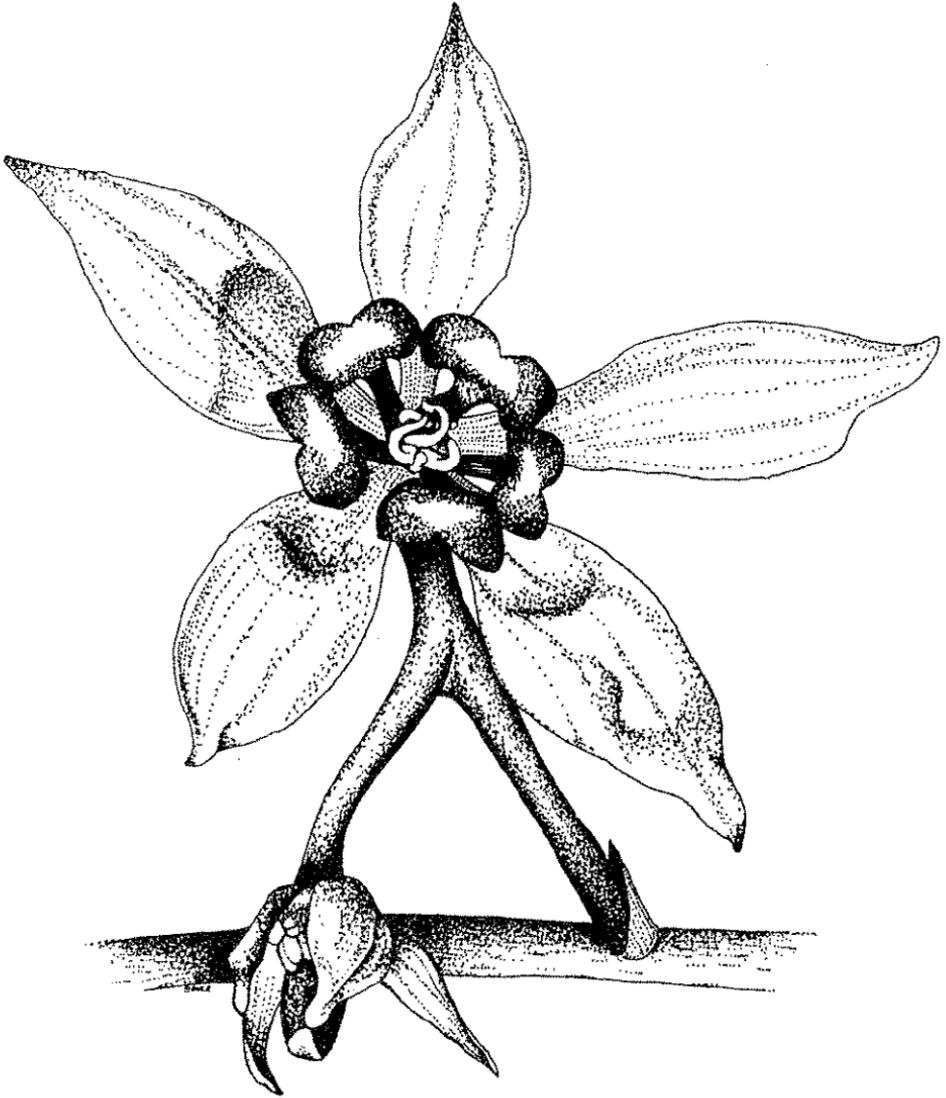


NORTH CAROLINA *wild flower* PRESERVATION SOCIETY, INC.



Xanthoriza simplicissima
Yellow-Root

SPRING 1987

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Cover drawing by John Soule.

Elderberry drawing by Jo Brown.

Australian plants drawn by John Campbell.

PRESIDENT'S MESSAGE
Spring 1987

Many members of the Society have expressed an interest in having a program of monthly garden visits, one-day trips or wildflower walks at various locations across the state. These would be in addition to our spring and fall membership meetings. The participants in the monthly programs would be mostly local, but it is likely that many members would be interested in visiting other areas if they knew about them in advance.

A start on implementing this activity was made at the Board meeting held January 25, 1987, at the home of Bob and Jane Welshmer in Chapel Hill. A committee of the following members was appointed: Harry Phillips Chairman, Julie Moore, Tom Howard, Benson Kirkman, Floyd Rich. The committee was charged with the following responsibilities:
1. to develop a list of meeting sites for the next five years for the spring and fall membership meetings; 2. to identify gardens, natural areas, State and other public parks suitable for one-day visits.

Society members should have received an announcement of the date and location of the spring membership meeting--May 8-10, 1987, Kanuga Center, Hendersonville, NC. It is a beautiful location and several interesting hikes and garden visits have been planned.

The meeting announcement also carried a list of four one-day visits from March 25 through May 2. We hope that additional ones will be arranged for the remainder of the year. To make this activity successful, we need input from the members regarding possible sites, local hosts, directions, and so forth. Let the members of the new Meeting Committee know of your interest. Their names and addresses are on the front inside cover.

Ray Noggle
President, NCWFPS

Spring Meeting 1986

The spring meeting in Asheville was memorable for several reasons. Firstly, the Society honored Tom Shinn and remembered Bruce Shinn for their long service and devotion to North Carolina Wild Flower Preservation Society. The visit to the Shinn residence and garden was a moving experience that will not soon be forgotten.

A second event at the meeting was related to the Shinns' interest in native plant propagation. John T. Soule of the Biology Department, University of North Carolina-Charlotte reported on his studies of "The Pollination Biology and Fruiting of Xanthorhiza simplicissima Marshall." John was the first recipient of the Society's Scholarship Program and his report fulfilled one of the requirements in receiving an award. The other is an abstract of his work to be published in the NCWFPS Newsletter. Those of you not present at the spring meeting will be able to ascertain the wisdom of the Society in establishing the Scholarship Program.

When Tom Shinn challenged Society members in 1973 to prepare a handbook of plant propagation he realized that there were many deficiencies in our knowledge of native plant growth and development. Research is needed on many aspects of handling native plants. What better resource than to draw on the ideas and enthusiasm of students? At the present time four student projects are supported. We look forward to learning about their findings.

More money is needed in the Scholarship Fund. Consider the tax advantages of making a contribution. The Society is a non-profit organization and is recognized by the Internal Revenue Service as eligible for tax-free gifts. I cannot say how we will fare under the proposed new tax laws. Now is the time.

G. Ray Noggle
President NCWFPS

The following article is a report to the NCWFPS by John Soule. Our Society sponsored a scholarship in 1984 to help with his undergraduate botany field project through the Biology Department of UNC at Charlotte. Dr. Jim Matthews and Dr. T. Lawrence Mellichamp were his advisors. Mr. Soule and our Society are indebted to them for their help and encouragement. (Editor)

POLLINATION STUDIES ON YELLOWROOT

by
John Soule

The plant that I worked on was *Xanthorhiza simplicissima*, commonly known as Yellow-root or Yellow-wood. This common name comes from the bright yellow color of the roots and underground rhizome, and should not be confused with the Goldenseal (*Hydrastis canadensis*) which also has a yellow rhizome.

