Petal Pusher

January-February 2009 NEWSLETTER OF THE MISSOURI NATIVE PLANT SOCIETY Vol. 24, No. 1

Society announces 2009 field trips

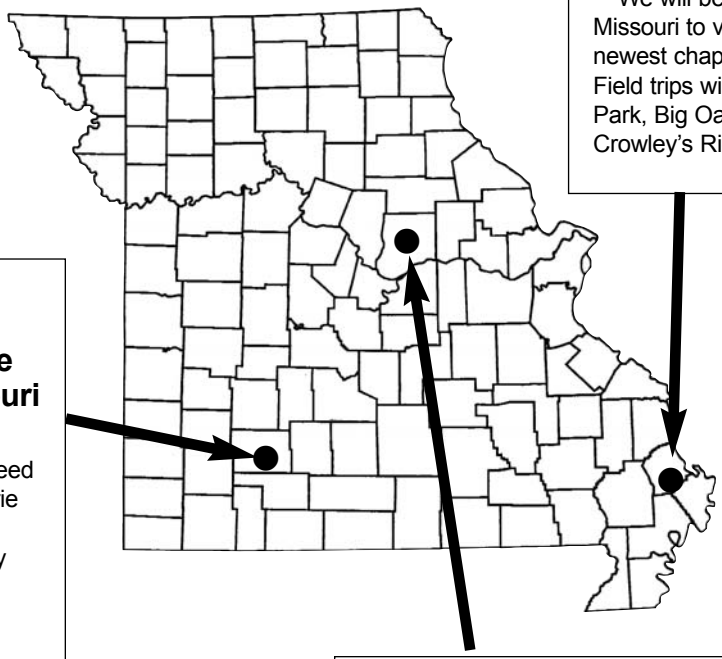
A schedule of field trips was determined at the Dec. 6 meeting of the Missouri Native Plant Society board of directors at the Dunn-Palmer Herbarium in Columbia, Mo.

Details will be forthcoming, but mark your calendars to take part in these trips. Anyone who has attended state field trips knows it is interesting and invigorating to take part in hiking with native plant enthusiasts from across the state.

Winding up the year, the winter board meeting is scheduled for Dec. 5 at the Dunn-Palmer Herbarium Columbia, Mo.

Spring field trip: April 17-19 Sikeston, Mo.

We will be traveling to southeast Missouri to visit with members of our newest chapter, the Perennis Chapter. Field trips will take us to Morris State Park, Big Oak Tree State Park, Crowley's Ridge and other areas.



Summer field trip: May 29-31 Springfield, Mo., and the area's southwest Missouri prairies.

The endangered Mead's milkweed (Asclepias meadii) and other prairie plants will be sought out on the Niawathe Prairie and other nearby locations such as Penn-Sylvania, Coyne, Stony Point and Diamond Grove prairies. This will be a joint field trip with our friends from the Arkansas Native Plant Society. A digital photo sharing session and silent auction is scheduled before the MONPS annual meeting on Saturday evening.

Fall field trip: Sept. 25-27 30th Anniversary Celebration at Fulton, Mo.

Return with us to the place where the Missouri Native Plant Society was founded 30 years ago. Plans include special presentations, visits with past presidents and founding and current members, a banquet and field trips to surrounding areas of botanical interest at Graham Cave State Park, Tucker Prairie, Danville Glades and Whetstone Creek.

Calendar of Events

Kansas City Chapter
Tuesday, Jan. 15: Meeting at 7 p.m. at the Discovery Center, 4750 Troost, to plan field trips.

Hawthorn Chapter
Monday, Jan. 12: Regular meeting at 7 p.m. at the Unitarian Church, 2615 Shepard Blvd.

Late January: A propagation workshop is planned but no date has been chosen.

No Feburary meeting.

Osage Plains Chapter
Monday, Feb. 16: At the Missouri Department of Conservation Clinton office at 7 p.m., topic to be announced.

Ozarks Chapter
Tuesday, Feb 17: Chapter meeting at 6:30 p.m. at the MDC Ozark Regional Office, 551 Joe Jones Blvd, West Plains. Alicia Mullarkey will present a program titled "Habitat, population status and management of the rare plant tall larkspur (Delphinium exaltatum) in Missouri" Alicia will present her assessment of the habitat and population status of tall larkspur, a rare plant found in just two Missouri counties, as well as other exciting botanical finds she made exploring the steep slopes of the Ozark hills in search of this rare plant.

Perennis Chapter
Thursday, Feb. 21: Native Grape Tour of the Ste. Genevieve area. Member Kelly Tindall will discuss how Missouri's soils and growing condition support the vitality of norton grapes as well as the diversity of the native grapes found in southeastern Ozarks and southeast Missouri. Time and location TBA. Check website www.semonps.org for more details.

St. Louis Chapter
Wednesday, Jan. 28: Chapter meeting at 7:30 p.m. at Powder Valley Conservation Area, 11715 Cragwold Road, Kirkwood, Mo., off Geyer Road between Watson and Big Bend. Program by Dr. Peter Hoch, curator at the Missouri Botanical Garden, on "Travels down the primrose path-the changing taxonomy of the Onagraceae."

Wednesday, Feb. 25: Chapter meeting at 7:30 p.m. at Powder Valley Conservation Area. Steve Buback, natural areas manager at Forest Park, will speak on "By Bud and Bark: Winter Woody Species ID."

New members

- Sunny & Ray Oberkramer, Eureka
- Jen Courtney, Lone Jack
- Greg Croll, Columbia
- Micky & Gerry Lee, St. Louis
- Gary Storm, Urbana, Ill.
- Bill Duncan, St. Louis
- Micah & Heather Nash, Pittsburg, Kan.
- Darlene Miller, Columbia

Martha Hill

Fruiting Indian pipe

Indian pipe often is confused for a fungus because of its lack of color, its waxy texture and because it grows in dark, moist places. But, no, it is an angiosperm.

