



Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 20 Number 3

Spring 2001

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street
Bloomington, MN 55425-1600
952-854-5900

6 - 6:30 p.m. — Board meeting, Room B
6:30 - 7 p.m. — Refreshments, information,
Room A
7 - 9 p.m. — Program, Society Business
9 - 9:30 p.m. — Socializing
9:30 p.m. — Doors locked

Programs

May 3

"The BWCA Blowdown," by Lee Frelich, U of MN / NRRI

Plant-of-the-Month: *Utricularia gibba* (Humped Bladderwort), by Karen Myhre

June 7

"Where have all the Medicinal Herbs Gone?" The impact of overharvesting on our native medicinal herbs, and what can be done to solve the problem," by Tim Blakley, National Center for the Preservation of Medicinal Herbs
Native Plant Sale

Plant sale guidelines

Members are urged to donate native plants for the June 7 sale. Plants must be from a garden or started from seed. Do not dig wild plants. Bring them by 6:30 p.m. Each plant must be in an individual container and labeled. Volunteers who help at the sale will have the first choices of plants, followed by plant donors and then by others. To volunteer, call Gerry Drewry at 651-463-8006.

MNPS Web Site

<http://www.stolaf.edu/depts/biology/mnps>

Challenges and Opportunities

by Joel H. Dunnette

It seems that everywhere you look you can see the increasing interest in non-traditional plantings using native plants. Roadside and commercial plantings of natives are more and more common. Articles and classes on how to have native landscaping or "butterfly" gardens are becoming widespread. And there has never before been such public support for the preservation of remnant native communities as well as the restoration of degraded areas to some of their original communities.

This does not mean that the battle is won. Maintenance intensive near monocultures of non-natives are still the most common home and commercial landscaping. Large areas of wild or semi-wild land are developed every year. The vast majority of the public and most decision makers know next to nothing about native plants.

We can — each of us — have a large impact now and in the next few years. With a modest amount of effort from each of us we can get the ball of interest rolling faster and faster. The level of public knowledge is so low that even the novice can provide useful information and enthusiasm to friends and neighbors. You might be surprised how easily many people get interested in having or supporting their own bit of diverse nature.

So what can you do? There are so many opportunities that the challenge is not in finding one, but rather in deciding which to pursue. Ways you can share your interest and further the use and understanding of native plants include:

- Sharing your enthusiasm with people around you;
- Telling them about what interests you;
- Showing them plantings and natural areas;
- Getting good information on native plants to people around you;
- Explaining the benefits; both practical and aesthetic;
- What are native plants and how they can be used;
- How to plant and maintain native plantings;
- Where plants and seeds may be obtained;
- Explaining what to expect, since natives behave quite differently than traditional plantings;
- Participating in projects to protect and manage native areas and plantings;

Continued on page 2

Challenges

Continued from page 1

- DNR has volunteer projects in parks and SNAs;
- TNC has projects at many preserves;
- Local parks often have need for survey, interpretation and management;
- Schools often have or want plantings;
- Great River Greening and other groups have many projects needing volunteers;
- Minnesota Valley National Wildlife Refuge can use help with field trips or maintaining native areas or plantings;
- Learn more yourself about native plants;
- Attend meetings;
- Ask questions;
- Read some of the many publications now available;
- Get out in the field and see for yourself the great diversity available around us.

You can find these opportunities in many places. If you want to know of a project near you, just look. Or ask other MNPS members. Remember you know so much more than the general public — your contribution can be quite valuable!

This interest is like a large wave, and like surfers we can push ahead and catch this wave of interest in native plants. If we move with it, what a great ride we can have!

Think Native update

by Deborah Strohmeier

For our pilot season, we are targeting the White Bear Lake area with Dave Crawford volunteering to be our project administrator. Dave started publicizing the Think Native program in March. We expect to announce the grant recipients at the May general meeting.

We expect the Think Native Program to raise general ecological awareness of the public by encouraging people to use native plants in their home landscaping projects and by providing opportunities for neighbors to see examples of native plant gardens. "By encouraging people to use native plants" specifically means: providing educational materials and at least partially funding the purchase of native plants within certain guidelines.

This program depends on member participation. Members may participate on the Think Native committee, volunteer as project administrators, assist project administrators, or donate money to the Think Native fund. Please feel free to contact Deborah Strohmeier anytime.