Yellow-root is a well-known but much unstudied member of the buttercup family, Ranunculaceae. It is very unusual in that it is the only woody member of the family; and it is monotypic, that is, *X. simplicissima* is the only species in the genus. It is a native of eastern United States from New York to West Virginia and south to Florida and Alabama. It typically grows as an extensive colony from invasive underground rhizomes, and is a fairly common streamside shrub that can be found from the lowest altitudes up to approximately 2,500 feet.

The slender woody stems may be up to 2 feet high bearing several delicate compound leaves clustered at the top. The brownish-purple to maroon flowers are borne on drooping inflorescences that may be simple or branched. The flowers are composed of 5 sepals, no petals, 5 staminodia with bilobed nectaries, 5-10 stamens, and 2-10 carpels (or pistils). The fruit forms a one-seeded follicle (a dry pod) which is inflated and approxi-

mately 4 mm long when mature. The seeds are reddish, ovoid, and about 1.2 mm long. Fruits are produced in late spring and may persist until well into October.

The flowers open in early spring (February to early May) and one of my interests was in determining what the pollinators were. Actually the flowers and blooming behavior are very similar to those of Blue Cohosh (*Caulophyllum thalictroides*) in the Barberry Family (Berberidaceae). I had also noticed differences in the structure of the inflorescences and that some colonies produced abundant fruits while others did not. This led to the question of whether Yellowroot is dioecious or not, that is, with only male flowers on one clone, and only female flowers (producing fruits) on another clone.

Considering how unique *Xanthorrhiza* is, it was surprising to find almost no published studies on it. Two studies reported chromosome counts ($2n=36$), ironically done on our American plants cultivated in India and Japan! Here was one of our most interesting native plants that had never been studied. Most wildflower enthusiasts would recognize it as a very common plant, growing unobtrusively along stream banks and in damp woods throughout the mountains of NC, and less commonly in the piedmont. Purportedly, the Indians used it as a dye plant and for other medicinal purposes, such as boiling or chewing the roots for treating stomach disorders.

My basic questions in this study were:

1. Is *Xanthorrhiza* dioecious?
2. What is the floral structure (maybe it is polygamous, that is, with male and perfect flowers)?
3. What are the variations in the structure of the inflorescence?
4. What are potential pollinators of such an early flowering species?

Methods:

During the springs of 1983-84 I observed populations of yellowroot in Mecklenburg County (along 4 Mile Creek near Matthews) and in Rutherford County (at Chimney Rock Park and Bat Cave). I also potted-up plants in winter and brought them into the McMillan Greenhouse at UNCC so I could observe more easily the flowers opening in the spring, and make microscopic observations. I would like to thank Dr. Thomas Reynolds, plant physiologist at UNCC, for allowing me to use his photographic microscopes to make observations. I also studied dried specimens preserved in the herbaria at UNCC and UNC-Chapel Hill.

Results:

Polinators -

I found that the plants do bloom early in spring, and that potential pollinators are not very plentiful. I never observed what I thought were truly effective pollinators in the populations that I studied. I did find a few species of gnats and midges visiting the flowers, but they are small, delicate, and hairless insects incapable of carrying much pollen. I would rather guess that at least medium-sized flies (like house flies) would be available and effective at that time. More observations are needed here.

Flowers -

After observing several hundred individual flowers from many different plants, I found that both stamens and pistils are present in each flower (so the flowers are perfect). In addition, there are 5 colored sepals, and no petals. There are very conspicuous bilobed nectar glands (which may be modified petals) in each flower (called staminodia) [see illustration]. The reason that some flowers do not produce fruits could be that the pistils are not functional, or they simply are not pollinated. I did find that the first flowers to bloom on each

branch of the inflorescence seldom set fruit, and generally had a reduced number of pistils, or none; but they did produce pollen. This implies that these terminal flowers, being the first to open, are often acting as pollen donors (or functionally male) and to a lesser degree as pollen receivers (that is, female flowers actually setting fruits). It also seems that the insects visiting these first flowers less often do not bring pollen, but they always take some away. The later flowers to open did produce numerous (about 10) pistils and set numerous fruits. Thus, the first flowers to open sometimes set fruit, if insects brought pollen, but more often did not.

Inflorescences -

I found that some plants have simple inflorescences with a single axis and single flowers spirally arranged along it. In other cases, the single axis had a series of clusters of flowers borne along its length. In still other cases the inflorescence was branched, and each branch bore lateral clusters of one to three flowers each. The center flower of each cluster usually opened first and seldom set fruits. The other flowers were perfect and usually formed fruits. I have not made enough observations yet to determine why in some clones the center flower of a cluster appears to lack fruits. I did notice that, in most cases, all the colonies produce abundant fruits as a whole. Though fruits and seeds are abundantly produced, seedlings are rare in nature (though I observed some) and the plants reproduce most effectively by vegetative means.

I enjoyed this field work and would like to thank the NCWFPS for helping me with travel funds for this project. It is really a good thing for the Society to help sponsor undergraduate research on native plants. I would also like to thank Dr. Larry Mellichamp and Dr. Jim Matthews of UNCC for their help and encouragement.

ELDERBERRY SAMBUCUS CANADENSIS

by

Patricia Ross

According to John Lust, writer of The Herb Book, elder seeds and branches have been found in Stone and Bronze Age diggings, telling us that this plant has been used since before recorded history.

The elder's Latin genus **Sambucus** comes from the Greek word sambuke, a musical wind instrument made from elder wood. The pith can be easily removed from elder sticks, leaving a hollow pipe suitable for making music. (The pith from the branches is sometimes used to make puree.) The Roman writer Pliny (23 to 79 A.D.) tells that shepherds of his day made trumpets and flutes from the elder. I suppose this is why elderberry is sometimes called elderblow in the mountains.

In the Foxfire 3 book in which Eliot Wigginton extended the concept of education through use of oral history, his students found that mountain folks sometimes brewed elderberry flowers with camomile or basswood to make a wash for the skin or cooked them with lard to use as an ointment. When brewed into a tea, the flowers were said to be a blood purifier and the tea was used as an alternative for aspirin to relieve pain and induce sleep.

The white flowers of the elderberry are sometimes dipped in batter and fried or made into "elderflower flapjacks." Remove the stems from two dozen flower clusters, wash in a quart of water and four tea-spoons of salt. Mix with a pancake batter and fry. Sprinkle with sugar and serve.