The Latin name for this plant, *Monotropa uniflora*, translates to "once-turned single flower." It refers to the way each stem holds a single flower that starts out pointing down and gradually turns upward as it starts to produce seeds.

Indian pipe has no chlorophyll and does not rely on sunlight for its survival. Instead it extracts nutrients from the roots of surrounding trees via michorrhizal fungi. This allows Indian pipe to live in dark places that are inhospitable to other plants.

Besides Indian pipe, common names for this plant include ice plant, ghost flower and corpse plant. Say what you will about the preciseness of scientific names, so-called "common names" have a bit of a poet's impish sparkle to them.

This unique plant can be found throughout much of Missouri but is less prevalent in the west-central part of the state. It is easy to identify because nothing else looks like it. The plant grows in thick leaf litter.

Another species, *M. hypopithys,* is less common in Missouri. It has the same growth pattern but is yellow to gold and turns red when fruiting.

— Chuck Robinson

New duties at MDC draw MONPS leader

Tim Smith, vice president of the Missouri Native Plant Society through 2008, state botanist and 22-year employee of the Missouri Department of Conservation, has been named MDC ombudsman.

Smith took on his new duties Oct. 16. In his new position, he fields questions and queries from the public. With more than 1,000 employees scattered around the state, it sometimes is difficult to know who to call to address a specific concern. In 1998, the ombundsman position was created to give the public a point man to call. Ken Drenon served as ombundsman from 1998 to his retirement Oct. 15.

Smith said his promotion will require him to step back from his duties with MONPS. He has been a key organizer of MONPS field trips in recent years. He said he wouldn't lose track of MONPS, however.

Tim Smith

A letter on behalf of the board of directors of the Missouri Native Plant Society has been sent to John Hoskins, director of MDC, to encourage the department to fill Smith's former position as state botanist with a qualified individual as quickly as possible.

The letter notes that MONPS was started in 1979 by a small group of MDC employees as a means to increase public involvement with and support for Missouri's wild plants. It mentions how important Smith as state botanist has been to MONPS, especially since MDC in 2005 discontinued its Missouri Flora position.

The letter notes that MDC programs dealing with species of conservation concern and invasive exotics require a full-time resource specialist with statewide responsibilities on staff.

Increasing dangers means pollintors need help to survive

By Retha Meier
St. Louis Chapter

We all share a common interest in our passion for our native plants of Missouri. Our Missouri native plants are beautiful. We love finding, classifying, sharing stories and photographing them. We care about our native plants and therefore we protect them.

In October 2008, Dr. Peter Bernhardt and I attended the eighth annual North American Pollinator Protection Campaign, and, as with most conferences, I met interesting people and learned a lot.

First, I learned that pollinators are declining all over the world and this has caused great ecological and economic concerns.

Second, I learned that we must support pollinator recovery as these animals are ultimately responsible for one out of every three bite of our food we swallow and an estimated 80% of our flowering plants can't reproduce without animals acting as "pollen taxis." Representatives from Canada, United States and Mexico worked cooperatively to discuss what can be done to help these organisms.

Who are the pollinators? Hummingbirds, bees, butterflies, moths, flies, beetles, wasps, bats and other small mammals serve as pollinators. Pollinators visit flowers to obtain food in the form of pollen and/or nectar.

At some point, the pollinator rubs against the stigma and transfers pollen from flower to flower. If this pollen transfer goes to the correct species, the pollen grain germinates and a pollen tube, containing the sperm cells, grows toward the ovary, thus delivering sperm to the egg and polar cells hidden in each ovule. Fertilization occurs and seeds are produced. Without this process our planet grows deficient in food and beautiful flowers.

John Ascher/www.discoverlife.org

The survival of Missouri's native flowering plants depends upon the survival of our native pollinators, such as Bombus griseocollis, the brown-belted bumble bee.

Honeybee (non-native) populations are vanishing across the United States, and no one really knows the cause. Worker bees leave the hive and just do not return. Researchers have labeled the phenomenon "colony collapse disorder." Possible causes include biotic factors, such as tracheal and varroa mites and insect diseases caused by various bacteria and viruses.

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Additional causes include environment-degrading forms of stress such as pesticides, malnutrition (bees are subjected to crops grown as monocultures) and overworking the bees.

Overworked bees? In California the honey bee's season starts in February in the blossoming almond groves and then the hives are trucked all around the country until autumn.

Most commercial fruits (strawberries, apples, cranberries, melons, etc.) are dependent upon the pollination process. The Häagen-Dazs Ice Cream Co. has identified and tagged 26 bee-dependent ice cream flavors ranging from coffee and almond crunch bar to caramelized pear and toasted pecan. A flavor launched in February 2008, Vanilla Honey Bee, is dedicated to the honeybee. A portion of the proceeds will be used to fund colony collapse disorder research and sustainable pollination.

Häagen-Dazs pledges a portion of the proceeds from sales of Vanilla Honey Bee ice cream to help fund colony collapse disorder research.

Back home in Missouri, the survival of our beautiful Missouri native flowering plants depends ultimately upon the survival of our native pollinators. The processes of pollination and fertilization can be interrupted when pollinator numbers decline in diversity and population density. Fewer pollinators could result in fewer seeds being set and a subsequent decrease in the sheer number of native flowering plants. Our organization works diligently to save our rare and endangered native plants through field trips organized to search for new and existing populations, botanical research by scientists at various universities and supporting habitat restoration projects by the Missouri Department of Conservation. We are concerned about habitat destruction, poaching and displacement by invasive species. A new concern is the decline of pollinators.

