

Public Is Invited

Marietta Natural History Society

Summer 2000 Newsletter

A trip To Gwamma's Farm

*Thursday, July 13, 6:30 PM
meet at the Hermann Fine Arts Center
parking lot, Marietta College*

We will visit the farm of John and Donna Betts near Stanleyville. Farming 'Back to the Future' – by borrowing from the past as a guide to sustainable farming for today. Tour will include organic garden, grazing practices and more!



Trees!

*Thursday, September 14,
6:30 PM*

*meet at the Hermann Fine Arts
Center parking lot,
Marietta College*

Our tour leader will be Roger Hendershot, Superintendent of the Marietta State Tree Nursery at Reno, run by the Div. of Forestry, ODNR. Raising hundreds of thousands of trees involves much more than just planting seeds.

Amble at Boord Nature Preserve

*Thursday, August 10,
6:30 PM
meet at the Hermann
Fine Arts Center*

parking lot, Marietta College
Also known locally as Falls Run, the pleasant walk will go through several habitats which should provide opportunities to observe native plants and perhaps some wildlife.





'Fal-Cam' Live! The Ohio Department of Natural Resources is providing a 'birds-eye view' of a peregrine falcon nest located on a twelfth floor ledge of the Terminal Tower in the heart of downtown Cleveland. For the seventh year in a row the female (Zenith) has come to this location. She mated with Buckeye this year and laid four eggs. Three of the four eggs hatched between May 7, 2000 and May 10, 2000. The chicks have been named Rockie, Perl and Blaise. See a current image of nest happenings or minute by minute images taken during the previous hour. Visit the site at: <http://www.dnr.state.oh.us/odnr/wildlife/diversity/falcon/peregrine.html>



Plant A Scents-ible Garden

Scientists at Purdue University have recently reported an unforeseen consequence of years of horticultural breeding, crossbreeding, and most recently, genetic engineering of garden flowers – blossoms of new varieties have much less fragrance. Every year about 1000 new plant varieties are introduced, and the vast majority of the garden flowers and shrubs now marketed are hybrids. The loss of fragrance is viewed in the floriculture industry as an undesirable tradeoff of breeding programs that emphasizes larger, more colorful blooms and disease resistance.

The consequences of fragrance loss extend beyond reduced human olfactory pleasure. The aromatic compounds (over 700 have been identified so far) that create fragrances actually have important biological purposes. These include attracting pollinators, repelling insect pests, and serving as a chemical system of warning other plants of disease infection. While the impacts of less fragrance are not likely to directly affect the hybrids themselves, their escape into the wild or cross-pollination with wild species could diminish the food available to insects attracted to flowers for nectar. You should expect that many hybrids will not serve as good specimens for a butterfly garden.

We can help by preferentially planting native and traditional plant species. These are best suited for local insect species, help to maintain genetic stock, and diminish the chances of introducing invasive exotic species. Ask for native species at local nurseries to encourage availability, and search the web for retailers. The Land Reformers in Meigs County is one local source.

Congratulations

Dave McShaffrey was recently nominated for president of the Ohio Odonata Society; he currently is serving as vice president. Dave, local entomologist-extraordinaire, is a member of the Marietta College Biology Department and past presenter of MNHS programs. The Ohio Odonata Society exists to promote knowledge and appreciation of dragonflies in Ohio. The Ohio Odonata Home page can be found at <http://mcnet.marietta.edu/~odonata/index.html>. Congratulations, Dave.

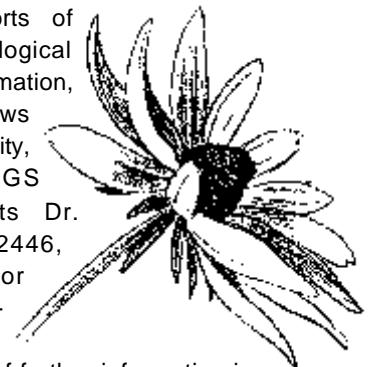
West Nile Virus Alert

The West Nile Virus has recently arrived in the western hemisphere, posing a threat to both humans and birds. The disease can be transmitted between birds or from birds to other animals including humans through a mosquito vector. This virus is responsible for an outbreak of encephalitis in the New York City area. The virus has been blamed for six deaths, and has sickened at least thirty people. The West Nile Virus originates in Africa, and rarely occurs outside Africa, Australia, and the Middle East. According to Centers for Disease Control (CDC) officials, the virus is **NOT** directly transmitted between humans.