A word of caution: All parts of the fresh plant can cause poisoning. Children have been poisoned by chewing or sucking on the bark. Cooked berries are safe and are commonly used in pies and jams, especially in the mountains. According to the Foxfire book, elderberry jam is made by using eight cups berries, six cups sugar and one-fourth cup

vinegar. After the berries have been crushed and measured, add sugar and vinegar. Boil until thick. Pour into scalded jars and seal.

Steamed elderberry pudding (Also from the Foxfire book)

4 cups berries	2 cups flour
2 cups sugar	4 teaspoons baking powder
1 teaspoon lemon juice	1 teaspoon salt
1 tablespoon butter	3/4 cup milk

Sift dry ingredients and work in the butter. Add milk and mix well. Combine sugar, berries and lemon juice and mix these with the batter. Pour into a buttered baking dish, cover tightly and steam 45 minutes. Serve with cream.

The berries, when ripe in late summer are also used as a red dye and as a cough syrup. Bill Dwyer, in Southern Appalachian Mountain Cookin' which he compiled with his wife Louise, tells how his granddaddy, Rufus Dwyer, who was a country doctor, concocted "a mighty good tasting medicinal syrup" made of elderberries. It was made by boiling a pound of sugar with a pint of water until fairly thick. He then added a pint of ripe berry juice and half of a grated nutmeg. After the mixture had boiled for 15 to 20 minutes, a half pint of brandy was added to each quart of the syrup. It was then bottled. A dose was one tablespoon for a child and a half glass for an adult. Dr. Dwyer's grandson reports that folks always spoke highly of Doc Dwyer's year round tonic and "sales were brisk with old ladies."

In Southern Appalachian Mountain Cookin' the Dwyers also give an old mountain recipe for Elderberry Pie:

4 cups berries	1 1/2 tablespoons lemon juice
1 cup sugar	1/8 teaspoon salt
1 cup water	1/4 teaspoon cinnamon
3 tablespoons flour	1 1/2 tablespoons butter
or corn starch	

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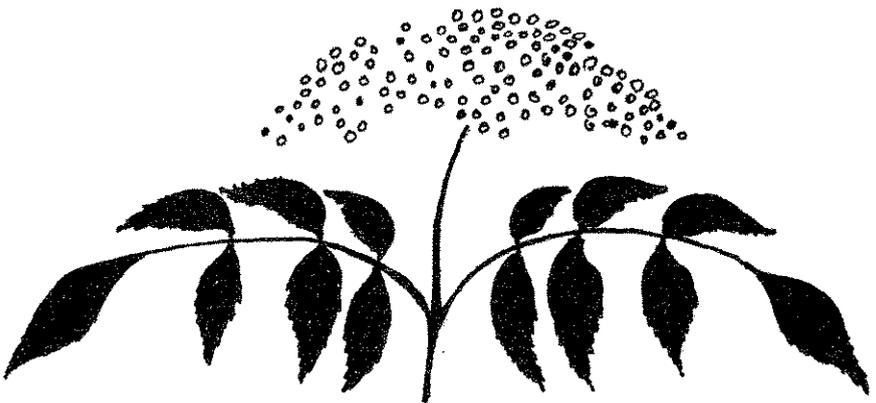
Have ready pastry for a double crust pie. Mix together flour, sugar, cinnamon, salt, water and lemon juice. Fold berries into this mixture and pour into crust. Dot with butter. Put on top crust and flute edges. Cut small slits in the top and bake at 400° for 45 minutes or until browned and juice bubbles through slits.

While I have double checked the ingredients for the recipes given, I have not pre-tested them in my kitchen; however, when I have a better source of elderberries, I do plan to try some.

(Recipes from "Southern Appalachian Mountain Cookin'" [1974] have been reprinted by permission of The Merry Mountaineer Press, P. O. Box 667, Highlands, N. C. 28741.)

Patricia Ross is currently Coordinator in Continuing Education at Wilson County Technical College and still tending to her wildflower garden in her spare time.

* * * * *



NORTH CAROLINA D.O.T. ADDS WILD FLOWERS
TO STATE HIGHWAYS

by
Ken Moore

We should be seeing thousands more Black-eyed Susans and a few other species along certain sections of North Carolina's highways this year. Building on the results of test plots set out across the state in 1986 the Department of Transportation (D.O.T.) has sown seed of selected species in numerous sites across the state this past winter. If the individual plots were joined end to end there would be approximately 150 miles of six foot wide wild flower beds located throughout the fourteen Divisions of the D.O.T. These plots occur along heavily traveled North Carolina primary highways with concentrations near major cities and towns. The North Carolina Botanical Garden has cooperated with the D.O.T. in assessing results and recommending species for future sowing.

Test plots for large scale seed sowing and large scale planting out of nursery propagated seedlings were established across the state in 1986. Many factors including costs of seed/plants, cost of site preparation, time of site preparation, follow-up maintenance and visual effects were all considered in selecting a general method for expanding the roadside wild flower beautification project this year. Some of you will undoubtedly already have noticed bare plots appearing along roadsides this past winter and early spring. Some had already turned green with wild flower seedlings by mid-January. Seed beds were prepared by cultivating selected locations along the roadsides followed by immediate gassing of the soil (the reason for plastic covering over the newly turned soil). After a few weeks the beds were uncovered and a seed mix of species specifically selected for each site was sown and lightly mulched for moisture retention and weed control.

Species included in the mixes for sowing this past winter are:

- Centaurea cyanus* (Cornflower)
- Chrysanthemum leucanthemum*
- Cichorium intybus* (Chicory)
- Coreopsis lanceolata* (Lance-leaved Coreopsis)
- Coreopsis tinctoria* (Calliopsis)
- Echinacea purpurea* (Purple Coneflower)
- Eschscholzia californica* (California Poppy)
- Linaria maroccana* (Toadflax)
- Oenothera lamarckiana* (Evening Primrose)
- Phlox drummondii* (Annual Phlox)
- Rudbeckia hirta* (Black-eyed Susan)

To the above species of seed purchased from commercial seed sources, four pints (3/4 lb.) of seed of *Asclepias tuberosa* (Butterfly-weed) was provided by the North Carolina Botanical Garden. A little seed goes a long way. Garden volunteers spent many hours in carefully separating the seed of the Butterfly-weed from the fluffy plumes in order that clean seed could easily be added to the other species.

