to our gardens.

**\*Both trillium seeds and rhizomes have built-in dormancy factors which must be considered in propagation. Trillium seeds have a double dormancy; a first period of low temperatures and freezing stimulates the emergence of the root from the seed. A further period of shoot or stem dormancy is necessary, which usually in nature involves a second winter before the shoot dormancy is broken. Trillium seeds, therefore, usually take at least two years to appear above ground. Maturation from that point requires from three to seven years depending upon species, soil fertility, and other cultural factors.**

Trillium rhizomes also have a bud dormancy. New growth is not initiated until the buds have been cooled sufficiently following a given period of growth. Also, if

the top of the plant is removed, the plant will make no further growth above ground that season. It will, however, appear again the following season after the required low temperatures break the bud dormancy.

Unless one is prepared to care for seeds in a frame or pot for several years, I believe it is more practical for gardeners to sow the seeds in a suitable spot in the wild garden and let development take its own course.

Trillium rhizomes may be scarified or partially girdled to produce a ring of buds which will ultimately develop into offset rhizomes. Once formed on the girdled rhizome, however, these offset buds must first undergo the required dormancy-breaking temperatures before any growth appears above ground.

Propagation is not difficult, but it does take time. Someone with the proper facilities ought to undertake a program of tissue culture and experimental dormancy-breaking to speed the propagation process.

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## WINTER GARDENING WITH NATIVES by Frank Kershaw

As wildflower gardeners, far too many of us are content to sit back in our easy chairs and wait for spring to rekindle our gardening interest. This need not be the case, as the 4th season (Dec. 21-Mar. 21), can offer rewarding garden experiences with plants and wildlife.

Unlike the other three seasons, where flowers and foliage dominate, the winter garden relies on shape, form and pattern, primarily provided by woody plants as opposed to wildflowers. Fortunately, mother nature has been generous to residents of this area in endowing this region with a wide variety of native trees and shrubs which have carry-over interest. A few outstanding examples are: columnar shaped birch and sweetgums, round-headed beech and bitternut hickory, vase-shaped elms and hackberries and flat topped flowering dogwoods. Albeit these trees are without leaves, their strong shapes silhouetted against the sky, add character and definition to the winter scene.

Native conifers such as hemlock, balsam fir, white cedar and white spruce which retain their foliage year round take on a new significance in winter imparting mass, color and grace. Snow and ice covered boughs drooping downward contrast effectively with the stark bareness of deciduous trees. Unique, shapes may also result from the forces of wind such as with white pines, where branches are noticeably shorter on the prevailing wind side. Staghorn sumac (*Rhus typhina*) with its antlershaped ascending branches is another uniquely sculptured tree.

As well as branching pattern, tree bark takes on added meaning in the winter landscape. Most readers are probably familiar with the exfoliating white bark of our native canoe or paper birch, but there are others. These include the muscular sinewy bark of ironwood, the smooth, cool grey bark of American beech and the flaky bark of hop hornbeam and shagbark hickory. On occasion, native trees, may exhibit unusual bumps or knobs due to past injuries or gall disease. These wart-like protrusions can be conversation pieces.

Like trees, a number of our native shrubs make a significant contribution in winter through form, bark colour, berries and even leaves and flowers. Mountain laurel, an attractive ten to twelve foot tall shrub has received extensive use as a specimen, foundation and woodland planting, retaining its leathery green leaves throughout winter. Native rhododendrons may also retain their foliage but usually in a less attractive curled form. Remember, if you choose to plant either of these species an acid soil pH 4.5-5.5 is required, along with wind protection. A sunny location also promotes denser branching.

Witch hazel (*Hamamelis virginiana*) a tall shrub whose branches have long been used by water diviners is unique in flowering late in the year (late Nov. into Dec.) in eastern Canada. Its narrow, ribbon-like, yellow blooms are a real curiosity.

Red-osier dogwood, (*Cornus stolonifera*) a medium height clump-shaped shrub with spectacular red barked twigs and branches is a real attention getter against white snow. In order to ensure red branches and twigs in later years, old twigs which are less colorful should be pruned out, to promote new growth and color.

Berry producing shrubs not only add an attractive touch to the garden, but also provide valuable winter food for birds and animals. Notables include common winter-berry, high bush cranberry, red oiser dogwood and flowering dogwood. American bittersweet (**Celastrus scandens**), a native vine is remarkable in producing orange colored fruits which open to reveal scarlet covered seeds. Unfortunately, this attractive vine has proved too popular for its own good, with many plants extirpated in the wilds by collectors seeking its fruits for winter dried flower arrangements.

