The Kentucky Native Plant Society

NEWSLETTER: Vol. 2, No. 4, December 1987. Editor: Julian Campbell

THE SECOND YEAR OF THE KNPS by Ron Jones

The Kentucky Native Plant Society has now completed its second year of existence. In the first year the membership list rose to 350 and our field trips and meetings were well attended. We have maintained our membership at about 300 in the second year and again had a very successful field trip season. In this past year the KNPS has organized field trips to the following areas: Raven Run, O'Nan's Bend, Black Mt., Lilly Cornett Woods, Boone County Cliffs, Reelfoot Lake, Panther Glade, Carter Caves, Mantle Rock, Mammoth Cave and Natural Bridge State Park. The total participation in these 11 trips was about 200, with an average of about 18, ranging from 5 to 35. Our quarterly newsletter has come out on time to publicize our field trips, and we have received many compliments on the quality of the publication and its contents. We will try very hard to maintain the quality of the newsletter, and welcome any comments or contributions from our members. A number of different possibilities were discussed in the newsletter this year, and several have been initiated, including a registry of wildflower gardeners and a seed bank of native species. Unfortunately, there has been very little participation from the general membership in these project (for further information see Vol. 2, No. 1 & 2 of the KNPS Newsletter).

Although the field trip participation has, overall, been excellent, we have been disappointed in the attendance at our annual spring and fall meetings. These are very important meetings in which we discuss the future activities of the KNPS. There only about 30 people at our Spring Meeting, on a Thursday night at UK, and only 14 people attended the Fall Meeting, on a Saturday morning at Natural Bridge State Park. These meetings were advertised well in advance, they were within a 2 hour drive of probably 2/3 of our members, and it is very disappointing to those of us who plan these meetings that there is such low interest. It is very important to have better participation in these annual meetings. The Society was not established to be a hiking club, but to develop into a group that can have an impact on the critical conservation and education issues facing Kentucky. We know that many of our members share the stated goals of the Society, and are just not able to participate because of scheduling conflicts. We are still at a loss to decide which day and time is best for these meetings. You can help us greatly by filling out the enclosed survey form and returning it quickly so that we can schedule the Spring Meeting at the most opportune time for the majority of members. Again, if at all possible, try to attend our annual meetings. There is also a great need to get more members involved in our committees and to try to get some of our special projects activated. We also realize that those of us who are the main organizers have perhaps not communicated well enough with the general membership to learn how to better utilize your abilities and concerns. We all need to work more closely together, to make the KNPS more successful in promoting botanical conservation, education, and research in Kentucky.

********** DUES NOTICE: INCREASE TO $3 **********

The major expense of the KNPS is the publication of the Newsletter. Thus far the printing of the newsletter has been done by the EKU Printing Office at a cost of only about $65 for 400 copies. Unfortunately, the EKU Office can no longer print for us after this year, and we will have to go to an off-campus printer. Several different printers in the Richmond area have been consulted, and the lowest bid was more than twice the previous cost. Therefore, the Executive Board has no choice but to raise the dues to $3 to assure that we will have the funds to cover our printing costs. Dues received after November 1st, 1987, will be considered as 1988 dues. Therefore, if you have recently sent your $2 dues, we will list you as paid for 1988. For those of you not yet paid for 1988, please send $3 as your 1988 dues. (RJ)

THE VEGETATION AND FLORA OF KENTUCKY: A NEW KNPS PUBLICATION

The KNPS has just published a 40-page booklet containing papers presented at a symposium held at the Kentucky Academy of Science Annual Meeting in Novmeber, 1986. The booklet contains articles on prehistoric vegetation, presettlement vegetation in central and western Kentucky, surface mine vegetation, geographic affinities of the flora, weedy flora, mosses and liverworts, and the vegetation of the Mixed Mesophytic Forest Region, the Knobs Region, the Bluegrass Region, the Pennyroyal Plateau and the Shawnee Hills. For a copy send $2 to Ron Jones, Dept. of Biology, EKU, Richmond, KY 40475. You may, if you wish, indicate on the enclosed membership renewal form that you are also purchasing a copy of the booklet, and just send one check to cover dues and the booklet. (RJ)

FIELD TRIP AND MEETING REPORTS

Big Woods, Mammoth Cave Natinal Park, October 17. About 25 people attended this field trip on a beautiful fall day. Several hours were spent walking through a remarkable old growth forest filled with huge trees, particularly white oaks, red oaks, sour gum and several hickories. Many sprouts of American chestnut were also seen. Thanks go to Henry Holman of Mammoth Cave National Park for leading such an enjoyable field trip.