Can MONPS help?

What can we as an organization do to help promote awareness of and concern for pollinators?

Our mission statement reads: "The purpose of the Missouri Native Plant Society is to promote the enjoyment, preservation, conservation, restoration and study of the flora native to Missouri; to educate the public about the values of the beauty, diversity and environmental importance of indigenous vegetation and to publish related information." This statement indicates our concern for native plants.

I believe that when a scientific problem exists, nonscientists often think that they cannot be a part of the solution — because they are not scientists. If people think that they can be a part of the solution, a sense of stewardship develops. Together we can help people realize that we can all help pollinators through developing pollinator-friendly gardens and reducing the use of pesticides.

What can the Missouri Native Plant Society do to help pollinators?

Can we become more involved with educating young people? This semester, students in two of my science methods courses developed unit plans on "flowers and their pollinators". Lessons were delivered in two St. Louis City Public Schools, one elementary school and one middle school. Third-grade activities began with a neighborhood walk that included a tour of a neighborhood garden. From this activity students discussed plant characteristics unique to plants, what plants need to survive and how we benefit from plants. During our second visit, students dissected flowers and learned about the pollination process. Our third lesson was a "Build a Bee" workshop in which students learned about bee anatomy.

During the final lesson, students participated in an ecology play about the role of pollinators. Students were presented with seeds to plant in their pollinator-friendly garden along with guidelines covering why, how, where, and when to plant. They were encouraged to enjoy the beautiful flowers and observe the kinds and numbers of pollinators. They were also encouraged to visit NAPPC's website www.pollinator.org to obtain a free Ecoregional Pollinator Planting Guide.

Can we develop a sixth Missouri Native Plant Society brochure for our Web site that reads: "Pollinator-Friendly Gardens," offering information about developing and maintaining gardens that provide habitat for pollinators?

Gordon Frankie, entomologist at the University of California-Berkeley says, "Plant the right plants in your garden, and they will come". We need to help people understand why they should help the pollinators and how to develop pollinator-friendly gardens. Which plants should they use? Which plants will provide the best food for pollinators? Should native as well as non-native plants be included in the same gardens? Where should these plants be planted and in what arrangements? Where are native plants purchased? We can help simplify the process by developing our own Web site providing fresh information and links.

Let's work together to help Missouri native pollinators and our beloved Missouri native plants.

What are your ideas about what the Missouri Native Plant Society can do to help pollinators? Please send your comments to rmeier3@gmail.com.

Fire helps reset native ecosystems

By Theo Witsell
Botanist for the Arkansas Natural Heritage Commission

Don Bley takes part in a controlled burn in early 2008. Fire thins dense forest canopies and allows forbs and grasses to take hold. After a fire, more plants flower, produce seed, grow taller and are more robust than the previous year.

There are three main ecological processes that work to maintain prairie and woodland ecosystems: drought, fire, and native grazing. This article will focus on fire – its role historically, how it works to shape plant communities and how it is used in the restoration of prairies, savannas and woodlands.

In Arkansas, Missouri and other states on the eastern edge of the tallgrass prairie biome, fire is the major ecological process responsible for the maintenance of most of our native grasslands and associated woodlands. The plants are dormant in the late fall and winter and the above-ground vegetation is flammable for a large part of the year. Many of the herbaceous plants native to this ecosystem have most of their biomass below ground and can withstand repeated fires.

In presettlement times, when the fall storms would arrive and lightning would strike on a large expanse of dry grassland, it could burn for miles until it came to a natural firebreak or rainstorm.

Woodlands along streams and at the edges of grasslands would burn as well, becoming more open in times of frequent fire and more dense in periods without much fire. Native Americans, and in some cases European immigrants, would also burn the prairies and woodlands to make travel easier, to improve wildlife habitat, and to encourage the fresh shoots of the grasses which were favored by bison, and later, by domesticated cattle.

In the context of this discussion, as we will talk about the continuum of habitats from prairie to forest, we will need to define four very specific terms: prairie, savanna, woodland, and forest. These relate to the density of trees on a landscape and, while they are sometimes defined by a specific number of trees per acre, or a certain basal (trunk) area or canopy area per acre, we will define them more loosely here. For this article, we will consider the following:

- prairie (few or no trees – dominated by prairie grasses and forbs),
- savanna (very few scattered trees, with an herbaceous layer dominated by prairie species),
- woodland (more trees than a savanna, but less than a forest, with a mix of prairie and forest herbaceous species) and
- forest (dense, closed canopy with a shade-tolerant understory).

When we use the term "prairie species," we mean those native plant species characteristically found in prairies and glades that need full sunlight, and are fire tolerant or dependent.

How does fire work?

The most obvious function of fire in prairie and woodland ecosystems is that fire suppresses woody plants (shrubs and trees) and favors herbaceous species of forbs and grasses.

Savannas and open oak woodlands survive because of fire, without which brush and shade-tolerant trees would invade. Fire suppresses woody plants in two ways.

First, it stimulates the prairie plants to form a vigorous sod, which prevents the establishment of woody plant seedlings.

Second, fire kills the above ground portions of smaller woody plants, weakening brush (but rarely eliminating it entirely). Deciduous woody plants will resprout from the base but conifers like pines and eastern red cedar (a major invader of prairies and woodlands) will be killed completely provided all the needles are brown following the fire. Even a small percentage of green needles can carry these species through, however. Needless to say, the goal when burning a woodland or savanna is not to kill the largest trees. Whether this is a pine system or an oak system, the dominant (largest) trees are, by their nature, fire tolerant. They have bark thick enough to withstand fires that would kill the fire-intolerant species that have invaded the site since fire suppression, or even smaller specimens of their own species.