The Minnesota Native Plant Society

Minnesota Plant Press

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MNPS Board of Directors

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Minnesota Native Plant Society's purpose

(Abbreviated from the Bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following:

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation and ecosystems.
6. Preservation of special plants, plant communities and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops and field trips.

Research programs need volunteers

by Nancy Sather

The Minnesota Natural Heritage and Nongame Research Program is seeking volunteers to assist with one or two monitoring efforts. Volunteers should be able to walk in rough terrain and work in inclement weather, willing to follow instructions, and able to invest a minimum of an entire day. It is important that volunteers sign up in advance, providing their name, address and e-mail or phone contact information, because field plans will need to be adaptable to accommodate phenological state of the plan.

Please do not independently search for any of these species on private land without the written permission of the land owner. To do so is a violation of

Weekend field trip planned in July

A MNPS field trip July 14 and 15 will combine a Western Prairie Fringed Orchid volunteer field day with a tour of the prairie forest border. It will be led by Nancy Sather and is co-sponsored by The Nature Conservancy.

Where: Meet at a pre-designated cafe in Fertile, Minn., on the morning of Saturday, July 14.

What: Tour the first and only designed experimental management study for Western Prairie Fringed Orchid management at Pembina Trail Preserve on Saturday morning. After a field box lunch, assist a joint DNR-USFWS-TNC effort to census all western prairie fringed orchid populations in the state. We will count all orchids at one or more nearby sites.

Saturday night: Overnight in Crookston at the Northland Inn. A block of rooms has been reserved.

Sunday a.m.: Ecological tour across the ecotone from the prairie through the deciduous forest zone to the conifer forests of Itasca State Park. The trip will end in the late afternoon.

RSVP to Nancy Sather at 651-297-4963 by May 18. Space is on a first-come basis; maximum trip size is 18 people. Provide your own transportation or car pool; pay for your lodging. Further details will be available when you RSVP.

the trespass law, and creates an awkward situation if plants are found.

Goldenseal volunteers may be needed to re-locate and determine the status of this state-endangered spring wildflower. Work will take place in mid to late May. This project is still pending.

Western Prairie Fringed Orchid volunteers are needed in large numbers to participate in a survey to determine the present status of all known populations. This work is likely to occur between July 4 and 20, depending on phenology. The majority of this work necessitates travel to northwestern Minnesota. Actual travel costs will be reimbursed for volunteers willing to devote a full two days to this survey.

If you are interested in either of these opportunities please e-mail (preferred) or phone Nancy Sather: nancy.sather@dnr.state.mn.us; (651) 297-4963

Provide the following information in your message: Your full name and full mailing address, including city and zip code; your e-mail address if you have one that you check regularly; and your home and work telephone numbers. Indicate for which species you would like to volunteer and what days of the week or dates you can be available. Don't expect an immediate response to your message. You will receive a tentative schedule in the mail and/or a phone call or e-mail.

North Shore wetland restored

by Terri Port-Wright, Ph.D.
Executive Director, Sugarloaf
Interpretive Center Association

Wetland restoration on the North Shore of Lake Superior is not very common. A recent joint project between the Sugarloaf Interpretive Center Association and the Minnesota Department of Natural Resources resulted in the restoration of a wetland and an extensive upland area.

Local fill material needed to be removed from the wetland area, and regrading was required in the upland areas that had once been a road, a power line corridor, and a house site.

Seeds were collected from native plants and were broadcast in the fall and winter of 1999. Additional seeds were propagated over the winter and, along with seedlings from nearby areas, planted in the spring of 2000.

In all, almost 12,000 native trees, shrubs, flowers and grasses were planted, including over 200 northern white cedar. Almost all were planted by volunteers. Plant selection was based on a comprehensive natural resources inventory of the Sugarloaf Cove site, completed in 1995 - 1996 by the Sugarloaf Interpretive Center Association.

Tours and a slide show of the restoration project, as well as an informational brochure, are available by contacting Terri Port-Wright at (218) 879-4334 or via email at sugarloaf@qwest.net.

Display board may be borrowed for events

Members of the Minnesota Native Plant Society are encouraged to borrow the society's display board for use at plant-related events. Deb Strohmeyer keeps the board. For additional information, call her at 952-943-9743.