Annual Fall Meeting, Novemeber 21. Fourteen people attended a slide presentation and business meeting at Natural Bridge State Park on a brisk, sunny morning. Wilson Francis gave an outstanding presentation on the types of plants found in the park, and in the business we discussed the problem of increased publication costs for the newsletter, the endangered species symposium at KAS, and the initiation of a roadside wildflower planting in Kentucky. We had lunch at the park lodge and afterward went for a tree walk, learning how to identify woody plants by their bark and twigs. A good time was had by all and we only wish more people had taken the time to join us for the day's activities.

SLIDE SHOW PROJECT

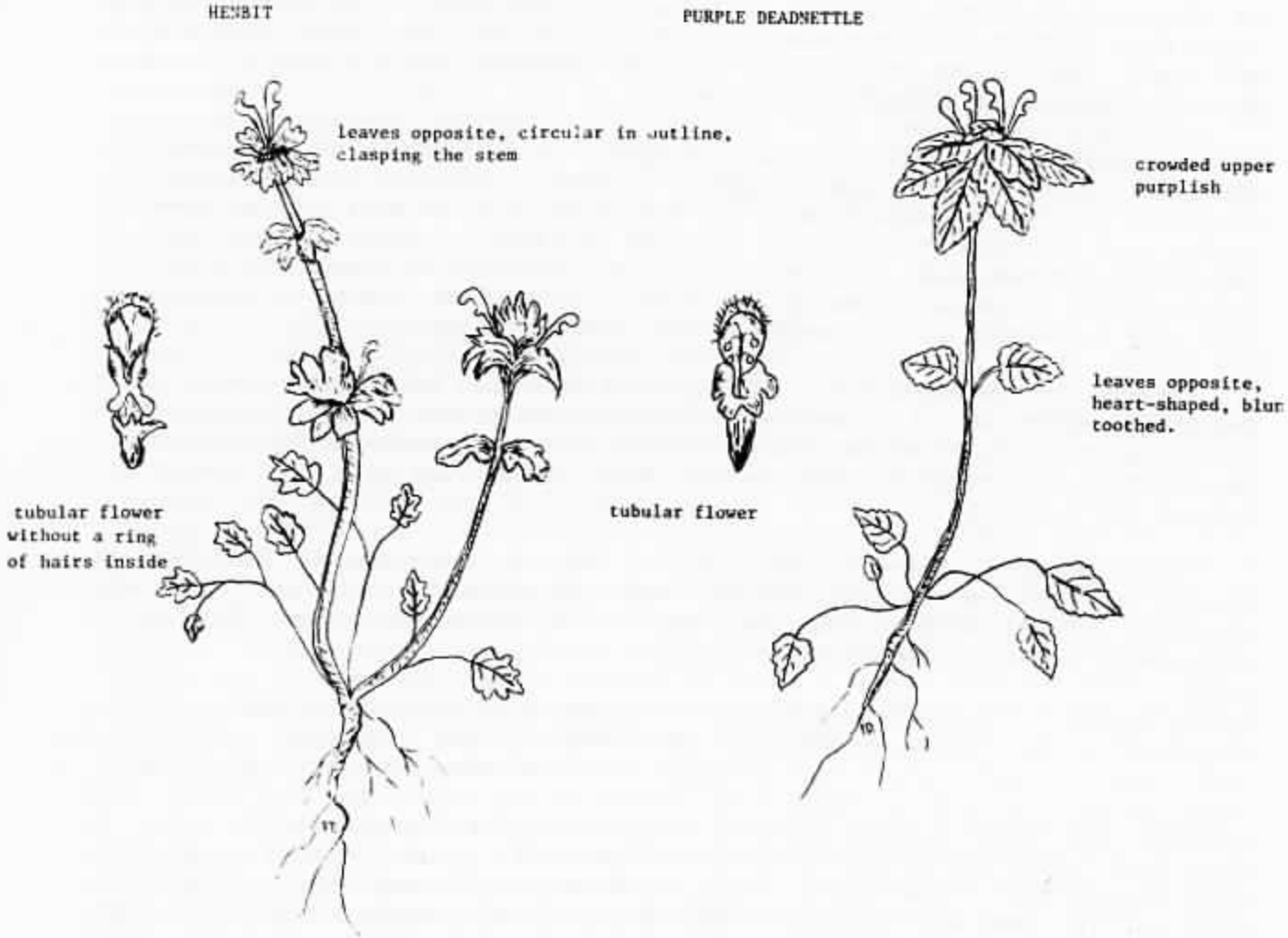
Some individuals in KNPS have expressed an interest in developing a packaged slide show dealing with native plants of Kentucky that could be borrowed by high school teachers, elementary school teachers, and others. The package would involve a carousel of slides, perhaps oriented about a special topic, such as rare species, woody species, medicinal species, etc, and would include a written narrative to be read along with the slide presentation. We need volunteers to help develop this project. If you are interested in donating slides, and possibly serving on a committee, please check the appropriate blank on the enclosed form, and I will get in touch. (RJ)