The native wild flower purist will have difficulty accepting the selection of species chosen because they are not all North Carolina natives. There are reasons, however, for the inclusion of a number of naturalized or exotic species in the mix. One consideration for including non-natives in the mix is the general public demand for instant color. It is not generally understood that most of North Carolina's wild flowers are successional perennials. These colorful perennials such as Black-eyed Susan, Lance-leaved Coreopsis and Butterfly-weed take two or more years to become established. Even then they will remain on a certain site for only a few years unless some act of nature (fire, storms, disease) or act of humans (clearing, mowing, cutting) interrupts the natural succession of plants toward a forest situation. To provide this instant color, the D.O.T. has included a few naturalized annual species, Cornflower, Calliopsis, Annual Phlox

and exotic annuals such as California Poppy. While these annual species are providing color during the first year following sowing, the real North Carolina wild flowers that we recognize so well, Black-eyed Susan, Butterfly-weed and Lance-leaved Coreopsis, will be growing and becoming established to provide a real natural show during successive years. To maintain the native perennials once they have become established, the D.O.T. is establishing restricted mowing schedules across the state to keep the roadside sites free from invading successional woody species and encourage seed reproduction and maintenance of the desired perennial wild flowers. Another reason for using non-native annual species for instant color is to assist the individuals on the mowing machines in identifying sites that contain these special wild flower seedlings and thus avoid damage by unscheduled mowing of the sites.

Care was taken by officials of the D.O.T. to prepare mixes of species appropriate for specific regions of the state. Certain species such as the Annual Phlox were included in mixes for eastern North Carolina but not for the mountain counties. Many plots were selected for solid stands of a single species. To avoid contamination of farm crops, sites containing species such as Cornflower were not located in vicinities of agricultural lands. Remember that many so called wild flowers are considered weeds in agricultural crops. Additional care was also taken to avoid sowing seed of Purple Coneflower in areas where naturally occurring rare species of Coneflower would present potential opportunity for hybridization.

The State of North Carolina is very committed to achieving success in increasing roadside wild flowers. As you have learned, a lot of thought and effort has already gone into this roadside wild flower program. The program is accepted as a long term effort which will require yearly maintenance and monitoring. In part, the project is also viewed

experimentally. Establishment and maintenance of wild flowers on roadsides is still a relatively young and misunderstood discipline. Management techniques within the program will be altered as determined by the successes and failures of each year's activities. We are fortunate that such a large scale program, which must be determined by practical budgets and maintenance activities, has also been adopted by the D.O.T. as a long term experimental project seeking yearly improvements.

You, as a citizen of North Carolina, can share in the success of the program. The Highway Department would like to hear from you. They frequently hear from citizens complaining that there are too many weeds on the roadsides specifically including the growth of Goldenrod and Broom Sedge. But there are many of you across the state who observe beauty in the native Goldenrods and Broom Sedges and other herbaceous growth on roadsides. Let the State know it. If public officials hear that not all citizens of North Carolina dislike these "weedy looking" native perennials, the D.O.T. will be encouraged to direct more of its skills toward maintaining the wild and natural look. Direct your enthusiasm for the roadside wild flower plots and your appreciation for the state's existing wealth of colorful roadside "weeds" to Bill Johnson, State Landscape Engineer and Harold Ritter, State Horticulturist, North Carolina Department of Transportation, P. O. Box 25201, Raleigh, North Carolina 27611. And of course I will appreciate having a copy of your opinions and recommendations.

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Ken Moore is Assistant Director of the North Carolina Botanical Garden in Chapel Hill. Please respond to Ken's request and also let Mr. Johnson and Mr. Ritter know that we support the use of native Goldenrods and Broom Sedge and recognize their beauty.

WILDFLOWERS OF WESTERN AUSTRALIA

by

John Campbell

There are few places in the world, which are so renowned for a wealth of wildflowers as Western Australia. My wife and I were, therefore, more than fortunate to arrive in Perth during October of last year, in the latish spring, when they are virtually at their height of loveliness.

The state is enormous (18.5 times the size of North Carolina) and a third of it lies in the tropics. The southwest corner is on a latitude equivalent to Georgia and South Carolina facing the Indian Ocean. This is the most interesting area, plant wise, since the climate is mild in winter (little or no frost), hot in summer, with a moderate rainfall, principally in the winter. The rainfall is highest (more than 30") on the corner, where one can see the remnants of the enormous Karri (*Eucalyptus diversicolor*) forests, up to 150' - 200' in height. It diminishes fairly quickly, as one moves northeast into desert lands, which form the majority of the state.

Perth is an ideal jumping off spot for seeing the varied flora. It is a lovely, well laid-out modern city, surrounded by the ocean and the beautiful Swan River. Overlooking the city is King's Park, a wild, 1,000 acre, bushland area, with a thirty acre Botanic Garden within it. Here one can obtain a quick and superb overview of the varied plants and shrubs available.

It is difficult in a short article to really do justice to what one has seen. One can only pick out a few highlights. Furthermore, I tend to look at plants and shrubs in a garden setting rather than a botanical one. This, therefore, has to be excused.

The Myrtle Family (Myrtaceae)

Perhaps this is the most important plant family in Australia. The most common genus is that of **Eucalyptus** comprising nearly 150 species of trees and shrubs. Disappointing en masse, eucalyptus forests, as perhaps best seen in the Blue Mountains behind Sydney, possess a somewhat dull and drab olive-green color. Needless to say, they have been taken throughout the world, particularly those species which have a smooth, multi-colored bark. The Koala bear is, of course, dependent on specific species for their leaves for food, making it difficult to raise them outside Australia. We were fortunate to see the beautiful Rose of the West, **E. Macrocarpa**, the largest flowering member of the genus, in flower. Certainly the Eucalyptus were the original forest trees, which were in turn cut down to make way for agriculture and there are comparatively few large pure stands at the present time.

The most striking shrub of this family is that of the fiery red bottle brush, **Callistemon phoenecius**, with its stamens very much longer than the inconspicuous petals. This and other species have been selected for various sizes and shades of red, pink, yellow and white, whose flowers are produced in great numbers over a long period. Other very similar members of the family, both wild and cultivated, include the genera, **Maleleuca**, **Calothamnus**, and **Beaufortia** with many species within each. The very striking scarlet-gold **Kunzea boxteri**, is to me, equally difficult in the naming between these genera and species.

Some more dwarf species (1'-3') of the family, the feather flowers (**Verticordia** spp) scarlet, brownish yellow, pink, bronze and white were flowering in profusion in open sandy country north of Perth. These species are almost entirely Western Australian and really do look delightfully feathery in appearance.

The Kangaroo-paw Family (Haemodoraceae)

This is a small, fascinating and unusual family, some of whose genera are restricted to the south-west. The family name is taken from the genus *Haemodorum*, whose richly colored red roots were formerly used medicinally by the Aborigines. The spectacular kangaroo-paw (*Anigozanthos manglesii*) with long flowering stems, (3'-5') of a deep red or purple color, and large finger-like flowers of a metallic green with a fiery red ovary at the base, was seen in profusion in King's Park. Indeed this is Western Australia's floral emblem. The yellow and black kangaroo-paw (*Macropidia fuliginosa*) is equally striking, together with more dwarf members (1'-2'), of different colors, seen on sandy soils elsewhere. Hybrids have been developed at the Botanic Garden and all can be grown successfully in gardens.