The West Nile Virus is a threat to both wild and captive birds. The effects on infected birds are not fully understood, but symptoms are believed to include encephalitis-neurological type disorders. A number of federal, state and private organizations and agencies are currently assessing the extent and nature of the problem. The disease is currently centered along the eastern seaboard, and cases have not been reported in Ohio; however, we should be alert to birds that show unusual illness or death. American Crows appear to be the most susceptible North American species; however, the pathogen also has been identified in Rock dove, Sandhill crane*, Blue jay, Bald eagle*, Laughing gull*, Black-crowned night-heron* Mallard*, American robin, Fish crow, Red-tailed hawk, Broad-winged hawk, Cooper's hawk, Belted kingfisher, American kestrel, Herring gull (* indicates cases of the disease in captive species).

The involved agencies are interested in receiving reports of sick or dead birds with neurological symptoms. For further information, and to report sick or dead crows or other unusual bird mortality, please contact the USGS Wildlife Disease Specialists Dr. Linda Glasser (608-270-2446, linda_glasser@usgs.gov) or Kathryn Converse (608-270-2445, kathy_converse@usgs.gov).

A good source of further information is the USGS web pages at http://www.usgs.gov/west_nile_virus.html.



July 2000

Sun	Mon	Tue	Wed	Thu	Fri	Sat
The midpoint for the year is 8 PM July 1 (Greenwich time) or 5 hours later (midnight) if you are following local time.						1 Δ
2	3	4 Independence Day	5 Milkweed Plants Maturing Look For GoldFinches Eating Thistle Seed	6	7	8 E
9 Watch For Young Bluejays	10 Tall Bell Flowers in Flower	11 Monarch Caterpillars Feeding On Milkweed Leaves	12	13 MNHS Meeting	14	15
16 A	17 Look for Wasps Making Paper Nests	18	19 Insect Night Chorus Tuning Up	20	21	22
23	24 X	25 Early Goldenrod In Flower Earth is at aphelion - farthest from the sun - 8 PM, July 4. Does the sun appear any smaller to you? (But never look directly at the sun!)	26 Orioles Moving South	27	28	29
30 Δ	31					

The Native Vascular Plants of Washington County, Ohio compiled by Diane Mitchell and edited by Marilyn Ort is available online at the MNHS web site (www.marietta.edu/~biol/MNHS/) or you can receive a free copy by contacting the Newsletter Editor or one of the MNHS Board of Directors.

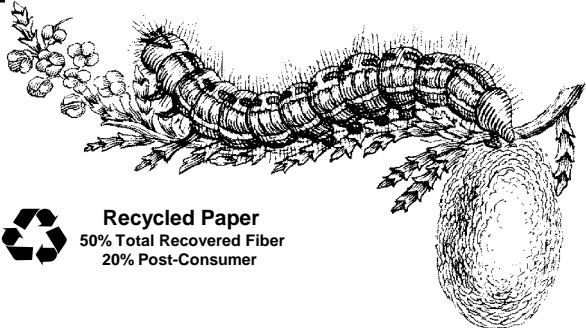
August is normally the Perseid Meteor month, with rising sporadic rates which peak this year on the 12th. August usually offers good meteor viewing conditions, with warm nights and clear skies. Unfortunately, viewing this year will be hindered by a waxing gibbous moon.

August 2000

Sun	Mon	Tue	Wed	Thu	Fri	Sat	
		1	2	3	4	5	
		Don't Forget To Water Trees Annual Cicadas 'Singing' From Trees					
6 E	7	8	9	10 MNHS Meeting	11	12 Perseid Meteor Shower 4:00 AM	
Is There Anyone Who Can Use Zucchini?							
13	14 A	15	16	17	18	19 Orville Wright Born 1871	
Cattails Have Reached Full Height Walk the dog on a summer dog-day							
20	21	22 X	23	24	25	26	
Look For Flocks Of Nighthawks Purple Martins And Barn Swallows Begin To Flock For Fall Migration							
27 Songbird Fall Migration Begins	28	29 Δ	30	31			