PAT'S WEED PATCH by Patricia Dalton Haragan

Here are two cute little weeds that everyone should know, in the mint family (Lamiaceae), with opposite leaves, square stems, tubular two-lipped flowers whorled in upper leaf axils, and small sharply angled nutlets. They are annuals that germinate through the winter, to flower in early spring, often abundant in lawns, gardens, waste places, pastures and fallow or cultivated fields.

Lamium amplexicaule or "henbit" has leaves rounded with bluntly toothed or scalloped margins, the upper leaves stalkless. Flowers are purplish-pink. Fruits are mottled light or dark brown.

Lamium purpureum or "purple deadnettle" has leaves spoon- or heart-shaped with bluntly toothed margins, and with stalks, which are long on lower leaves. Flowers are purplish-white with a ring a hairs inside. Fruits are brown.



A ROADSIDE WILDFLOWER PROGRAM FOR KENTUCKY by Ron Jones

There is federal money available for Kentucky to use in planting native plants along roadsides. The Federal Highway Administration now allows $0.25 for this purpose out of each $100 in federal landscaping funds. The Kentucky Transportation Cabinet has recently initiated a program of using wildflowers along highways, and observations are being made by their biologists on what desirable and attractive species are already present along the rights-of-way. The goal of the Cabinet is to use native species that will be pleasing to the motorist, not increase the safety hazard, and reduce roadside maintenance costs. (They also want to avoid worrying farmers with new weed problems - Ed.)

Several other states have initiated wildflower planting programs with great success. In Texas, where the program was begun by Lady Bird Johnson, roadside wildflower plantings have saved taxpayers $8 million a year in mowing costs. Oklahoma also has a well established program begun in 1973-74, in which the State Department of Transportation plants seeds collected by garden clubs, 4-H groups, Boy Scouts, etc. Thus, a whole community may become involved in collecting seeds to beautify the local roadsides and other open areas. In Oklahoma a special committee of wildflower experts advises the maintenance crews on site selection, seed selection, and planting procedures. The Department also cooperates by delaying their mowing schedules, so that the plants have time to set seeds. The delayed mowing, and the less frequent mowings needed by these planted sites, saves $500,000 each year.

The Louisiana Project Wildflower was begun in 1983, and plantings have been sponsored by chambers of commerce, banks, museums, libraries, garden clubs, etc. Seeds are provided through Science and Nature Centers, as well as from numerous groups and individuals. Besides roadside plantings, plantings may also be initiated in urban parks, shopping malls, road cuts, and in lawns. In Louisiana the number of sites has expanded from 4 in 1984 to 15 in 1987; the program has been very successful and the source of much community pride.

In addition to the monetary savings from decreased maintenance costs, there are other payoffs for wildflower plantings; beautification of roadsides, and the associated enhancement of the tourist industry; litter abatement (people tend to be more reluctant to trash wildflower plots); and serving as a food source and habitat for wildlife.

These examples provide some idea of what is possible in Kentucky. We applaud the efforts of the Kentucky Transportation Cabinet, and offer the resources of the KNPS in whatever way is needed to encourage the further development and expansion of these plans.