Echinacea harvest in the Great Plains

by Dr. Dana M Price, Wildlife Diversity Program, Texas Parks and Wildlife Department, Austin, Texas

(Abstract of talk at MNPS March 24, 2001 symposium)

Echinacea angustifolia (family Asteraceae), native to North American prairies, exemplifies the need for information on the size and resilience of wild populations in order to define sustainable harvest levels. It is widely used, has a long history of harvest, and has a wide distribution across the Great Plains.

Echinacea was introduced to the medical profession in the mid-1880s. The earliest published reference to *Echinacea* digging in north-central Kansas is from the diary of Elam Bartholomew, a naturalist who settled in Rooks County. His entry for Nov. 21, 1894, reads "went over north about 7 miles to dig *Echinacea* roots for shipment to Lloyd Bros. wholesale druggists, Cincinnati, Ohio." He reported shipping 100 pounds of dried root "for which I am to get \$25.00."

From Bartholomew's correspondence with the Lloyd Brothers, drug trade journals, recollections of Kansas diggers, and a few academic publications, I reconstructed the price history of the *Echinacea* market. What is left out are the many up- and downturns of the market, pictured in the final three years of the figure. During the period of my study, there were two "booms" with prices of \$20, and two "crashes" during which there was no market for several months. The cyclical nature of the market for *Echinacea* roots may allow time for populations to recover from harvest.

From interviews and participation in harvest, I learned that several other factors moderate the impact of harvest. Digging with a pick is hard work, and harvesters skip over many plants to maximize their hourly yield of roots. An observed 25-35 percent of the plants regrow after being dug, and areas with a long history of harvest (one of which I visited) still support populations of *E. angustifolia*.

The demographic part of my study took place at five rangeland sites in two clusters. Each cluster had a harvested and an unharvested population, but cluster 1 also included an unharvested population that had experienced soil disturbance. The population density of *Echinacea* varied among the sites, and only a small percentage of plants flowered in any given year (generally 5-10 percent).

I used the survival and reproductive rates of different-sized plants to model *E. angustifolia* populations at five sites. For plants in each size class I recorded the likelihood of producing seedlings, growing, dying, or remaining in that size class. These "transition probabilities" make up a matrix that can be used to calculate expected sustainable harvest rates, generation times (a measure of longevity) and to project the population's size over time.

Only two of my five populations had growth rates greater than one, meaning the population was growing and had an expected sustainable harvest. However, these growth rates did not include the higher seedling production I observed in the first spring of the study. The generation times ranged from 16 to 44 years, suggesting that the plants are fairly long lived. "Large" plants produced almost three times as many seeds and seedlings as "medium" sized plants.

I used the matrix representing an "average" population (growth rate = 1.03) to project the population's growth under several scenarios. I assumed that population growth was density-dependent, meaning that the population has an upper limit (carrying capacity) and that it grows faster the farther it is below this carrying capacity. Generally, without density dependence, there is no sustainable harvest.

The software I used to run these projections only allowed me to simulate harvest on an annual basis and assumed that harvested plants were dead. However, I learned from diggers that they usually do not harvest in the same place every year, and that plants can grow back after being dug. I modeled harvest on a three-year rotation and found that if 1/3 of the plants survived harvest, taking 15 percent of the harvestable sized plants resulted in a stable population. So the harvesters' usual practice of allowing the stand to recover for two or more years after a harvest appears to be economically and ecologically viable.

What makes a sustainable harvest, and when is harvest sustainable? Criteria for sustainability may be either economic or ecological, and when harvesting a wild resource, both come into play. Economic sustainability results when the value of a good remains constant. Ecological sustainability results when harvest has no long-term deleterious effect on the population's ability to reproduce and regenerate, and there is no adverse effect to other species or to ecosystem functioning.

However, much remains to be learned about *Echinacea angustifolia* and its ability to sustain harvest. The size of existing populations is not documented, so long-term declines are difficult to monitor. The actual response of populations to harvest, including density-dependence or response to thinning, is unknown. No one knows how long it takes for plants

that survive harvest to flower again. And perhaps most important, the plant's response to management, such as fire, mowing, or different grazing practices, needs to be examined.

Conclusions from this project are fewer than these answered questions. My study suggests that the rate of sustainable harvest of *E. angustifolia* is low, on the order of 5 percent of the medium-sized and large plants per year. Social and ecological factors contributing to sustainability are in place in central Kansas, but are not fail-safe.

The plant's longevity, ability to produce large amounts of seed in a good year, ability to remain dormant, and the existence of many inaccessible populations (which are uneconomical to harvest) makes it unlikely that the species will disappear. Nevertheless, local extinction of populations that are accessible to diggers is likely if high demand continues. The increasing supply of cultivated *E. angustifolia* is a welcome trend.