September 2000

Sun	Mon	Tue	Wed	Thu	Fri	Sat
Autumn begins 9/22, the autumn equinox, when the sun appears to cross the equator into the southern hemisphere.					1	2 Cecropia Caterpillars Making Cocoons
3	4 Labor Day	5 E	6	7	8	9
Spots Beginning To Fade On Fawns						
10	11	12	13 A	14 MNHS Meeting	15	16
Look For Walking Sticks -- Good Luck!						
17	18	19	20 X	21 Monarchs On Way To Mexico	22 Autumn begins	23
Hummingbirds Fleeing Oncoming Cold Fronts						
24	25	26	27 Δ	28	29	30 Nighthawk Migration Begins
Height Of Fall Songbird Migration						



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The Summer Silent Symphony by Steven R. Spilatro

The early summer twinkling will soon be reaching a crescendo. A new generation of adult fireflies has emerged and is now seeking to complete their life cycles – and start new ones. Having eaten voraciously as larvae the previous year, firefly adults' interests now focus on reproduction. And to find a suitable mate, each species plays its part in the summer silent symphony of light.

Fireflies actually are not flies, but rather, beetles – members of the insect family Lampyridae. Over 1900 species of fireflies have been identified world wide, about 170 have been identified in North America. We are fortunate to be living in an area where fireflies are common; they do not occur in the western half of the U.S. Fireflies are among a small collection of organisms that have evolved the ability to produce light. The light they emit is produced by a process called bioluminescence, a biochemical conversion of chemical energy into light. The reaction occurs in specialized cells, called 'photocytes' found in the rearmost segments of the insect's abdomen (a region called the 'lantern'). Here, an enzyme called 'luciferase' (named for Lucifer, the bearer of light) activates molecules called 'luciferin' with energy from ATP, a cellular energy source. When luciferin reacts with oxygen, it emits a small burst of light.

The firefly controls flashing with its nervous system, which regulates oxygen supply in the lantern. This explains why the abdomen of a firefly may begin to glow when crushed (possibly by a curious youth) – the luciferin becomes flooded with oxygen causing it to flare uncontrollably.

Flashing is the signal by which adult males and females find one another. Since more than one species often inhabit the same area, each uses a distinctive pattern of flashes – a photonic morse code, more or less. A pattern is usually created with a series of long or short flashes, separated by an appropriate time interval. *Photinus consimilis*, for example, produces triplets of short flashes, whereas a sustained series of evenly timed flashes is characteristic of *P. brimleyi*. Some species use extended flashes and their flight pattern to draw curves (*P. pyralis*) and squiggles (*P. granulatus*) against the evening darkness. To the sensitive observer, fireflies do appear to create a silent symphony of light in the summer night sky.

Other characteristics and behaviors also distinguish species. The color of the light produced varies: members of the genus *Photinus* have a yellowish light, those in *Photuris* have a greenish flash, and among *Pyraetomena* the flash has an amber hue. Some species are found in open fields, others in forests. Some inhabit the upper tree canopy,

some fly only near ground level. Some only display near dusk, others only when it is fully dark. (Some species of firefly do not flash at all. These species usually fly during the day and attract mates with chemical pheromones instead of light.)

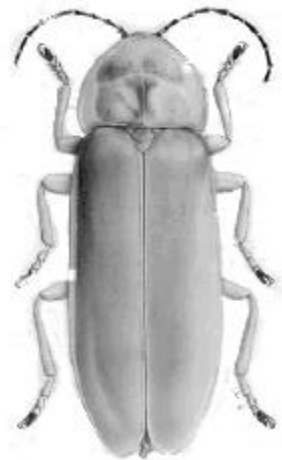
One of the most remarkable firefly behaviors is 'synchronous flashing', a phenomenon well documented among Asian fireflies and more recently reported for a North American species (*P. consimilis*). A synchronous flash by some Asian species can illuminate an entire tree canopy, and such firefly 'luminaries' truly merit the moniker 'lightning bug'.

Most of the work of attracting mates is left up to the male fireflies. While females protect their cargo of eggs by remaining stationary, the males repeatedly signal their intentions while flying overhead. A female attracted to a particular male, will rejoin with an appropriate flash of her own, enticing him to come closer. After a repeated 'call and response' dialog, and when both are convinced of the other's identity, mating will occur.