Editor's note. I recently attended a "brainstorming session" on this subject, organized by Carl Wills, State Dept. of Transportation, Frankfort, and by Mary Witt, Dept. of Horticulture and Landscape Architecture, University of Kentucky. These people are seeking input from others in the state who know about this problem, and could suggest species, sites to collect seeds, model areas to experiment with, and so on. Of special interest to us is the need to preserve rare plants that occur along roads, and perhaps expand their populations artificially. Remnants of prairie and other natural grassland vegetation types that are seriously endangered in the state do survive along some roads, where the degree of disturbance is moderate. We badly need to survey these remnants. Hopefully, the KNPS can provide special input to this effort, at least by our pooled knowledge of the state's highways. Also, there will be a need for nurseries specializing in local native wildflowers and seed collections. (JC)

NATIVE PLANTS AND THE WHITE-TAILED DEER by Charles Elliott

As the Fall and Winter seasons approach, certain species of wildlife become more visible to people. The animals migrate to lower elevations to escape winter's winds and snow and to find available food. One of the animals that becomes more evident at this time of the year is the white-tailed deer. A favorite animal of the sport hunter, the white-tail is also highly regarded by the hiker and wildlife photographer. The white-tailed deer is one of the most adaptable animals in the world. The species lives from near the arctic to the tropics. This tremendous adaptability is reflected in the diversity of foods that the white-tail eats. We might call the white-tailed deer the "red fox" of the plant eating animals (herbivores). In spite of the fact that it can, and does, eat a tremendous variety of foods, it has an uncanny ability to select the most nutritious foods available when it has the opportunity to be selective.

The food habits of deer in Kentucky and surrounding states are associated with which plants are available. In Spring, green succulent leaves and stems of both woody and herbaceous plants are the dominant food items. Resaearchers in Alabama, Georgia, and the Carolinas have found the fruit of prickly pear (Opuntia humifusa), hawthorn (Crataegus spp.), yellow poplar flowers (Liriodendron tulipifera), mushrooms, and acorns were important food items. In summer, materials from succulent green plants are the dominant foods taken. In addition to fresh green forage, white-tails in summer also consume woody plant stems. In Missouri some species of shrubs and vines are browsed repeatedly during the growing season, such as New Jersey tea (Ceanothus americanus), wild hydrangea (Hydrangea arborescens), summer and frost grape (Vitis aestivalis and Vitis vulpina), pasture rose (Rosa carolina), poison ivy (Toxicodendron radicans) and Virginia creeper (Parthenocissus quinquefolius. Missouri white-tails are also fond of mushrooms. Few mushrooms are ignored; only the poisonous Amanita species and the leathery polypores are not eaten. In fall, acorns are the dominant food item in the deer's diet. But Japanese honeysuckle (Lonicera japonica), mushrooms, grapes (Vitis spp.), apples (Malus spp.), blueberry (Vaccinium spp.), prickly pear fruits, sumac (Rhus spp.) and honey locust fruits (Gleditsia triacanthos) are readily consumed. Winter is the most critical time of year for white-tail deer. The extremes of weather and temperature place a tremendous demand on the animal. Having sufficient winter food is one of the main white-tail deer management goals for most state wildlife agencies. In Virginia, white-tails heavily use rhododendron (Rhododendron maximum) and buffalo nut (Pyrularia pubera) as winter food. Deer in Ohio consume the fruit of wild crab-apple (Malus coronaria), acorns, and the leaves and stems of Japanese honeysuckle. Ohio white-tails also feed extensively on the fruits and leaves of staghorn sumac (Rhus typhina) and shining sumac (R. copallina) but oddly enough, did not eat the more abundant smooth sumac (R. glabra). Common perennial plants which have basal leaves that remain green during the winter are readily grazed by deer. Plants such as aster (Aster spp.), cinquefoli (Potentilla spp.), violet (Viola spp.), phlox (Phlox spp.), strawberry (Fragaria spp.), buttercup (Ranunculus spp.), and pussey-toes (Antennaria spp.) are commonly eaten.

As indicated previously, the white-tail is truly a remarkably adaptable animal in its food habits. This fact creates conflicts between white-tails and people. Deer sometimes feed on numerous types of agricultural crops, including apples, soybeans, grape vines, nursery stock of all kinds, cauliflower, beans and buckwheat. Newly planted trees and shrubs used for landscaping and reforestation purposes are also favorite deer food. Young apple trees, oaks, ashes (Fraxinus spp.), basswoods (Tilia spp.), cucumber trees (Magnolia acuminata), tulip poplars, maples, hobble bush (Viburnum alnifolium). and American yew (Taxus canadensis) are readily eaten by white-tails.