The Lily Family (Liliaceae)

While the lily has a wide range throughout the world and is known by everyone, two of its members caught my attention. They took me a little while to separate. They are a far cry from the normal members of the family.

One is the black boy (*Xanthorrhoea preissii*). It has long grass-like leaves (1'-3'), very tufted and when very old (100-200 years) stands up with a palm-like trunk. It can withstand fire and puts out flower spikes (1"-2" in diameter) up to 10'-12' long. It grows extremely slowly but can be transplanted at any age. A very similar member of the family, the black gin or grass tree (*Kingia australis*) has soft, greyish, grass-like leaves but it produces short flowers of a pompon habit. That is the major difference. Again this plant withstands fire, is a slow grower and is palm-like in structure at an old age.

While we did not see Tree Ferns in the areas which we visited, they do grow in Australia and by the thousands in New Zealand. They constitute some of the oldest plants in existence and of course are widely used horticulturally for the growing of orchids and ferns. We found that black boys and tree ferns have a thing in common. Their very old "stems" can be carved into exquisite, extremely hard bowls.

The Banksia Family (Proteaceae)

This family is widely dispersed over the southern hemisphere. The very common *Grevillea* spp are somewhat similar to the bottle brush group above. The West Australian smoke-bushes, particularly the white *Conospermum stoechadis* (3'-4'), looked particularly attractive amongst the feather flowers.

But the most striking of all is the genus *Banksia* itself, named after Sir Joseph Banks, who accompanied Captain Cook on his many voyages in the Pacific, as botanist. Cook discovered Australia in 1770. This genus comprises 51 species, of which 41 are native to Western Australia. They range in size from fairly dwarf plants to large shrubs some 15'-20' in height. They have superb cone-like flowers of varying colors, often 6"-8" in height and some 2"-3" in diameter. They really are beautiful and many can be grown in gardens.

The Daisy Family (Compositae)

This short article would not be complete without reference to the richness of "everlasting" flowers growing wild by the hundreds of acres, along road-sides and highways, in fields, everywhere. Many of these are of the daisy family which are grown throughout the world, particularly the multicolored *Helichrysum bracteatum*. All are comparatively short annuals. Often they are cut and dried for dried flower decorations. They include the yellow

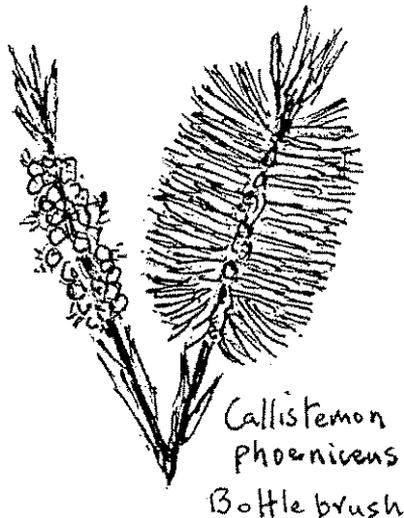
or white *Cephalipterum drummondii*, the pink *Schoenia cassiniana*, the rose pink or lilac *Podolepis gracilis*, the yellow *Helipterum tenellum* and the golden *Waitzia acuminata*.

Regretably, we did not observe any of the *Acacia*, the *Wattles*, and the *Mimosa* in flower but this family (*Mimosaceae*) is very extensive in Western Australia.

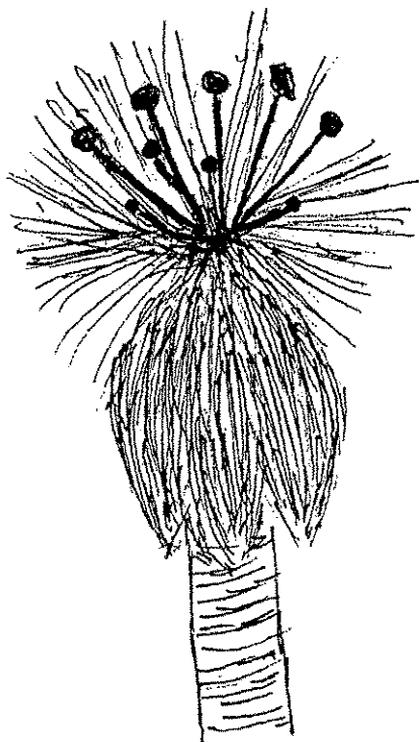
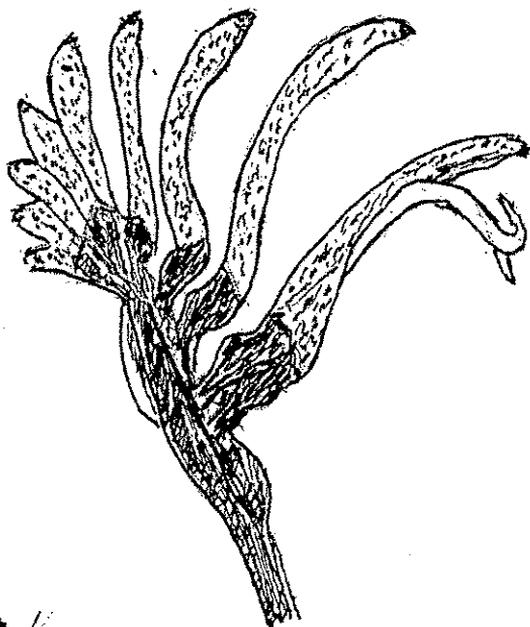
Needless to say, the gardens and the highways were full of flowers too. The people of the area seem to really enjoy this wealth of flowers and shrubs and the lovely climate that goes with it. The air is clean and fresh. It is a long way to go to visit from the east coast of the USA, but for those interested in flowers and gardens or in botany, there would be no regret.

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John Campbell, a native of England, came to Wilson twenty years ago as Vice-President of Imperial Tobacco Company. For the past seven years he has been Tropical Agriculture Consultant for United Nations and World Bank and for private and public institutions. He travels widely with his work and he and his wife, Ding, will be going to Zimbabwe this spring.



*Anigozanthos
manglesii*
Kangaroo-paw



*Kingia
australis*
Black
Gin.

PROTECTING NORTH CAROLINA'S RARE FLORA;
NEW BROCHURES AND SLIDE SHOWS AVAILABLE FROM
THE PLANT CONSERVATION PROGRAM

by
Rob Sutter

A geologic map that resembles a patchwork quilt, the mountains as an art gallery, and the weathering of the Appalachians to form the coastal plain; these are the introductions in a set of new brochures available from the Plant Conservation Program (PCP). Each brochure highlights a few of the rarest species from North Carolina's three physiographic regions: the coastal plain, piedmont, and mountains. They also describe the rare habitats of each region, summarize the activities of the PCP, and discuss how you can help protect rare plants. The brochures were written, designed, and illustrated by Carol Ann Moorhead, formerly with the program and now in graduate school in Colorado.