Carefully choosing one's mate is not a matter of mere visual appeal – it can be a life or death decision. Females of some firefly species mimic the response flash pattern of other species, and a heedless male enticed by such a *femme fatale* will soon become dinner for his intended. Like the male black widow that is devoured by the female after mating, these 'Fatal Attractions' provide a nutritional boost for a female, *sans copulation*.

After mating, females are now ready to deposit their eggs. Within a month of being deposited, the eggs hatch and larvae emerge to inhabit moist soils and forest leaf litter. All stages of the firefly life cycle – eggs, larvae, and adults – can bioluminesce. Firefly larvae, or 'glowworms', are familiar to anyone who has ever gone on a night hike at Camp Hervida or other suitably moist area. They are voracious eaters, preying upon insects, worms, snails, and other small organisms they can inject with toxins and liquify. Emerging a diminutive sixteenth inch in size, larvae of some species achieve a half inch in length before pupating.

See Fireflies, Page 5



Fireflies, con't from page 4

During the fall, the larvae burrow into the ground, and pass the winter in a dormant state. They reawaken the following spring and build a small earthen cocoon of soil particles welded together with saliva. Within this protective enclosure the firefly larva pupates, to emerge about two weeks later as an adult ready to repeat the cycle.

Many a night hiker has speculated about the reason for the glowworm's glow. It would seem as likely to attract potential predators as the interest of human hikers. This characteristic is believed to serve the same purpose as the vivid colors of other species, such as the black and white pattern of the skunk, the orange coloration of the monarch butterfly, and the yellow and black banding of the yellowjacket. The glow is a warning to potential predators!

All stages of the firefly life cycle are protected by substances called lucibufagins, self-defense molecules that are poisonous to many potential predators. Lucibufagins are steroidal compounds, structurally related to poisonous substances found in certain toads and plants. Animals, such as birds, amphibians and lizards that attempt to eat a firefly adult or glowworm quickly regurgitate the morsel. Astute predators learn to avoid these small illuminated critters, while a shallow learning curve can have fatal consequences.

Lucibufagin toxicosis is a particular threat to captive exotic animals that come from areas that do not have toxic fireflies. Recently, two *Pogona* (bearded dragon) lizards held in an outdoor enclosure died at the Philadelphia Zoo after eating fireflies. Some exotic pets reported to have died after consuming fireflies include an Australian White's tree frog, a rock lizard native to Central Asia, and an African chameleon.

Knowledge of firefly biochemistry has led to some interesting commercial spinoffs. Next time you buy a 'glowstick' at the Sternwheel Festival you can admire its light as well as the more skyward pyrotechnics. Packed with tremendous quantities of luciferin, a glowstick's irradiance is sufficient to read by! More valuable applications have also developed. In the hands of the biochemist, luciferase allows sensitive measurements of various biomolecules. Microbiologists can use luciferase-based systems for detecting very small numbers of pathogens, such as *Mycobacterium*, the agent of tuberculosis.

Presently, no species of North American firefly is currently designated as threatened or endangered. However, there is concern for their numbers, which some scientists believe to be declining. Possibly, the widespread use of pesticides is having an indirect impact on fireflies. Some people have suggested that artificial lights may interfere with mating behavior. Or maybe climatic shifts are altering species

distributions.



There are many sources available for more information about fireflies. Some information used in this article was drawn from *Dance of the Fireflies*, by Susan Tweit (Audubon, July-August, 1999). Another resource is *Fireflies* by Bernice Kohn. 1966., Prentice-Hall, Inc., Englewood Cliffs, N.J. Good. Internet sites include "The Firefly Files" (<http://IRIS.biosci.ohio-state.edu:80/projects/FFiles/frfact.html/>) and "Blinks and Links" (<http://members.aol.com/terrylynch/firefly.htm>).

Japanese Knotweed: Invader with an Attitude by Marilyn Ortt



Japanese knotweed (*Polygonum cuspidatum*) is one of those species that blends in with the landscape until it is pointed out and then you see it **everywhere**. It can grow several inches in one day and when it is 4-5 feet tall, it is part of the background.

If you want to see it from a distance, look at the heads of most of the Ohio River islands – see the solid green fringe? This knotweed is common on the banks of the Ohio and Muskingum Rivers as well as up many of the tributaries. It will grow in many habitats from railroad right-of-ways to woodlands.