Another interesting shrub during late winter and early spring is native pussy willow (**Salix discolor**), a clump-shaped shrub of medium height, which produces attractive, fuzzy catkins.

Unlike many exotic shrubs, native shrubs seldom require special winter protection such as burlap wrapping. This will minimize maintenance.

Native wildflowers and ferns may offer a touch of greenery in the winter, provided there is minimal snow. Examples of evergreen ferns include: Christmas fern, ebony spleenwort, and shield and polypody ferns. Native groundcovers such as foam flower, bluets, moss, wintergreen and bearberry remain in leaf during the winter, albeit leaf color often takes on a bronzy tinge. The red berries of the latter two species offer a food source for birds.

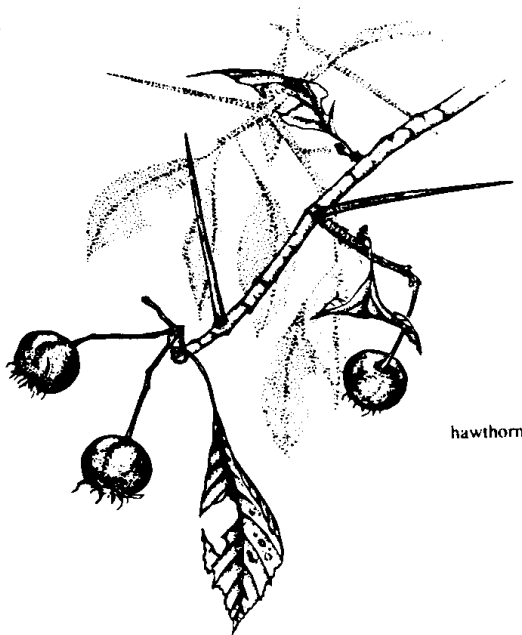
Should your wildflower garden include a moist area, try a few skunk cabbages (**Symplocarpus foetidus**) which generate enough internal heat to melt the snow around the emerging spath (rolled leaf). In effect, this plant is its own space heater.

Sandy, drier environments favouring rock garden and meadow species offer an ideal habitat for our native yucca (**Yucca glauca**) from southeast Alberta. Its sword-shaped leaves, which stay erect and green throughout the winter, are most attractive.

For many years, dried flower arrangers have long recognized the beauty of native wildflower seed heads and pods. Shapes vary considerably from the button-like seed heads of mountain-mint and wild bergamot to the cone shaped seed heads of coneflowers and black-eyed susans. The boat-shaped pods of butterflyweed and common milkweed are often used in such arrangements. When collecting wild seed heads and pods, do so in early winter, before the ravages of ice, snow and strong winds take their toll.

Many native plants provide food and cover for birds and animals. These creatures add life and action to the winter garden. Bird feeders, and suet sticks will encourage birds to make your property a regular destination on their daily winter itinerary.

Unlike the other three seasons where garden scenes are appreciated mainly from within the garden, the winter garden is primarily viewed from inside the residence. Accordingly



hawthorn

in positioning trees, shrubs and wildflowers for winter effect, first determine from where most of your outward viewing will take place. With the trend in newer houses to greenhouse type kitchens, this room has assumed new importance in garden viewing. The front entrance to your home is also an important area for winter viewing where wildflowers, small trees and shrubs can be used to define the approach.

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Frank Kershaw is Vice President of the Canadian Wildflower Society and teaches an annual course on native plant gardening.

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#### SMALL WHITE LADY'S-SLIPPER by Guy L. Denny

One of the most spectacular floral displays in Ohio can be witnessed during mid-May near Castalia, on the Resthaven Wildlife Area in Erie and Sandusky counties. For it is then thousands of lovely small white lady's-slipper orchids adorn the wet, calcareous prairies there.

In Ohio there are historic records for this orchid from Champaign, Erie, Lucas, Montgomery, Portage, Trumbull and Wyandot counties. Today, however, it is known only from the Resthaven Wildlife Area as well as from one site each in Henry and Portage counties. The Portage County population was last seen in 1979 and may no longer exist. In 1980 only 13 plants remained at the Henry County site.