Slide shows on protecting the rare flora of the state are also available from the PCP. As with the brochures, there is a slide show for each region of the state. The presentation includes a discussion on why we should care about saving rare plants, what is a rare plant, the distribution patterns of rare plants, what makes a plant rare, the rare habitats of each region, and the preservation efforts and techniques of the PCP, Natural Heritage Program, NC Nature Conservancy, and the NC Botanical Garden. Each slide show comes with a script and takes 40 to 50 minutes to present.

The PCP recognizes the importance of education for the protection of rare plants. While information on the occurrences and biology of rare plants forms the bedrock of protection, and site protection and management ensure their survival, educating the citizens of the state forms an atmosphere of support and cooperation. A citizenry that values the protection of rare plants will support the

organizations that protect them. And education allows the PCP to take a more preventative approach to species protection.

The PCP has produced:

1. Brochures on the rare flora of the coastal plain, piedmont, and mountains;
2. Regional slide shows on protecting North Carolina's rare flora;
3. A brochure on the Plant Conservation Program, other preservation organizations, and their approaches to preserving rare plants in North Carolina;
4. A technical discussion about rare plants-- their characteristics, distribution, and how they are ranked;
5. A statewide list of Endangered, Threatened, and Special Concern plant species;
6. A list of reasons why you should care about saving species;
7. A slide show on the collection and conservation of ginseng;
8. A discussion of the medicinal value of ginseng, is it fact or folklore?; and
9. A collector's guide to preserving wild ginseng.

These materials are available from the Plant Conservation Program, NC Department of Agriculture, P. O. Box 27647, Raleigh, NC 27611. A number of items are still being printed and will be available at a later date.

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Rob Sutter is an Endangered Species Botanist with the Plant Protection Program of the Agricultural Department.

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I went with my mother, Mary Henry, on several trips. She was a great inspiration and it was through her that I became interested in plants... Her car was especially equipped--the trunk was all insulated so the baking hot sun wouldn't cook the contents. The car always had to have extra heavy-duty springs installed, plus large truck tires. It was very important to have high clearance. We had a box on top known among the family as 'The Attic.' My mother's chauffeur was named Ernest, who drove her for forty years...

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ordered into the open. Two men came forward with rifles and mother started telling them how she collected plants for the U.S. Government. I was getting very nervous because these fellows were scared to death of revenuers. I started talking and got us out of it, and I got after my mother for mentioning the United States Government.

...Maps are of vital importance, and now I am also resorting to something called Sectional Charts--like the pilots use. The ones of Texas are fascinating because they have every private ranch landing strip listed, but they have the topography. That is what I wanted.

...I just recently returned from Texas where I have been looking for a specific styrax, actually two species. One I found in the herbarium at the University of Texas. We don't know what it is. And another one my mother grew from seed but unfortunately the record was lost. It has been placed as intermediate between the *platani-
folia* group of *Styrax* and the *Styrax americana* variety *pulverulenta*. I have been ten years looking for this and I'm not through yet, so wish me luck!...

...The North Carolina mountains are a fruitful place. We were at a spot of about 3,000 feet where *Magnolia acuminata* thrives as well as *Rhododendron cumberlandense* and I was dumb-founded to find a number of *Lilium superbum* at that elevation.

...Some of my friends at the University of North Carolina divulged where I could find *Lilium grayi*. I wanted to measure and photograph them. I saw the tallest stalk I've ever seen of *Lilium grayi*. It was one meter, 6 centimeters tall and it produced 6 flowers...

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Another plant Miss Henry found in the North Carolina mountains was *Phlox amplifolia* "with its lovely fragrance and vivid flowers."

But the loveliest phlox I've ever seen," she says, "came from an uninviting, dry Oklahoma road. The first time I was there, I thought, Oh this is a dreary spot, and I got out to have a drink of gingerale and I noticed these little patches of violet in last year's dried up withered golden grass. I looked closer and said, "Gosh, it's a phlox." But it was an impoverished phlox. It didn't look like much, but the color was the finest blue I've ever seen in a phlox so I dug several and took them home and planted them. The next spring I opened the greenhouse door to check on their progress and I was nearly bowled over with the fragrance of heliotrope coming from this phlox! It was a marvelous surprise..."

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Josephine Henry continues the work started by her mother, Mary Henry, who founded the Henry Foundation for Botanical Research, Gladwyne, Pennsylvania 19035.

Some of the Henry botanical namesakes are: *Chamaecyparis henryae*, *Lilium mary-henryae*, *Hymenocallis henryae*, and *Campsis radicans*, named for Miss Henry's father, Norman Henry.

TRANSPLANTING AN UNUSUAL FERN

by
F. Kershaw

Camptosorus rhizophyllus, the botanical tongue twisting name for walking fern, has not as a rule met with success in being transplanted to the wild-flower garden. Perhaps this is a blessing in disguise, as it discourages people from tampering with this fern. There may, however, be unusual circumstances that warrant transplanting this wildling. One such opportunity presented itself to the author while visiting a local stone supplier.

During a visit to these premises in search of some flagstones for a walkway, I noticed a large limestone rock covered on one side with a mantle of walking ferns. Recognizing the beauty of this fern and its likely demise, exposed as it was to direct sunlight and desiccating winds, I obtained permission from the company's manager to rescue some of the plants. This permission was willingly given, as the owner had little interest in the plants and was clearly not interested in their future welfare. Accordingly, armed with plastic bags, mister bottle, damp peat moss, and brick mason's pointing trowel, I returned to the site two days later to undertake my rescue mission. Unfortunately, to my surprise the rock had been shifted to gain access to other rockery stones, resulting in some of the ferns being dislodged and crushed. Others appeared faded and wilted due to the sun's exposure. Of the original 50 to 80 plants less than a third remained intact.

Given the irrevocable damage the plants had suffered, I was more determined than ever to achieve a successful transplant operation. My first task was to moisten the ferns' root mass which by now had dried out, resulting in brittle roots. This task was easily achieved by using the mister bottle to spray water into the rock crevices where the roots were imbedded. The benefit of a mist-type spray is that it is gentle enough to avoid washing

out the soil adhering to the roots.

Following this I employed a long, narrow .317 cm wide pointing trowel to penetrate the crevices and ease out the ferns. If you are careful and pry out the roots very slowly, a good proportion of roots and soil will come out intact. Once removed, the root/soil mass was surrounded by damp peat moss and kept in a plastic bag for the journey home. This procedure will ensure moisture retention by the plants.