CARING ABOUT COMPOSITES by Jim Conrad

Sunflowers, goldenrods, asters, thistles, ironweeds, fleabanes, bonesets, wormwoods, yarrows, Spanish-needles, cockleburs, ragweeds, dandelions, wildlettuces, black-eyed suzans... These and other familiar Kentucky plants are members of the world's largest family of flowering plants, the Composite family (technically known as Compositae or Asteraceae). In all, about 20,000 species in perhaps 950 genera constitute this family; in Kentucky we have at least 200 species in about 60 genera. Since most composites blossom in the fall, nowadays the serious wildflower-appreciator simply can't get very far without coming to grips with this family's special features. By "coming to grips" I mean making efforts to understand the composite flower's unique design.

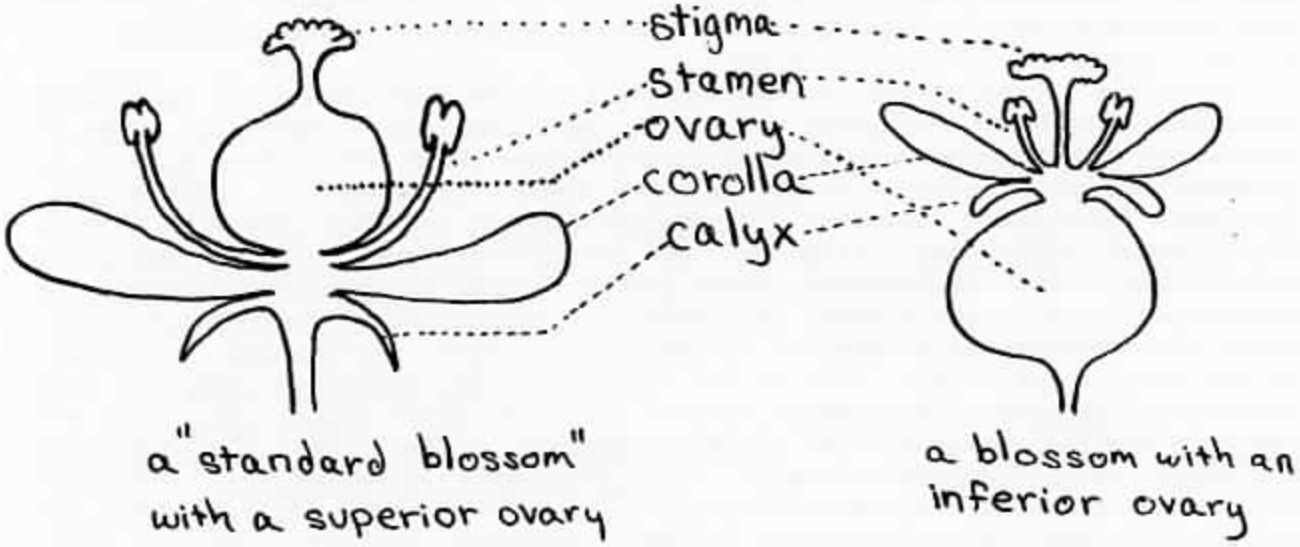


Figure 1

Let's look at this family's blossoms in terms of how they <u>differ</u> from other flowers. On the left of Figure 1 I've drawn a cross-section of the most run-of-the-mill (non-composite) flower I could think of -- it's a "Standard Blossom." The thing to notice here is that the single ovary (which later will develop into a seed-containing fruit) resides <u>above</u> the calyx (sepals) and corolla (petals). Of course a flower's corolla is the attention-getting part of a flower and the calyx is the greenish part beneath it. Such an above-residing ovary is called a "superior ovary."

Now it's supposed that late in the evolution of flowering plants certain groups of plants began evolving blossoms with "inferior ovaries" -- ovaries situated <u>below</u> the corolla and calyx. Today most botanists consider inferior ovaries to represent a modern evolutionary trend. Some Kentucky wildflowers with inferior ovaries include members of the Parsley Family (sweet cicely and golden Alexanders), the Evening Primrose Family (enchanter's nightshade and seedbox), the Madder Family (bluets and partridge-berry), and others.