Presently, the small white lady's-slipper is reported from only 12 states and two Canadian provinces. It tends to occur in isolated, often small, scattered populations primarily growing in moist calcareous soils of tallgrass prairies and open fens. Although the greatest number and largest populations of small white lady's-slipper orchids are in Minnesota, this species is considered to be either rare, threatened, endangered or extirpated throughout its range. It apparently no longer occurs in Saskatchewan, Missouri, New Jersey or even Pennsylvania where it was first discovered, but has not been reported, since 1865.

Small white lady's-slipper was first reported by the famous American botanist Gotthilf Heinrich Ernst Muhlenberg, who discovered it in the vicinity of Lancaster Co., Pa. Unfortunately, Muhlenberg neglected to properly describe his new-found species when he listed it in the **Index Flora Lancastriensis**, published in 1791. Consequently, in 1805, when the fourth edition of Linnaeus' **Species plantarum** was completely rewritten and significantly enlarged through the editorship of Karl Ludwig Willdenow, professor of natural history at the University of Berlin and director of the Berlin Botanical Gardens, Willdenow included a proper botanical description of **Cypripedium candidum** based on Muhlenberg's records. This is why the scientific name carries both men's names.

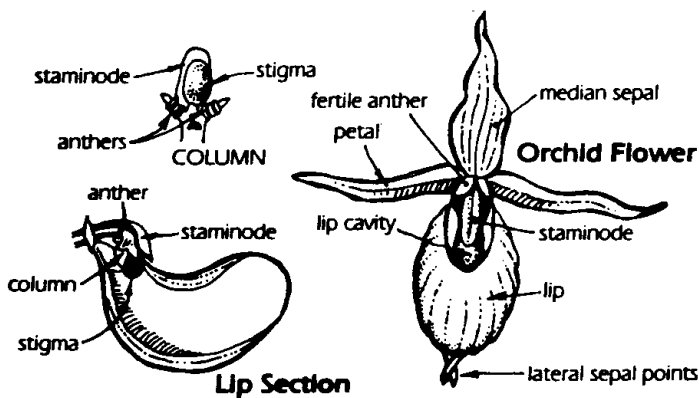
The generic name **Cypripedium** comes from the Greek **Kypris**, which was Latinized to **Cypris**. This is the name for Venus or Aphrodite, the goddess of love and beauty who was supposed to have been born on Cyprus. The second part of the generic name is derived from the Greek **pedilon**, a sandal or slipper. Hence, the origin of the common name "lady's-slipper" orchid. The specific name **candidium** comes from the Latin **candidus** meaning "shining white," which is in reference to the shiny, waxy white blossoms.

The small white lady's-slipper is the smallest of lady's-slipper orchids. It stands only 1" to 14" tall. Its distinctive pouch or "slipper" is only about 3/4" to 1" long, which is just a little more than half the size of that of the more common stemless or pink lady's-slipper orchid (**Cypripedium acaule**). White lady's-slippers grow singly or in compact clumps or clones of three to 60 stems or more. Usually there is only one blossom per stem, but two on a single stem have been reported.

Lady's-slipper orchid blossoms are unique with their distinctive slipper-like pouch, which is actually a specialized inflated petal called the "lip" or "labellum." It is quite unlike the other remaining two petals, which look more like sepals than petals. These two petals, as well as the three sepals, are long, greenish-brown structures" often streaked with reddish-brown or madder-purple. However, the petals are distinctively spiral and are longer and narrower than the sepals. They are also located on either side of the labellum. The shorter, broader sepals, on the other hand, are located one above and one below the labellum. The top sepal is wavy and barely twisted and arches over and above the labellum. The bottom two sepals, which droop beneath the labellum, are fused and therefore give the appearance of being a single structure. It is interesting to note that although the labellum is the most showy of the three petals, most of the fragrance is produced by the other two petals and the three sepals, not by the labellum as one would expect.

Like all members of the genus **Cypripedium**, the small white lady's-slipper possesses an intricate and fascinating pollination mechanism for guaranteeing cross-fertilization. These orchids have been characterized as "semi-trap" flowers. The central opening to the pouch or labellum is inviting and permits easy access to pol-

linators, primarily small bees. Both color and fragrance probably play a major role in attracting pollinators, but neither nectar nor any other food substance are contained within the pouch. Nevertheless, once the bee is fooled into passing through the entrance into the pouch, it is prevented from exiting the same way by the recurved rim surrounding the entrance and slippery interior walls. Consequently, once inside, escape is possible only by squeezing through one or two channels leading to two small exits at the rear of the pouch, on either side of the column. The yellow-capped column is comprised of the stigma, style,



anthers and filaments all united in a single structure. This escape route is marked by a series of fine purple stripes, long bristles and translucent "windows."