Arriving home, I immediately moved the ferns into their new home, a large limestone rock located in deep shade within my fern border. Fortunately, I had previously taken the necessary steps to prepare the rock to receive the plants, by filling available crevices with a neutral pH, loose, textured soil. These crevices had been watered for the preceding two days to ensure high moisture content. Soil is easily moved into these fissures by placing it on a flat piece of wood and using the narrow trowel as noted gently push the soil into the crevices, the same way a mason points a chimney. Be careful not to compress the soil unduly, as walking ferns require a loose, friable soil. Working a small quantity of peat moss into the soil will keep the soil loose as well as increase its moisture retention.

Inserting the ferns into the soil-filled crevices can be done with fingers, similar to transplanting pot plants. Young plantlets growing from the fern frond tips, from which walking fern derives its name, can likewise be affixed to moss on the rock face or moved into a nearby rock crevice.

To maximize survival, these ferns will require daily misting, if possible. If you have to rely on hose watering, soak the rock from the top, letting water gently run down the rock face into the fissures. This will avoid dislodgement of ferns or soil. As noted earlier, walking ferns require

constant shade, which may be achieved by placing the ferns on the shady side of the rock or locating the rock in the shade of trees.

While not conspicuous or showy, the walking fern is attractive with its long spear-shaped fronds which are evergreen. In combination with a living carpet of moss on a limestone rock, the effect is most pleasing. The ability of this plant to reproduce at the frond tip is quite educational. This vegetative reproductive technique enables it to form extensive colonies.

Like all other ferns it also reproduces by spores on the underside of fronds.

While the author cannot guarantee the above transplanting technique, he can attest to its apparent success in this single instance, as all transplanted ferns are thriving in their new home after a period of eight months. Perhaps some readers have had similar experiences with this and other rock loving fern species, e.g., spleenworts and cliff brakes, which could be noted in upcoming issues of this publication.

For those interested in learning more about our native walking fern, the following references are recommended:

Nyman, L. P. and Trek to Survival - The Walking
Marchand, D. A. Fern, Ontario Naturalist, March
1975, pp. 10-13.

Foster, F. Gordon Ferns to Know and Grow, Second
Revised Edition, Hawthorn
Publishers, p. 282.

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Mr. Kershaw is our member from Ontario, Canada, and as director of the Toronto Parks Department is in charge of 9,000 acres of park land in the Toronto area.

NATIVE PLANT CONFERENCE

by

Jane Welshmer

The third annual Conference on Landscaping with Native Plants was held (as were the previous two) on the campus of Western Carolina University at Cullowhee. The meeting was the inspiration of Leo Collins of the TVA Botany Department and Jim Horton who is on the WCU Faculty.

To quote this year's brochure: "The purpose of the conference is to increase interest in and knowledge of southeastern plant species in the landscape. Past participants of the conference have included landscape architects, commercial nursery operators, garden club members, and botanists and horticulturists from state highway departments, universities, native plant societies, botanical gardens, and arboretums. Both the professional and the layman will gain valuable knowledge from the informative lectures and workshops. A considerable amount of unstructured time has been included in the program to allow for the informal exchange of ideas with fellow participants."

Everyone who has attended has been inspired to be a better conservationist through protecting, propagating, and circulating native plants. We all see how practical it is to landscape with plants which feel at home and do well without being pampered. Once they are established and encouraged through that first critical year, they can survive and thrive on their own.

The meeting is held in August. It starts with a mixer after the Thursday afternoon registration. The evening is devoted to a keynote speaker or speakers in the auditorium of the music building and followed by another mixer in the Lobby. The principal speakers are booked for the auditorium with various groups meeting in classrooms and smaller auditoriums for choices which run concurrently.

It is rather entertaining to be housed in the college dorms and to share the cafeteria lines with summer students. The cost is extremely reasonable and, so far, the registration has been limited to 400, so it is necessary to send in one's registration early. Write to Dr. James Horton, Department of Biology, Western Carolina University, Cullowhee, NC 28732.

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Jane is a specialist on ferns and grows and propagates them from spores. She is a volunteer at the NC Botanical Garden.

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"Wild Orchids of the Middle Atlantic States" has been published by the University of Tennessee Press. North Carolina is among those states, and the book makes a wonderful addendum to C. Ritchie Bell's "Wild Flowers of North Carolina."

In this book, written by Oscar Supton (who earned his doctorate at UNC-Chapel Hill), and illustrated by Fred Swope, 52 terrestrial orchids are presented. A page is devoted to a photograph of each orchid, taken in natural light in the wild. The facing page of text tells about the appearance, locale and habitat of the orchid.

By providing this information about our native orchids, the author and illustrator, both professors of biology at Virginia Military Institute, hope to encourage readers to appreciate the orchids and to develop an interest in maintaining wild habitats.

This hardcover book, also priced at \$12.50, should be in bookstores this spring. If you cannot locate it, write directly to the University of Tennessee Press, 293 Communication Building, Knoxville, Tenn. 37996.

FROM AN RHS LECTURE BY ONE OF OUR MEMBERS . . .

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NORTH CAROLINA WILD FLOWER PRESERVATION SOCIETY
BOARD MEETING
January 25, 1987

The Board met at Jane and Bob Welshmer's home in Chapel Hill for a pot-luck lunch and a business meeting with these members present: Jane Welshmer, Eleanor Pegg, Tom Howard, Jean Stewart, Harry Phillips, Benson Kirkman, Julie Moore, and Ray and Ruth Noggle.

The President opened the meeting with the consideration of plans for the spring meeting and presented a plan prepared by Floyd Rich for visiting Hanging Rock State Park. After much discussion, it was decided not to meet there but at the less frequently visited area around Hendersonville, including Green Cove and Mondamin, the camps of Mr. Frank Bell. Julie Moore will investigate motel arrangements for a weekend in late April or in May. The President will ask the Western Carolina Botanical Club to cooperate in the weekend, possibly to provide a program for the Saturday evening.

A committee was named to list possible sites for meetings in the next five years. Jean Stewart supplied a list of the sites of past meetings. The committee is composed of Harry Phillips as chair, Julie Moore, Tom Howard, Benson Kirkman, and Floyd Rich.

A list of places for one-day meetings and a list of local people to take charge of them is to be made by Benson Kirkman. Seven sites and people who might arrange them were spoken of.

Most of the other business concerned improvements that might be made in the newsletter, as the Editor, Linda Lamm, had asked the Board to consider whether some changes should be made. It was agreed that the present format is pleasing and should be kept and the content is excellent. It was thought that the

printing and mailing could be more efficient, perhaps by having more steps in the procedure done in Wilson. Tom Howard, who keeps a computerized membership list, and Jane Welshmer were asked by the President to go with him to discuss procedures with the Editor and the typist and possibly others in Wilson.