Well, the Composite Family took the inferior overy concept and developed it even further. In the upper right-hand corner of Figure 2 you'll recognize a "typical daisy" -- a member of the Composite Family. Significantly, that "typical daisy" is not just one blossom, but rather a bunch of flowers; it's a composite flower composed of many smaller "real" flowers... Each of those little roundish things in the daisy's center is a "disk flower" and each of those flatish things that looks like a flower petal is a "ray flower." Cogitate for a moment on Figures 2 and 3, and let what's being said there sink in.

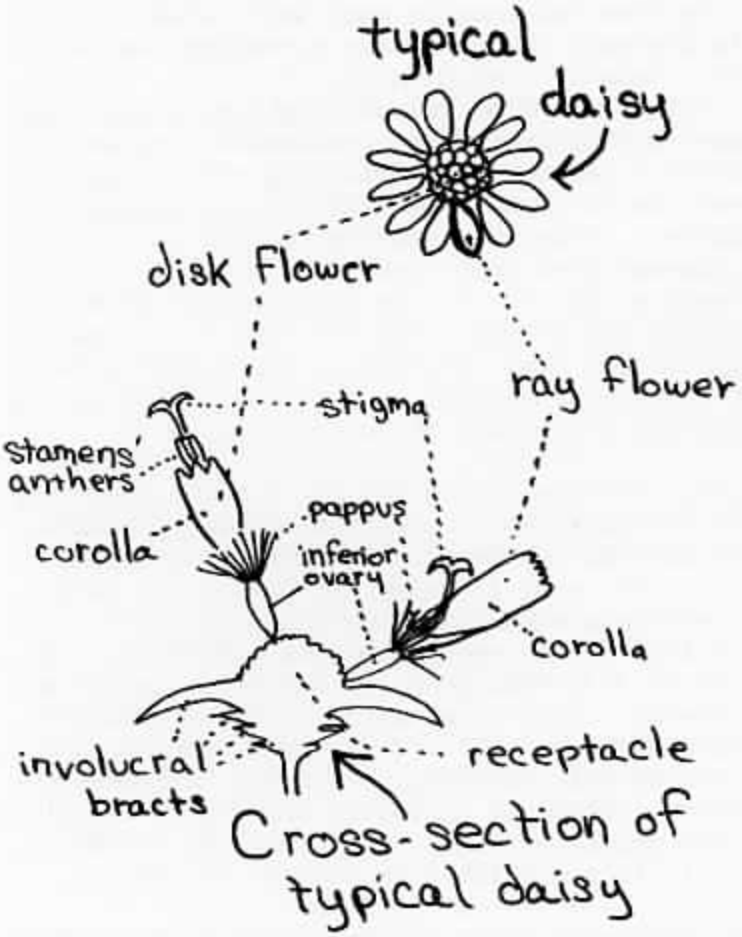

typical
daisy
disk Flower
ray flower
stigma
stamens' anthers
corolla
pappus
inferior ovary
corolla
involucral bracts
receptacle
Cross-section of typical daisy