In the process of exiting, pollen collected from previously visited lady's-slippers is brushed off as the bee squeezes by the stigma (female flower part). As it forces its way out the exit it is then pushed against one of the two anthers (male flower part) located on either side of the stigma and just above the exits. In doing so it picks up a sticky mass of pollen on its back, which will be carried on to the next orchid it visits. If the bee is too large to follow this escape route, it must either chew its way through the wall of the labellum or die within the trap.

Resthaven Wildlife Area supports one of the largest populations of small white lady's-slipper in the world. Today there are an estimated 2,000 to 3,000 plants growing there. It is therefore surprising to learn that in the early 1970's most naturalists believed this species had disappeared from the Resthaven site. Where clumps of small white lady's-slipper had formerly grown, corn had since been planted. Still other potential sites for these orchids had been invaded by a dense cover of shrubs. Unlike the small yellow lady's-slipper, which is reported to grow only in shade, the small white lady's-slipper has the highest light requirement of any *Cypripedium* species and is therefore intolerant of shade and unable to compete successfully under woody species.

In the spring of 1974 the Ohio Division of Wildlife, which administers Resthaven Wildlife Area, initiated an extensive program of spring burns followed by discing to reduce weedy shrubs in favor of prairie species. By the following May, much to everyone's surprise and great delight, the managed meadows were literally covered with the beautiful white blossoms of small white lady's-slipper orchids. Apparently this seemingly miraculous event was in response to the removal of shade and stimulation by fire accompanied by wet, warm spring, all of which combined provided optimum growing conditions. The orchids evidently had been present all along.

Although fire apparently stimulates flowering, especially after a prolonged absence of fire, flower production can vary greatly from year to year. Even though relatively few seed capsules may be produced, each can contain several thousand minute, dustlike seeds. Nevertheless, the percentage of germination is reported to be typically low. Several years may be required for the seeds to become buried deep enough in order to germinate.

Even after germination it may require another 12 years or more before seedlings develop into flowering adult plants. The limited food reserves in each minute seed are quickly consumed upon germination. Therefore, further development thereafter is reported to be dependent upon an invasion of the developing root system by an endophytic fungus, which helps nourish the seedling. The success of orchid growth and development is consequently dependent upon this mycorrhizal activity. Since seedling mortality is probably very high, populations usually consist of a large number of vegetatively reproduced plants or clones, as opposed to seedlings.

Habitat management techniques including burning, discing and mowing (all of which are now employed biennially at Resthaven Wildlife Area under the direction of Area Manager Wendell Foreman) should ensure the maintenance of this specialized habitat, which is so essential for the continued existence of this endangered species.



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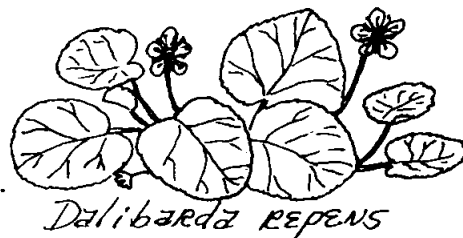
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2472 Overlook Rd. Suite #8  
Cleveland Hts., OH 44106

## ADDRESS CORRECTION REQUESTED

Memberships are **DUE FOR RENEWAL** on January 1, 1988. Please continue to support your Society and renew at the **highest** possible category. Those of you who send us Sustaining and Patron memberships are enabling us to go on with our worthwhile projects. An active membership just about pays for the newsletter costs. However, economics aside, we need **EACH** of your memberships and each year we get stronger and better. The 1988 Program and Field Trips schedule will be worthwhile.

Please enroll me as a member of the NATIVE PLANT SOCIETY OF NORTHEASTERN OHIO.

- |  |   |
|--|---|
| <input type="checkbox"/> ACTIVE.....\$ 7.50  | <input type="checkbox"/> SUSTAINING ....\$25.00 |
| <input type="checkbox"/> FAMILY .....\$15.00 | <input type="checkbox"/> PATRON.....\$50.00     |



Membership runs from January through December and is not pro-rated.

Make checks payable to: NATIVE PLANT SOCIETY  
6 Louise Drive, Chagrin Falls, Ohio 44022

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Address: \_\_\_\_\_

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