If sustainable and ethical harvesting practices are implemented, wild harvests of *E. angustifolia* can continue to supply part of the demand for *Echinacea* roots. To accomplish this will require communication among conservationists, harvesters, landowners and herbal products companies.

Harvesting moderately, leaving the majority of the flowering plants to produce seed, monitoring the source population to ensure its recovery, and respecting the rights of private landowners will help keep the prairie purple.

Name that plant

The average person recognizes more than 1,000 corporate logos, but can identify fewer than 10 locally native plants and animals, according to Paul Hawken, author of "The Ecology of Commerce."

Raising Monarch caterpillars can be easy, interesting hobby

by Dewey Hassig

If you have native plants in your yard, including milkweed, you probably have and appreciate Monarch butterflies, too. Raising Monarch caterpillars in your home is an easy and interesting hobby.

Raising the caterpillars indoors may be a lifesaver for them, as they will be safe from marauding ants in your home. Be sure that the caterpillars and the milkweed to feed them are from your own yard or from someone else's with their permission. Do not take them from parks or public areas. They will require daily attention as caterpillars, and hourly surveillance as they are about to emerge from the chrysalis (cocoon). Bringing them to work may be a possibility for some people.

A screen cage should be about 4 inches by 6 inches by 6 inches high, for three caterpillars, with an opening large enough for your hand. A glass jar will work, but then ventilation is a problem — they poop a lot, and odor and humidity build-up may be a problem. There must be a lid on top for them to attach themselves as they form a chrysalis.

By early summer, check the milkweed daily, particularly the underside of leaves, for the yellow and black striped caterpillars. Place them in your cage with milkweed leaves, or a partial plant. Depending on what age you find

Acorn update

by Catherine C. Reed

Here is an update on last year's acorn crop. I am always interested in exchanging information on oaks.

Fall 2000 was an excellent time for acorns. I collected fallen acorns from bur oaks in early to mid-August, red and white oak acorns from late August to mid-September, and northern pin oak acorns in early to mid-September. These dates are a bit later than 1998, except for the northern pin oaks, which produced few acorns in 1998. In 1999 very few oaks of any species produced acorns.

I soaked the acorns in water for 24 hours, then stored them in plastic bags in the refrigerator. I started potting them in late March.

Once again I will give sprouted acorns or potted oak seedlings to non-profits, Scouts, etc. for planting and ecological restoration. These are all local St. Paul ecotypes, offspring of the last survivors of our native vegetation. If you would like some sprouted acorns or seedlings, call me at 651-644-3765 or send an e-mail to reedx012@tc.umn.edu.

them, they may need about a week of daily feeding. When they are ready to form a chrysalis, they climb the side of the cage and attach themselves to the top, hanging upside down in the shape of a J, until they shed their skin, leaving a light green chrysalis. About ten days later the chrysalis begins to darken, indicating they will emerge within a day or two. At this point they should be checked on every couple hours or so, for when they emerge, they hang upside down for a couple of hours, expanding and drying their wings; then they are ready to fly away.

As soon as you notice the butterfly, take the cage outside. Gently push your finger under the butterfly, and it will readily climb on. At that point, transfer it to the underside of the plant or branch to continue drying out until it is ready to fly off.

In two years I have raised about 10 butterflies, with a 100 percent success rate. If you have poor success, you would be best just to let them be in the wild. For further information, check out www.monarchwatch.org, a web site about monarch butterflies.

Have you seen the eared false foxglove?

by Nancy Sather

Agalinis auriculata, the eared false foxglove, is one of the rarest plants in the state. Although it is known from a number of eastern and Midwestern states, it is apparently rare in all of them. As of August 2000, only nine sightings have been reported in the state, and only six of these have been seen in the last 15 years. Recent discoveries include one in Big Stone County in 1985 by Carmen Converse and 1999 discoveries by Gerald Wheeler and Steve Merchant in Chippewa, McLeod and Renville counties.

Its Minnesota habitat is poorly understood, since little habitat information was provided on specimens documenting three historically known populations. All presently known sites in the state are in wet mesic prairie, tending to occur in microhabitats that support *Andropogon gerardii* instead of *Spartina pectinata*. Most of these areas appear to have been subject to some recent disturbance that has prevented thatch buildup. In other states, *Agalinis auriculata* has invaded the edge of fallow fields near prairies, suggesting that it may be a pioneer species.