Fig. 2

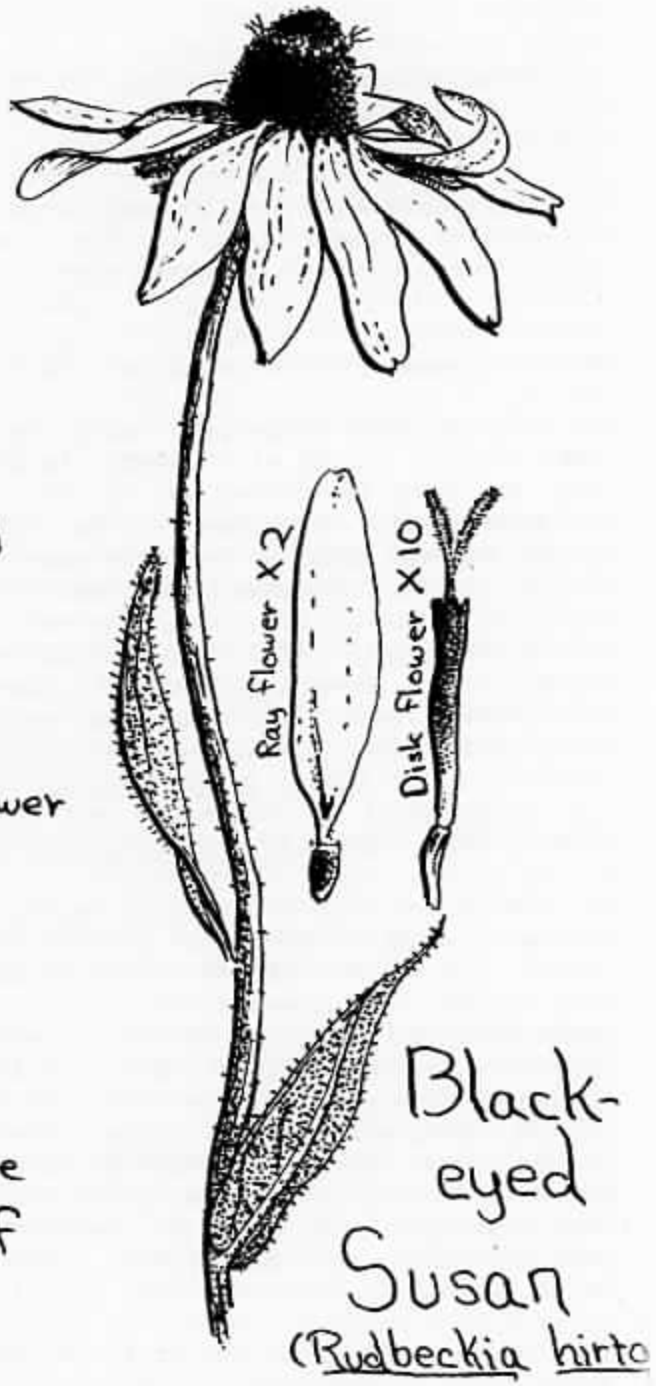

Ray flower X2
Disk flower X10
Black-eyed Susan
(Rudbeckia hirta

Fig. 3

Notice that disk and ray flowers bear a pappus instead of a calyx. Pappuses come in many forms -- slender bristles (dandelions), barbed awns (Spanish needles), feather-like (thistles), crown-like (tansy) and others, while wormwood has no pappus at all. Disk and ray flowers are born upon a platform called a receptacle. The whole receptacle is subtended by greenish bracts. Sometimes a composite flower's ray flowers are of a different color than its disk flowers.

Many Composite Family species have blossoms composed only of ray flowers (dandelions, chicory, wild lettuce, sow thistle, goat's beard). Usually these species also exude milky latex when a leaf is torn. Other species have only disk flowers (thistles, thoroughout, white snakeroot, Joe-Pye weed, cudweed, pussy toes). However, the most prolific genera -- the asters and goldenrods -- usually bear blossoms with both disk and ray flowers.

Though most Composite Family species tend to be much more weedy-natured than average spring wildflowers, in Kentucky we have some marvelous composites that are very fastidious as to their habitat requirements, are rare, fragile, and most worthy of protection. The white-haired goldenrod (Solidago albopilosa) is an endemic growing in dense shade under overhanging sandstone-conglomerate cliffs in the Cumberland Plateau. Also, we have rare blazing stars (Liatris spp.) in cedar glades and infrequent purple coneflowers (Echinacea pallida) on the Mississippian Plateau's limestone. Those of you who recall my earlier essays on the genus Carex and the grasses know that I relish "subtle variations on a stated theme." Thus you can imagine that for me the asters, with about 500 species (at least 30 in Kentucky) are favorites. There's the blue-flowered aromatic aster (Aster oblongifolius) in the Inner Bluegrass, the creeping aster (A. surculosus) of the Knobs and Cumberland Plateau, the ditch-bottom-loving crooked-stem aster (A. prenanthoides) and a glorious gob of others.

Of course when identifying members of this family you can use the usual big floras -- GRAY'S MANUAL and GLEASON & CRONQUIST -- but that's pretty technical stuff. THE WILDFLOWERS AND FERNS OF KENTUCKY by Wharton and Barbour illustrates some of the most spectacular species; but when it comes to look-alike asters, goldenrods and such, the picture-matching approach to identification isn't very effective. The COMPOSITE FAMILY IN KENTUCKY by my former major professor, Dr. Willem Meijer, may still be available at U.K, though it is fairly technical and not illustrated. (It is being revised - Ed.) You might consider using Dr. Meijer's booklet and WILDFLOWERS AND FERNS OF KENTUCKY together. My favorite companion on fall-wildflower hikes is THE FALL FLOWERS, one of the "Pictured Key Nature Series," by Mabel J. Cuthbert. This is a series of fairly simple, semi-technical, well-illustrated (line drawings) booklet published by the Wm. C. Brown Company in Dubuque, Iowa. Usually it's available in college bookstores.