Another obvious result following fire is that more plants flower, produce seed, grow taller and are more robust than the previous year. This is in part due to the removal of leaf litter and thatch but is also likely the result of increases in the available nutrients in the soil. Fire does this through indirect stimulation of soil microbial activity and by releasing small amounts of nutrients from the ash.

Following a fire, careful observers might also notice a decrease in cool-season invasive Eurasian weeds (exotic species that originated in the cool meadows of Europe). This is the result of a not-so-obvious effect — fire lengthens the growing season for most native prairie plants and shortens it for many exotic Eurasian weeds.

Fire lengthens the growing season for native prairie species (which do best in warm soil) by removing the leaf litter and thatch and exposing a darkened soil surface to the warming rays of the sun. In the absence of fire, the light-colored leaf litter reflects the sun and acts like a blanket, insulating the ground, slowing the soil warming process and smothering new

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seedlings. This fire effect may increase the growing season by as much as four weeks.

On this same note, fire shortens the growing season for many cool-season weeds (which go dormant during the heat of the summer) by warming the soil and causing the roots of these species to stop growing.

Also, fall burns done after the native species have gone dormant can burn off several inches of growth on the cool-season plants, weakening them further.

Restoring prairies, savannas, and woodlands with fire

The results following a burn can be dramatic. Species that were there before in very low numbers can suddenly become common. It is not at all uncommon for species that were not there before to suddenly appear, sometimes in great numbers. These were present in the seedbank or perhaps were barely hanging on — a single small leaf getting just enough light to keep the plant alive, but nowhere near enough to flower. Under the right conditions, this sort of response can be seen following a single burn, though these sorts of results may take several burns to achieve.

Once fire is reintroduced to a forest or woodland, it will allow more light to penetrate, which is good for most plants. This, in turn, will stimulate herbaceous plant growth, which increases the fuel for the next fire.

The next fire might then be more intense, which will allow even more light to penetrate, stimulating even more herbaceous plant growth, and so on. If, however, fire is excluded for a long enough period (just a few years in some cases), the woody plants will again become dense, the herbaceous plants will die out, and low-intensity fuels (like leaf litter) will dominate.

It should also be noted that when a forest reaches a certain density, fire alone will not be effective in restoring it to woodland or savanna conditions. For example, ground layer fuels in an Ozark glade that has been completely overgrown with cedars for a number of decades will not support a fire hot enough to kill the cedars and begin the cycle of reopening the glade. In cases like this, a certain percentage of the cedars (or other trees) will have to be mechanically removed to allow the herbaceous fuels to build up to a level where fire will work its magic.

Bill Knight keeps watch during a spring 2008 controlled burn.

Benefits to wildlife

The benefit of fire restoration to the wildlife native to these ecosystems can also be dramatic. There is more herbaceous cover in a burned system, which is good for many animal species. There are more flowering plants, so butterflies and other nectar-feeding insects have more food. Quail and other grassland bird species (many of which are in decline) need this open habitat structure. Specialist insects (including many butterflies and moths) that need specific prairie plants benefit from increased populations of their host plants. There are legitimate concerns that burning an entire isolated prairie or savanna remnant will do harm to insect and other animal populations. This can be avoided by leaving sizable portions of the area out of the burn unit in order to leave a refuge for these animals. These will then recolonize the burned areas the following year and reap the benefits of increased flowering, seed set and plant vigor. Timing of a burn can also be important to wildlife.

Where was fire historically?

Today's landscape is so different from that of the past that it is hard for us today to understand the magnitude of fire's role in shaping plant communities historically (and prehistorically). Early explorer and settler accounts can provide us with a glimpse into this past character in many areas.

Many of these accounts described large areas of the Ozark and Ouachita Mountains as being treeless on the ridges with open oak or pine woodlands and savanna on the slopes and forests only in the valleys (and in fire-protected areas in canyons and on some north- and east-facing slopes). In the absence of fire, following the fragmentation brought on by settlement, this open landscape became encroached by the steady march of woody species and prairie openings, savannas and woodlands transitioned to shrublands and forests.

So where does that leave us today? How do we know if an area would benefit from the reintroduction of fire?

Almost any area that has naturally occurring prairie plants will benefit from a burn. Clues to fire-suppressed woodlands are many and are easy to interpret with a little practice. They include the presence of prairie species in sunny spots like roadsides and power line rights-of-way. Sites with swaths of pale purple coneflower, little bluestem, big bluestem, Indian grass and butterfly milkweed are likely former woodlands. These species didn't just arrive on the roadsides and utility lines, those are the only spots left where there is enough sunlight for them to express themselves and bloom.

Another good clue is the presence of old, open-grown oak trees (especially post oaks, but other species too). These are easily spotted by their large diameter, often twisted trunks and spreading limbs (which indicate that they grew in an open situation). They often have the tops broken out of them and are surrounded by younger, densely spaced trees with straight trunks and compact branches.

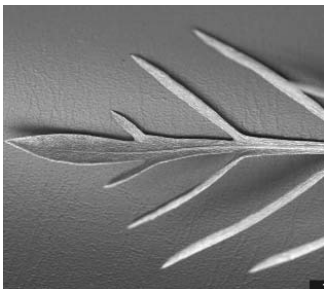
Also look for grassy openings in conjunction with these large oaks.

A longer version of this article was published in the spring 2005 Claytonia, newsletter of the Arkansas Native Plant Society.

Enemy attack

Spotted knapweed stalks our native plants

By Susan Farrington
MDC/Ozarks Chapter



Flower and leaf of spotted knapweed (Centaurea stoebe).