Agalinis auriculata is scarcely a plant to be overlooked. The four angled, hairy stems can grow from 6 to 36 inches. The opposite leaves have two small outgrowths at the base that resemble ear lobes. Inflorescences are unbranched flowering stalks. The purple flowers are one to two inches (2.5-5 cm) long and are aggregated together. Small green leaflike bracts occur at the base of each flower. Eared false-foxglove flowers from late August to early September.

For a great factsheet on this species check the following URL:
www.biosurvey.ou.edu/agalinis_aur.htm

Secluded rare sedges of ancient hardwood forests

by Scott C. Zager

Plant Ecologist, Minnesota County Biological Survey

(Abstract of Plant-of-the-Month talk)

Carey's sedge (*Carex careyana*) and plantain-leaved sedge (*Carex plantaginea*) are two similar appearing sedges that are primarily restricted to rich hardwood forests within deep valleys of Southeast Minnesota. *Carex careyana* is a state-threatened species first discovered in Minnesota in 1993 by the Minnesota County Biological Survey. It is currently known in only seven locations in Minnesota. *Carex plantaginea*, a state-endangered species, was first collected somewhere in Winona County in 1897. In 1903, C.O. Rosendahl collected it in deeply shaded ravines of Minnehaha Park in Hennepin County. This remained the only known site of the plantain-leaved sedge until 1994, when two populations were discovered in Wabasha and Winona counties.

The range of *Carex careyana* is from Ontario to Michigan, south to Missouri and Virginia. It is disjunct in the driftless area of Iowa and Minnesota. It is believed to be extirpated in Wisconsin.

Carex plantaginea has a similar distribution except it tends to be more common in the Great Lakes region. It is found from New Brunswick to Manitoba, south to Minnesota, Illinois, Pennsylvania and Massachusetts; also in the mountains of North Carolina, Tennessee, Kentucky and Alabama. In Iowa, it is rare in the east-central portion. It is very local in east-central and southeastern Minnesota.

The habitat for both species is the same, and it is possible that they could occur together in mesic upland forests on calcareous substrates. They are found in long-established maple-basswood forests. Many locations for *Carex careyana* are within designated old-growth forests. They are usually in narrow valleys with steep bluffs and exposed bedrock in habitats protected from direct sunlight. Often they are found only on the lower slopes and floodplain with northerly aspects. All locations are near bedrock strata with springs from large aquifers. The soils are slightly wet-mesic, but moderately drained and are comprised of darkly organic silt or clay loams. It is hypothesized that the added groundwater moisture maintains these populations outside of their preferred wetter and more humid climates. Associate species in Minnesota share similar ranges of distributions and habitats. Many of these are state-listed: *Adoxa moschatelliana* (moschatel), *Athyrium pycnocarpon* (narrow-leaved spleenwort), *Carex jamesii* (James' sedge), *Carex laxiculmis* var. *copulata*, *Jeffersonia diphylla* (twin-leaf), etc.

Minnesota has three species of *Carex* that have at least some basal leaves up to 3 cm broad. Both *C. plantaginea* and *C. careyana* have purplish lower leaf sheath bases and strongly dimorphic foliage. Stem leaves on *Carex plantaginea* are reduced to the sheath and are essentially bladeless. The presence of cauline leaves on *Carex careyana* distinguishes it from *Carex plantaginea*, which also has smaller perigynia which are 3.5 to 5.0 mm long (*C. careyana*, 5-5.6 mm). Leaves of the vegetative stems of *C. careyana* are mostly between 8 to 20 mm wide, whereas those of the flowering stems are only 2 to 6 mm wide. The basal leaves of *C. plantaginea* tend to be larger, averaging slightly more than 3 cm wide. The rose colored leaf bases and lower stems distinguishes them from *Carex albursina*, a species with brownish white leaf bases, flat leaves which are a light green and shiny on the upper surface and have the uppermost cauline leaf-blades several times longer than its sheaths.

Butternut

by Bruce Carlson

(Abstract of plant-of-the-month talk)

Butternut (*Juglans cinerea*) is a native, deciduous tree of North America with a distribution extending from east-central Minnesota to New Brunswick, southwest through the Appalachian states, and westward just beyond the Mississippi River in Arkansas, Missouri, Iowa and Minnesota. Also known as white walnut and oil nut, this tree was valued by Native Americans in the manufacture of dyes, oils and cathartic syrups. In modern times, butternut is valued by wood carvers and furniture makers, as well as by herbalists and homeopathic practitioners who utilize the inner bark and sap as a laxative and in the treatment of liver and intestinal disorders.