As with so many of the invasive non-native species, Japanese knotweed was originally brought here from eastern Asia as an ornamental and, when it escaped from the site where it was planted, it became widespread on the landscape.

This knotweed is a perennial that dies back to the ground each fall but bursts forth with incredible vigor in the spring from the intertwined, rope-like rhizomes beneath the soil surface. The early spring sprouts are edible --reputed to taste sour like rhubarb, which is also a member of the *Polygonum* family.

Mexican bamboo is a name sometimes used because of its reddish-brown, thick, hollow stems that can reach 10 feet in height! The triangular leaves grow from large nodes and are up to 6 inches long and 4 inches wide. When the stems reach about 5 feet in height in late June, narrow plumes of small creamy flowers are borne from the leaf axils. Japanese knotweed has male and female flowers on separate plants although there are few males apparently. The seeds are shiny black and triangular as are others of this family. Although many seeds are formed, this species spreads primarily by rhizomes. A patch will continue to increase in size overcoming just about any competition from other plants including trees that have the audacity to think they can get ahead of knotweed. **See Knotweed, page 6**

Threatened Plant Species Update

In February, the biannual meeting of botanists was held as required by law to determine status of rare plant species in Ohio. Of 103 species designated Extirpated from the state two years ago, 5 taxa were removed but 7 added (some were moved to Extirpated status while other upgraded to Threatened). Of 153 species determined to be Threatened, 15 were removed and 16 added. Ten taxa were removed from the list of 148 Potentially Threatened species while 7 were added. Knowing which species are at risk, research, monitoring and restoration projects are bringing attention to and attempting to reverse the losses of Ohio's natural heritage.

Summer Musings Under a Tree

Sitting under a tree on a hot summer day, imbibing a cool beverage through a straw, we might wonder how that shade-providing tree can supply water to the leaves at the greatest heights of its limbs. Trees also need water on hot sunny days, indeed, their needs are far greater than our own. We might be surprised to learn that the tree too is drawing water through a straw. As you might imagine, it would take a tremendous force to suck water up a straw the entire height of a tree (think sequoia). How does the tree do it?

Actually, through many small microscopic straws that comprise the 'xylem'— inner wood – of the trunk. The cells of the xylem form continuous hollow channels through which the water flows easily from the roots to the leaves. Just as water is drawn into a piece of paper when a corner is submerged, capillary action draws water into these small xylem channels. An upward 'pull' on the water is generated by evaporation of water through tiny pores (called *stomates*) in leaf surfaces. As water evaporates from the leaves, replacement water is pulled from the roots as a long continuous column.

A large tree draws a tremendous amount of water from the soil. Actually, young trees are threatened most by drought, since their roots can extract water only from a relatively small volume of soil. So when your throat is starting to feel dry and you're reaching for that 'cold wet one', why not provide a wet one for your trees as well?



**Suggestions, Comments
or Contributions for the
MNHS Newsletter?
Send them to the editor:**

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Knotweed, con't from page 5

Native knotweeds and smartweeds, also in the same family, provide valuable food for wildlife. The monoculture that develops when Japanese knotweed establishes a toehold does not provide a good habitat for anything but itself. Walking through one of those knotweed-fringes around the islands, instead of the mix of various species of plants with accompanying insects and other invertebrates, one becomes aware that in spite of the quantity of biomass of stems and leaves, the soil surface is void of living organisms. There are no tracks or signs of other critters although I did find an empty snail shell once.

Several years ago, the research section of a Canadian paper company was considering Japanese knotweed as a source of fiber for paper manufacture. What an answer to the problem! If everyone were out harvesting the knotweed for a second income, we could soon have it under control. However, there would then develop a demand which would require plantations of this pernicious species – not a good move.

As small pieces of the rhizome are washed downstream, they become established on the first landfall they reach and there goes another riverbank. Another means of rhizome dispersal is the constant moving about of soil. Topsoil should be carefully watched for the first few years for this and other invasive non-native species.

Japanese knotweed stems can force their way through several inches of asphalt, creating cracks and surprising site managers the spring following installation of pavement.

"Sterile" forms of Japanese knotweed are still being sold by some landscapers although recent studies indicate cross-pollination with naturalized populations does occur which only adds to the genetic vigor. Seeds may not be produced on the newly purchased plant but since the species spreads so vigorously by vegetative means, seeds are not the main concern.