While the pages of this newsletter are normally dedicated to the celebration of native plants, we also must be aware of the invasive plants that threaten our favorite natives. There are a host of nasty plants out there, and one particularly bad one is spotted knapweed (*Centaurea stoebe* ssp. *micranthos*, synonyms *C. biebersteinii*, *C. maculosa*).

Spotted knapweed hails from Eurasia, and was introduced to North America in the late 1800s as a contaminant in alfalfa and through discarded soil used as ship ballast. It is found in virtually every state in the union and is a particularly serious problem as a noxious range weed of the American West.

Here in Missouri, Steyermark recorded it in 13 counties in 1963, and it is now vouchered from 29 counties (although it is probably found in others as well). It is particularly common in the southern portion of the state, although bad infestations also are found in far northeastern Missouri and other scattered locations around the state.

Along my entire 60-mile commute from Eminence to West Plains, I noted in 2007 that I could not drive more than 100 yards without seeing it along the roadway. This past summer, the Missouri Department of Transportation sprayed herbicide along these roadways and killed most of the spotted knapweed just as it was beginning to flower.

The spraying was controversial, as certainly some natives were killed and the brown swaths of dead plants were not an attractive sight. But I would argue that it might be a necessary pain to endure in the battle to eradicate a real threat. Also, by the end of summer, many of those sprayed swaths were full of maturing native grasses, which were unaffected by the selective herbicide.

What's so bad about spotted knapweed? After all, it is very attractive! It has silvery foliage and light lavender flowers in the shape of the familiar cultivated "bachelor's buttons." But it is also allelopathic (exudes chemicals that inhibit the growth of other plants) and is capable of forming large monocultures. I have seen it successfully invade thick stands of fescue and even sericea lespedeza (L*espedeza cuneata*). It starts in disturbed settings like roadsides and gravel bars along our rivers but then invades natural habitats such as prairies, glades and open woodlands and displaces our native species.

Spotted knapweed is a biennial or short-lived perennial, and relies entirely on seed production for propagation. It typically forms a rosette its first year and blooms during its second year, but it also can bloom in just one season. Its multiple stems produce copious amounts of seeds that remain viable in the soil for about seven years. It especially likes southern rocky exposures, favoring well-drained sandy soils, but is found in a variety of habitats.

Methods of control include manual removal, herbicide and biological control. Mowing is not effective: the plant just adapts by blooming at a very short height.

Removing by pulling is not practical for large populations, and disturbs the soil, exposing buried seeds that will replace the plants removed.

Herbicide treatments vary in their effectiveness. If an herbicide has no residual activity, spraying must be conducted for a number of years until the seed bank is exhausted.

Biological control is the release of specialized insects that feed on the plant, which presumably do not attack other plant species. Biological agents seldom completely eradicate problem species, but they can substantially reduce their numbers.

In addition to herbicide spraying, MODOT has released two species of insects to attack the knapweed: *Cyphocleonus achates,* a root-boring weevil, and *Larinus minutus*, a seedhead weevil. Both are native to Europe and have been used in the U.S. since 1987 and 1991 respectively. They have been tested on at least 70 closely related species and are considered host-specific. The root-boring weevil does not fly and therefore does not move far from its release site (it must be spread manually to be effective). The seedhead weevil is a strong flier.

Ozark National Scenic Riverways Green Highways Partnership

In response to concerns about roadside spraying and mowing in the National Scenic Riverways region, John Regenbogen of Scenic Missouri called together a committee to establish a Green Highways Partnership of concerned citizens and representatives of MODOT, the Missouri Department of Conservation, the National Park Service, the Natural Resources Conservation Service and the Nature Conservancy.

Regenbogen presented a vision of showcasing native wildflowers along the roadsides in the Scenic Rivers region (e.g. Highway 19 and Highway 106), serving as a tourist draw such as the roadside wildflowers in Texas.

MODOT pointed out that they plant natives in all their new road projects and understand the importance of using natives for roadside management. They also pointed out, however, that a sizeable number of their constituents prefer the roadsides to be neatly mown and manicured, complaining that deer and other safety hazards will increase if the roadsides are allowed to become overgrown.

The committee agreed to work toward educating the public as to the importance of maintaining biodiversity along our roadsides, both by encouraging natives and by working to eradicate exotic threats such as spotted knapweed. Interested parties should contact John Regenbogen at Scenic Missouri (314) 265-5328 scenicmissouri@yahoo.com.

NATIONAL NEWS ROUNDUP

Wither Walden?

Walden Pond isn't quite like Henry David Thoreau remembered it.

Climate change has affected some of the plant communities at Walden Pond near Concord, Mass., report scientists at Harvard University. Warmer springs have caused the blooming period for lilies, orchids, violets, roses and dogwoods to shift. Those plant families unable to adjust have sharply declined or even have been eliminated.

Mustards, knotweeds and non-native plants have gained ground.

The scientists say 27 percent of the species recorded by Thoreau in the mid-1800s have become locally extinct. Another 36 percent are sparse enough for extinction to be imminent.

Researcher Charles Davis, assistant professor of organismic and evolutionary biology at Harvard, told Science Daily that the losses can reasonably be attributed to climate change and not loss of habitat because 60 percent of the land in Concord has remained protected or undeveloped since Thoreau's time.

In general, Davis said plants surveyed flower on average a week earlier than when Thoreau made his detailed notes. Some plants showed no shift, however, while others now bloom 16 to 20 days earlier. Since Thoreau's time, the mean annual temperature in the Concord area has risen 4 degrees.

The work was reported on in the "Proceedings of the National Academy of Sciences."

Thanks to MONPS member Sylvia Forbes for the head's up on this story.

Texas invasion

Texas has gotten notoriety from an Associated Press article that ran in the *New York Times* in early December for the state's efforts to battle invasive species.