Juglans cinerea has alternate, compound leaves with 11-17 leaflets. Its twigs and buds often have rusty-colored hairs. It is monoecious, with both male and female flowers on the same plant. The nuts form singly or in groups of two to five in the year of pollination. Gravity and squirrels disperse most of the seeds. It is typically found on well-drained soils in mixed deciduous forests near rivers. A mature tree is 40 to 60 feet tall and one to two feet in diameter at breast height. Its lifespan is about 75 years.

Butternut has never been abundant through its range, but it once was much more common than it is now. Butternut has decreased dramatically throughout its range over the last 40 years due to a butternut canker disease incited by the fungus *Sirococcus clavigignenti-juglandacearum*. This disease was first identified on butternuts in southwestern Wisconsin in 1967. However, the fungus was unknown to science and was not officially described as a species until 1979.

Very little is known about the natural history of the fungus, but evidence suggests that it is not a native species within butternut's range. Such evidence includes tree-ring studies that suggest that the fungus has been present within butternut's range for no more than 40 years, very little genetic variation between fungal populations, the rapid spread of the species and the inability of butternut to fight the disease. To date, butternut is the only known host for *S. clavigignenti-juglandacearum*.

Trees are initially infected on branches in the lower crown. Within one to three years, the fungus will likely spread, via spores transmitted by rain, onto the trunk and exposed roots. A diseased tree can be identified by the presence of black, elliptical-shaped zones or by "bull's-eye-shaped" areas with a black center surrounded by white. One canker does not kill the tree, but when multiple cankers form around the trunk, the tree becomes girdled and soon dies. A tree survives about seven years after the initial infection.

Due to the threat posed by the canker disease, butternut has been listed as a threatened or special concern species in many states. Some states have reported as much as an 80 percent loss of butternut trees. Scientists in Wisconsin estimate that 91 percent of its butternut population is diseased. In Minnesota, butternut is listed as a species of special concern. On the federal level, it is an unofficial policy of the U.S. Forest Service to only harvest diseased butternuts and to leave healthy trees. The hope is that the healthy trees are resistant to the canker disease. Scientists believe that healthy trees in close proximity to diseased trees have the greatest potential for resistance since they have most likely been exposed to the fungus but have remained uninfected. Only two such locations have been identified, one in Wisconsin and the other in West Virginia. The U.S. Forest Service wants to know about butternut locations. Submit reports of healthy butternuts to Mike Ostry, Research Plant Pathologist, U.S. Forest Service, North Central Forest Experiment Station, 1992 Folwell Ave., St. Paul, MN 55108; 612-649-5111.

Plant Lore

by Thor Kommedahl

What is Jack-in-the-Pulpit?

This native plant is called *Arisaema triphyllum* and is a member of the *arum* family (*Araceae*).

What do its names mean?

Arum is derived from the Arabic word *ar* for fire, which refers to its burning reaction when tasted. Theophrastus then used that name; actually *aron*, is the Greek name.

What about Arisaema?

This comes from the Greek meaning *arum's* blood, and the *triphyllum* is obvious from the leaf divided into three leaflets.

Where is it found?

It is found generally throughout Minnesota, mostly in rich, moist woods, although some variants grow in boggy places.

What is the plant like?

In spring, green-to-purple spikes emerge from a corm. The leaves remain curled to retain the spike shape until plants are nearly a foot tall. Then the "pulpit" (spathe) uncurls, and one or two compound leaves appear. A flower-bearing stalk appears between the leaves. This looks like a pulpit with "jack" (spadix) nestled under the overhanging leaf part.

What kind of flower does it have?

The tiny flowers are at the base of the spadix and are male or female. They produce clusters of green berries which turn bright red by fall.

What determines the sex of the flower?

That depends on the size of the corm. If the corm is large, with lots of stored nutrients, it produces two leaves and a female flower; with less food, one leaf and a male flower; and with still less food, one leaf and no flower.

What causes the burning sensation?

All parts of the plant produce calcium oxalate crystals, which are extremely irritating. American Indians had medicinal uses for roots of this plant but usually not as food.

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