Nowadays the mingling of fall's intensely crisp and brilliant sunlight with those never-ending cricket chimes creates a profoundly mellow and significant mood. The fields' broad yellow splashes of Spanish needles and goldenrod and the diffuse white and yellow sprays of aster along the road all become charmed by the light and chimes, and when I go carrying my fieldguide through fields and along road banks, I feel as if I'm moving through a generous Chinese watercolor. On an aesthetic level, most certainly there is some kind of harmony that unites cricket chimes, abundant yellow sunlight and diffuse sprays of aster into one satisfying thing. Yes, when you consider the degree to which the Composite Family contributes to the essential quality of our Kentucky fall landscape, you must agree that at the very least this family is worthy of our special attention.

NATURAL COMMUNITIES OF KENTUCKY: PRAIRIES

by Marc Evans

A Natural Community is an assembledge of native plants and animals that are interrelated with each other and their environment. Natural Communities are usually differentiated based upon a number of criteria including vegetation structure, indicative plant and animal species, soil moisture, geologic substrate and topographic position. Kentucky, because of its diverse topography, varied geology and geographic location, has a wide variety of Natural Communities. Some examples of types of Natural Communities in Kentucky could include Dry Upland Forest, Limestone Savanna, Wet Bottomland Forest, Forested Acid Seep, Mesic Prairie, Marsh and Swamp.

Prairies are a type of Natural Community that have, unfortunately, essentially disappeared from the Kentucky landscape. In fact, most Kentuckians today do not even realize that praires once covered thousands of square miles of the commonwealth and were an important part of Kentucky's rich natural heritage.

Basically, prairies are native grasslands with a relatively simple vegetative structure dominated by a layer of grasses intermixed with prairie forbs. Trees and shrubs are either absent or occur as scattered individuals or in groves. In Kentucky prairies occurred mainly on deep but sometimes shallow soil which usually overlies limestone bedrock. They required periodic fires to maintain their integrity and to control encroachment by trees and shrubs. In Kentucky they ranged in size from over one thousand square miles to small 1 acre or less openings in the forest. They usually occurred on relatively flat plains but also occurred (and a few still do) on steep slopes (often called hill prairies).

It is well documented that at the time of settlement in the late 18th century, Kentucky had a considerable amount of non-forested lands, mainly in the western part of the state (4, 5, 10, 11, 13). Early pioneers, emigrating from the east, encountered the first large grasslands they had ever seen. Not knowing the French word "prairie," they called these grasslands the "barrens" because of the lack of trees (13).

The main prairie region of the state, known as the "Big Barrens" occupied a large part of the Mississippian Plateau (Pennyroyal Plain) and extended in a crescent-shaped belt from near the Ohio River in Meade County south to Barren County then west to Christian County and then northwest to Caldwell County. Another large area of prairies also occurred further west in the Jackson Purchase (Gulf Coastal Plain). Other smaller prairie areas occurred in parts of Crittenden and Livingston Counties, Bullitt County, and Pulaski and Wayne Counties. Additionally, a number of small prairie openings were scattered throughout parts of Kentucky (2, 5, 6, 7, 8, 9, 10, 11, 12, 18).

It has been estimated that the major prairies of Kentucky occupied from 2 to 3.8 million acres (3-6,000 square miles) or roughly ten percent of the state (3, 11, 12, 13). The size of some of the larger prairies were estimated to be 60 miles by 25 miles, between the Green and Little Barren River, 90 miles by 15 miles, south of Russellville and 40 square miles northwest of the Rolling Fork (3, 11, 12). Today, most of the Barrens area is utilized for agricultural purposes, and only a few small scattered remnants remain that support prairie communities.

The origin and age of the Kentucky barrens, as well as its exact character and species composition, is not known. A number of authors have written on the subject expressing various theories as to the origin and age (2,4, 5, 11, 12, 15, 18). Several factors, mainly climate, fire, grazing animals, soils and geology, have been attributed to

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DISTRIBUTION OF PRESETTLEMENT PRAIRIE IN KENTUCKY

Areas shaded in black indicate the larger prairies
x = counties which are known to have smaller prairie openings