One of the leaders of the charge is Damon Waitt, a biologist at the Lady Bird Johnson Wildflower Center in Austin who is also president of the Texas Invasive Plant and Pest Council. The council was formed in June to pull together federal agencies, conservation organizations, academia and other groups for a unified fight against invasive species.

Among the scourges of Texas, augmented from information from the U.S. government sources:

- Saltcedar, so called because it oozes salt from its leaves, is altering soil salinity and drying up small streams and rivers by consuming so much water. It does not threaten Missouri.
- Broomrape, a parasitic plant that attaches to other plants and sucks them dry of water and nutrients. Native to Europe, it is believed to have migrated to North America by ship. It is a Missouri threat too.
- Chinese tallow, a tree that drives out other species, has become a serious problem in east Texas, Louisiana and Mississippi, where is establishes dense stands that quickly outcompete most other tree species.
- Giant salvinia, a Brazilian plant that has spread across up to 8,000 acres at Caddo Lake, when in 2006 it covered about 30 acres. It's range is not likely to stretch to Missouri.
- *Hydrilla verticillata*, native to warmer areas of Asia, is aggressive enough to form dense mats of vegetation that interfere with recreation, clog irrigation canals and destroy fish and wildlife habitat. It is a widespread threat. U.S. southern populations overwinter as perennials, while northern populations overwinter and regrow from tubers.

The dark side of biofuel

The Florida Native Plant Society is saying "hold on a minute" to people pushing jatropha as a biofuel source.

According to an online article in the Naples, Fla., Daily News, jatropha is believed to have originated in South America or Central America. In recent years it has been cultivated for the oil the jatropha nut produces. Governments are promoting cultivation of the crop.

Jatropha curcas is an evergreen shrub that can grow almost anywhere, even on gravelly, sandy and saline soils.

While the University of Florida's Institute of Food and Agricultural Sciences has signed off on jatropha as a noninvasive plant, Doria Gordon says not so fast. She is director of conservation for The Nature Conservancy and a member of the IFAS invasive species working group. She is also a courtesy faculty member at the University of Florida. She has unpublished research being reviewed by IFAS that says jatropha has invasive tendencies.

She said jatropha has been documented in natural areas and has become weedy in areas similar to Florida that have problem weeds similar to Florida's

"If it's planted in large enough areas as a biofuel source, this is a species whose seed would become much more available," she said.

According to an article at www.green-energy-news.com, large-scale jatropha plantations are being created in India, China, Burma, Nicaragua, Africa, the Philippines and Brazil. The article weighs the benefits of planting jatropha, too.

"As a perennial, it can sequester carbon too. A full-grown shrub or tree absorbs around 18 pounds of carbon dioxide every year. 2,500 shrubs can be planted in a hectare (about 2.5 acres), resulting in more than 20 tons of greenhouse gas sequestration per year."

The New York Times published an article in mid-December about airlines using biofuels. This year, Virgin Atlantic has made a test flight from London to Amsterdam with fuel mixed with coconut oil and babassu oil, the article said. Continental Airlines and Boeing have planned a Jan. 7 test flight of a 737-800 aircraft partially fueled by biofuels, including algae and jatropha.

Chinese tallow, *Triadica sebifera*, considered invasive in Southern coastal regions of the U.S. (see above), also has been named a source of biofuels.

Tallow has been cultivated as a seed-oil crop in China for at least 14 centuries. Candles, soap, cloth dressing, and fuel are made from the tallow.

Two things that make Chinese tallow appealing as a biofuel source also raise concerns among people worried about native habitats. For one, *T. sebifera* is not choosy about soil types or drainage. Also, Chinese tallow can to reach reproductive age in as little as three years and remain productive for at least 60 years.

Complied by Chuck Robinson, the non-invasive Petal Pusher editor

Hawthorn Chapter

Submitted by Nadia Navarrete-Tindall, chapter representative

We had a wonderful diverse group of activities in October and November.

On Oct. 12, several members of the chapter went to Schwartz Prairie. This prairie is located in St. Clair County and is managed by the Missouri Prairie Foundation. Among the 200 or more native plants found at this prairie is the rare *Geocarpon minimum*, which is a small (1-4 cm tall) succulent in the Caryophyllaceae family. Other rare species present in this prairie are prairie mole crickets and prairie fringed orchids.

On Oct. 18, several members attended the Chestnut Festival in New Franklin hosted by the University of Missouri Center for Agroforestry. During this event, besides enjoying freshly roasted chestnuts and other Missouri gastronomic delicacies, members set up a booth to sell books and plants and share information with visitors about gardening with native plants. Nadia offered two walking educational tours of a five-year old prairie that includes cluster fescue (*Festuca paradoxa*), a shrub planting that provides habitat for quail and other wildlife, and natural woodland remnants with gorgeous American bittersweet vines. The event was open to the public and attended by 5,000 people or more. The day was beautiful and the weather was perfect. It is a worthwhile event to attend because there are always people 'new' to native plants that we hope we 'converted'.

October activities ended with a hike to Three Creeks on the 25th. Taking part were Wanda Pascal, Jean Graebner, Jim Whitley, Paula Peters and Becky Erickson enjoyed the fall colors and beautiful creeks.

President Nancy Langworthy sent a survey via e-mail and newsletter to learn more about "absentee" members and promote their participation. Thirteen members sent their responses, but she is asking other members to participate in the survey.

During our regular meeting in November, our guest speaker was Dr. Chris Starbuck, extension associate professor at the University of Missouri, who gave an excellent presentation about his research project growing bare root plants in gravel beds. Gravel beds are easy to establish and don't require much space, he explained. This system not only promotes fast growth and a well developed fibrous root system but plants are easy to transplant with a high rate of survival. He has worked successfully with shrubs and trees and recently, he has been experimenting with native forbs with promising preliminary results.