It was suggested that the logo of a lady slipper which appears on the membership forms and other designs used on the newsletter covers would be attractive on note cards and on tee-shirts which could be sold.

The President asked Tom Howard to designate on the computerized membership list those that are also members of the North Carolina Botanical Garden, so that the mailing of duplicate Seed Lists can be avoided.

The meeting adjourned at 2:28 p. m.

Respectfully submitted,

Ruth C. Noggle
Corresponding Secretary

Callaway Gardens (Pine Mountain, GA) is constructing a new butterfly garden, the Cecil B. Day Center, said to be the first devoted to butterflies in the U.S. Patterned after similar centers in England and Scotland, it is given by Mrs. Deen Day Smith of Atlanta, and named for the founder of Days Inns . . . Colonial Williamsburg, VA in October opened the new Lila Acheson Wallace Garden adjoining the DeWitt Wallace Decorative Arts Gallery. By English designer Sir Peter Shepherd, the garden features native American plants in a formal landscape.

* * * * *

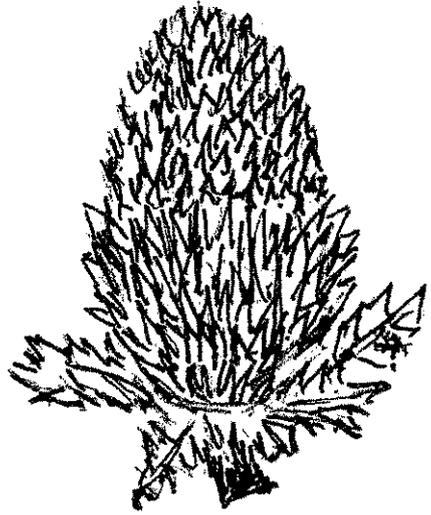
APRIL

The sun was warm but the wind was chill.
You know how it is with an April day
When the sun is out and the wind is still,
You're one month on in the middle of May.
But if you so much as dare to speak,
A cloud comes over the sunlit arch,
A wind comes off a frozen peak,
And you're two months back in the middle of March.

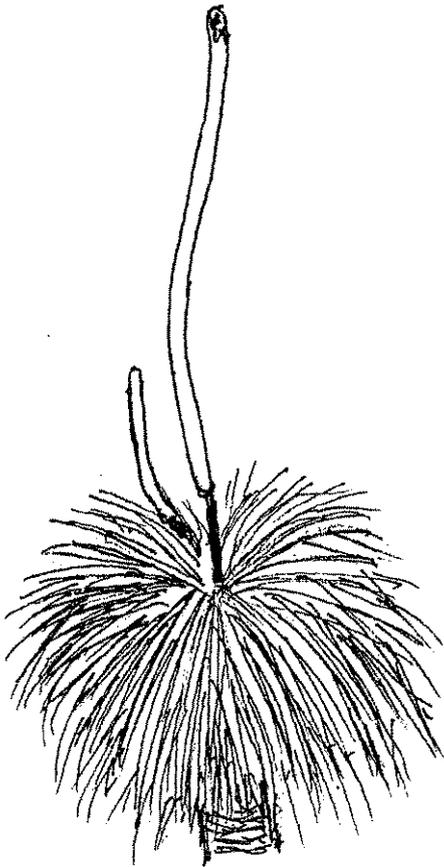
- Robert Frost
1874-1963

"Oh, how this spring of love resembleth
The uncertain glory of an April day!
Which now shows all the beauty of the sun
And by and by a cloud takes all away."

- William Shakespeare
1564-1616



Banksia sp.



Xanthorrhoea
preissii
Blackboy

WE WELCOME THE FOLLOWING NEW MEMBERS
TO
N.C. WILDFLOWER PRESERVATION SOCIETY

Adler, Mr. Brad
7575 Cambridge # 3103
Houston, Texas 77054

Boyles, Mr. Roger
4 Blakes Dr.
Pittsboro, N. C. 27312

Crow, Mr. William E.
1249 Pinebluff Rd.
Winston Salem, N. C. 27103

Culp, Mr. Iv
903 Forrest Hill Dr.
High Point, N. C. 27262

Eletto, Ms. Nancy
Rt. 7, Box 154
Raleigh, N. C. 27614

Elliott, Mr. Frank D.
P. O. Box 2375
Boone, N. C. 28607

McCotter, Mrs. Margaret B.
3212 Doubleday Pl.
Durham, N. C. 27705

Martin, Mr. Charles K.
510 Patrick St.
Eden, N. C. 27288

Matherly, Mr. Chris
2695 Airport Rd.
Centerville, Ind. 47330

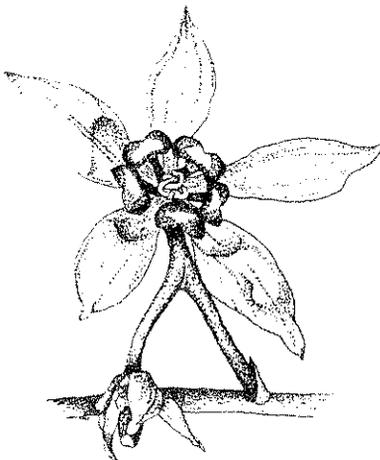
Minno, Mrs. Maria
303-18 Diamond Village
Gainesville, Fla. 32603

Morris, Mr. E. C.
5275 Reynolda Rd.
Winston Salem, N. C. 27106

Perry, Thomas O.
5048 Avent Ferry Rd.
Raleigh, N. C. 27606

Tucker, Mr. & Mrs. F. B.
Seven Lakes Box 2055
West End, N. C. 27376

Underwood, Mrs. Harrison A. 111
3409 Williamsborough Ct.
Raleigh, N. C. 27609



First Flower to open on
Yellow-root, showing Sepals,
5 bilobed Staminodia, and a
few stigmas. Stamens have all
fallen.

NOTES

**NORTH CAROLINA
WILD FLOWER
PRESERVATION
SOCIETY, INC.**



900 WEST NASH STREET
WILSON, NORTH CAROLINA 27883

NORTH CAROLINA WILD FLOWER PRESERVATION SOCIETY, INC.
Mrs. S.M. Gosart, Treasurer
900 West Nash Street
Wilson, North Carolina 27893

MEMBERSHIP APPLICATION

Regular:	\$5.00	New	[]
Sustaining:	\$25.00		
Life:	\$100.00	Renewal	[]

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP CODE _____



North Carolina Wild Flower Preservation Society, Inc.
Totten Garden Center, 457-A, UNC
North Carolina Botanical Garden
Chapel Hill, North Carolina 27514

SPRING MEETING - MAY 8-10

NON-PROFIT ORGANIZATION
U. S. POSTAGE PAID
Chapel Hill, N. C. 27514
Permit No. 378