On Nov. 15 we celebrated one of our chapter's most traditional annual events, our wreath workshop. This fun event has been hosted by Laura and Paul Ellifrit for the past few years at their farm along Cedar Creek. The workshop started at 10 a.m., where Paula, Vanessa and Wanda created beautiful wreaths by using almost exclusively dry plant materials. The cookout started in early afternoon where Paul's custom made grill was the centerpiece with the roasting free-range Cornish rock hens cooked to perfection with Jim Whitley's expert supervision. While we may have missed the old days with poles propped on rocks, the new grill made things much easier. Since it was just cold enough to be uncomfortable, we still had the winter spirit of being in the woods and the food was just as good.

The Hawthorn Chapter held a wreath-making workshop Nov. 15, creating holiday decorations of mostly dried materials like this one created by Paula Peters.

Also in November, our vice-president Vanessa Melton was named the volunteer of the month by the Columbia, Mo., Office of Volunteer Services for her environmental work. She is a City TreeKeeper, a member of CARP, Audubon Society board member, among others. She is very enthusiastic about her work and many of us wonder, where she finds enough time to volunteer with these and other groups and do it well. Congratulations Vanessa!

Kansas City Chapter

Submitted by Daniel Rice, chapter representative

Kansas City Chapter's last meeting of the year took place on Thursday Nov. 20. After a short business meeting at which we established a Nominating Committee for next year's elections, our speaker for the evening was introduced. Dr. Mindy Walker, professor of biology at Rockhurst University in Kansas City, gave a very entertaining and informative talk on the timber rattlesnake.

The timber rattlesnake is at the western edge of its range in eastern Kansas, and is considered a species of concern by that state. That is why, when a known hibernaculum (hibernation area) was to be leveled for the construction of a retail store, Dr. Walker was called in to relocate as much of the population as possible. It took several months to find a location with all the requirements necessary for the survival of the snakes, but one was found on public property. There were 35 snakes relocated in 2007, and to date the process is considered successful.

The slides were a great asset to the presentation, the best one showing Dr. Walker giving mouth-to-mouth resuscitation to a female rattlesnake that was not coming out of sedation. A great talk!

The next meeting of the Kansas City Chapter scheduled for Jan. 15 at the Discovery Center. Everyone is welcome to attend, as this is the meeting to establish field trips for the coming year.

Osage Plains Chapter

Submitted by Marlene T. Miller, chapter representative

We have had two meetings since we last reported, October and November. We have not had any more field trips. They will begin again with 2009's spring weather.

Continued next page

From the previous page

We had 14 members and friends at our October meeting. We had some fun with a pumpkin decorating contest. They were all winners and we got a lot of enjoyment from seeing what had been created.

At the same time, others worked on native plant seed balls. Using native plant seeds that our President Emily provided and some "sticky" soil, small balls of dirt and seed were made. Others of us put together the little packets that they would go into after they dried along with an ID tag, Emily has plans for their distribution to the public. It was a lot of fun and allowed members to interact with some of the newcomers and get to know each other.

Marlene reported on Indian pipe found in a neighbor's woods this fall and passed around pictures. The neighbor reported it to MDC and someone from there came out and took pictures also. We believe it to be the first reported sighting in Henry County. Marlene and children saw some in the 1980's near where this neighbor now lives (no houses there then). This was before her introduction to MONPS. Marlene also passed around a couple pictures of plants in fruit from the neighbor's woods for ID.

A finding of Monotropa unifolora has been recorded in Henry County.

The meeting included the beginning of plans for 2009.

Our next meeting was Nov. 17, with 24 members and guests attending. Our speaker was Ted Bolich. He spent several years as a ranger in Arizona for the Petrified Forest. With maps, charts, samples and pictures, he amazed us with information about petrification and the fossils, etc. that are a part of the Petrified Forest/Painted Desert area. This was a whole new way of thinking about plants and their presentation. There are several designated wilderness areas in the park and of course everything within its boundaries is protected. Unfortunately, as with many of our national treasures, there is a deficit of money and personnel for adequate study and interpretation.

There was no business meeting. Our next meeting will be Feb. 16 at the Missouri Department of Conservation Clinton office at 7 p.m., topic to be announced. Watch the newspaper and e-mails.

Ozarks Chapter

Submitted by Susan Farrington, chapter representative

Our October meeting was a plant ID night. Participants brought plants in to identify, and we got out hand lenses and a dissecting scope to learn about some of the smaller parts of plants.

At our November meeting, Susan Farrington talked about her trip to Glacier National Park and contrasted Montana's wildflowers with those found in Missouri.

We have a great line-up so far for our programs next spring. In addition to our February program on tall larkspur (see the calendar), we have scheduled Chris Crabtree to talk about the mushrooms of Missouri in March (just in time to get you excited for the April morel mushroom season) and we've asked renowned botanist Theo Witsell to come up from Arkansas to give us a talk in April. More details to follow.

Perennis Chapter

Submitted by Allison Vaughn, chapter representative

On Sunday, Nov. 9, the Perennis chapter met at Trail of Tears State Park to hear Chapter Secretary Jennifer Picker discuss the findings of her graduate research at Big Oak Tree State Park.

To complete her master of science degree requirements from Southeast Missouri State University, Jennifer investigated the impact of deer browse patterns on the flora of two natural communities within the park.

Under the guidance of her professor, Dr. Alan Journet, Jennifer examined the two dominant communities at Big Oak Tree and compiled thorough plant lists. Jennifer focussed her efforts on the higher reaches of the park. Within her study area were two primary communities: the mesic bottomland woodlands (hosting plants such as *Carex tribuloides*, Shumard oak, and *Clematis crispa*), and the most diverse community in the park's 1,026 acreage, the dry-mesic bottomland woodland (where plants such as *Arundinaria gigantea* and *Carex socialis* grow).

Jennifer discovered that, while in years prior to her research the park had seen a persistently high deer population, long-term effects of deer were not detrimental to the park's flora. At her talk, she compared the vegetation between the two plant communities and offered suggestions for future research projects.

Following Jennifer's lecture, members were given details about the Dec. 14 Mistletoe Hike at Big Oak Tree.

St. Louis Chapter

Submitted by Martha Hill, chapter representative

Our monthly meeting was our annual members show-and-tell night on Wednesday, October 29.

It was a time to catch up on the interesting and often beautiful vistas and plants that our members have taken pictures of while walking around the trails in our area, or on planned trips to orchid meetings, or even while abroad. The St. Louis chapter has been very fortunate to welcome several new and, often, younger members to our organization.

Several people participated in showing their native plant pictures including Mary Smidt, Kevin Bley, Steve Buback, and an informative and well-presented talk about the progress of the Flora of North America by Kay Yatskievych; along with the usual cast of characters.

Steve Buback held the Forest Park Forever annual honeysuckle cut-and-destroy event in November. As usual, many volunteers showed up to show their support in eradicating this beast from our beautiful city park. Forest Park is looking very good these days, and much of that thanks goes to Steve for working so hard on making the Kennedy Woods (and other areas) a place we enjoy visiting.

We do not meet again until 2009 and want to wish the Missouri Native Plant Society members and friends a very good holiday and best wishes in the New Year.

Quarterly board meeting

By Ann Schuette
Secretary

President Rex Hill called the meeting to order at 7:05 p.m. on Sept. 13 at the Powder Valley Nature Center, St. Louis.

Treasurer's Report — Bob Siemer reported that the Hudson Fund had $15,268 in CDs with recent additions primarily due to the courses that have been conducted at Meramec Community College by MONPS members. RH noted that several will be done again next year.

PUBLICATIONS AND MEDIA

Distribution Chairman — Bill Knight noted that there had been two small problems with the last issue, but that they had been smoothed out.

Publicity Chairman — Kevin Bley let the members know a few more Blazing Star awards went out this year. George Yatskievych mentioned a good job had been done with the publicity for this event resulting in a great turn out.

MONPS website — Yatskievych said he had three contacts with questions that were forwarded to him from the Web site. It was noted that you have to be a member to blog or post photos. Ann Earley said she gets inquiries from Dave Winn about whether an individual is a member. Everyone joined in thanking Dave for the good work.

Missouriensis — Yatskievych reported that it was almost ready. He noted that to catch up with the publication schedule, a double issue (two years — 2007-08) will be published. Since the post office complained about the last issue's thickness, it will be put in an envelope this time. Yatskievych will need the full membership list. Seimer related that $1,100 was in the budget. Doug Ladd will bid it out.

COMMITTEES AND TASK FORCES

Membership — Ann Earley reported that there were 17 new members with at least one from each chapter bringing the total to 335. The chapter representatives have received a roster showing which of their members still have not renewed.

Hudson Award — Yatskievych said that the announcement for next year's award would go out in November or December. Hill suggested the December meeting agenda include a discussion on how much to award.

Archives — President Hill thanked Jack Harris for his work. It was noted that plant lists are available in the archives.

Awards Committee — President Hill thanked Jack Harris for the job he has done.

Nominating Committee — Sherry Leis was named chairwoman. She will be looking for replacements for several positions.

President Hill brought up the need to keep up our tax-exempt status and provide an updated tax exempt letter to vendors. Siemer will have one available in case anyone needs it. The Missouri annual registration requirement will be the job of the vice president.

CHAPTER REPORTS

Paul McKenzie will be the interim representative for the Hawthorn chapter.

Marlene Miller of the Osage Plains chapter was not able to attend because of her husband's illness. When they move, the chapter may be without a representative.

SOCIETY BUSINESS

30th Anniversary Committee — The celebration will be held during the September 2009 meeting. Larry Morrison brought up the idea of meeting in Fulton since that was the site of the original meeting. Everyone is to bring their ideas to the December 2008 board meeting where a date and site will be decided on.

Joint Meeting with Arkansas — It was brought up that the meeting should be held the last weekend in May in order to find the Mead's Milkweed in flower. There are precedents to hold the annual meeting in May even though the bylaws say June. Yatskievych moved and Siemer seconded to move the 2009 annual meeting to May. The motion passed. Paul McKenzie will decide the best place to hold the meeting. It was mentioned that Mike Skinner should be involved. Springfield may be the best option for the meeting location with the nature center there. Hill will talk with both Mike Skinner and Emily Horner.

MISCELLANEOUS ANNOUNCEMENTS

Hill said the plant list for Squaw Creek National Wildlife Refuge was done and was ready to be sent to the NWR. Harris requested Hill send a copy of both the Squaw Creek NWR and Mingo NWR lists to the archives. Yatskievych brought up that if we want to continue doing plant lists for public lands, the Big Muddy National Wildlife Refuge has requested help.

INFORMATION ON JOINING THE MISSOURI NATIVE PLANT SOCIETY

SOCIETY DUES

(Chapter dues additional)
Student dues $5
Regular $10
Contributing $20
Life $200

CHAPTER DUES

Columbia $6
Kansas City $5
Osage Plains $5
Ozarks Native Plant $5
Perennis $5
St. Louis $5

(Circle all above that apply)
$_____ Contribution for student research award (Hudson Fund)
✷ All contributions are tax deductible ✷

Make checks payable to Missouri Native Plant Society
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