Recommendation: avoid acquiring at all costs and destroy any populations on your land. Constant mowing or cutting at the base, several times during each growing season, will eventually exhaust the incredible amount of stored food supply while denying new from the photosynthetic process. [Editor's note based upon personal attempts to rid knotweed from yard: Good Luck!]



Summer Highlights of a Naturalist *by Brad Bond*

For the last six years I've kept a diary of what I've seen in day walks around the county, and they may serve to anticipate what summer will bring.

1st Weekend in July

For some years now the Fish & Wildlife people have invited the public to participate in a butterfly hunt on Middle Island. I've joined the crowd the last 3 years. It starts at 10 and the results are summarized over lunch. Combing the downstream end of the island, my total last year was 13 white-and-black cabbage butterflies, 7 silver-spotted skippers, 7 clouded sulfurs, 7 fritillaries (mostly great spangled), 5 pearl crescents, 4 black and 1 yellow tiger swallowtails (they come in two color phases), 4 zebra swallowtails, 4 monarchs (could be some were viceroys), 2 sulfur butterflies, 2 black swallowtails, 1 spicebush swallowtail, and 1 small black skipper.

For birds: I heard or saw catbird, yellowthroat, song sparrow, barn swallow, chimney swift, many goldfinches in thistle stands, robin, grackle, mockingbird, warbling vireo, starling, cowbird, indigo bunting, meadowlark, red-winged blackbird, and great blue heron.

Saw a long-horned beetle (*Strangalia luteicornis*) on wild carrot, a yellow-antennaed spider wasp with red wingtips and a snowberry clearwing moth (*Hemaris diffinis*), the kind that looks like a small hummingbird. A really strange sight on these forays is the number of orange-and-black soldier beetles (*Chauliognathus marginatus*) that commit suicide by biting into milkweed leaves or stalks and getting stuck.

18 July 1997

From May until the end of July I count long-horned beetles in various areas across the County. The wild hydrangea in the ravine behind the Washington County Career Center is a great host for this flower-loving beetle, the most common of which is *Typocerus velutinus*. I found three while hearing a hooded warbler, wood thrush, towhee, Acadian flycatcher and scarlet tanager sing. There was also an orange-haired robber fly I had seen just once before (*Laphria sericea*). Robber flies and dragonflies are the hawks of the insect world, preying on other insects. I once had a robber fly snatch a hover fly I was about to photograph before I could click the camera. The approach of my camera had distracted the fast-moving hover fly.

In the meadow uphill from the ravine, flowering spurge, narrow-leaved mountain mint, Queen Anne's lace and common milkweed were in bloom. I found 4 black-spotted, red milkweed beetles, members of another tribe of long-horned beetles. They feed only on milkweed and have



learned how to avoid the mouth-clogging stickiness of milkweed sap. They cut the vein upstream of the end of a leaf and eat downstream unhindered by the "milk".

1 August 1998

Hover flies are notorious imitators of bees and wasps. This day in the OEC meadow I found a mimic (*Eumerus tuberculatus*) of a black-and-white wasp known as *Bembix*. The fly was not at all bothered by my picture-taking, trusting, I thought, to my wariness of getting stung. The color patterns were the same; the fly is smaller than the wasp, and, of course, it has much shorter antennae and only two wings. But these are things you would notice only if you had prior knowledge or a direct comparison. There are some yellow-legged syrphid flies with the usual stubby antennae that have black forelegs, the color of a wasp's antennae, and they are long enough so that, when they move them, they look like a wasp's antennae. What bird counts legs when trying to decide whether to eat an insect?

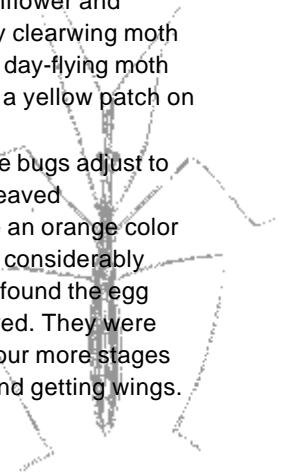
This day, swallowtail butterflies were on the violet-blooming teasel, the red-shaded-to-green dogbane beetle was feeding on its host plant – dogbane – and a tiger beetle was patrolling the dirt path looking for lunch.

16-20 August 1995

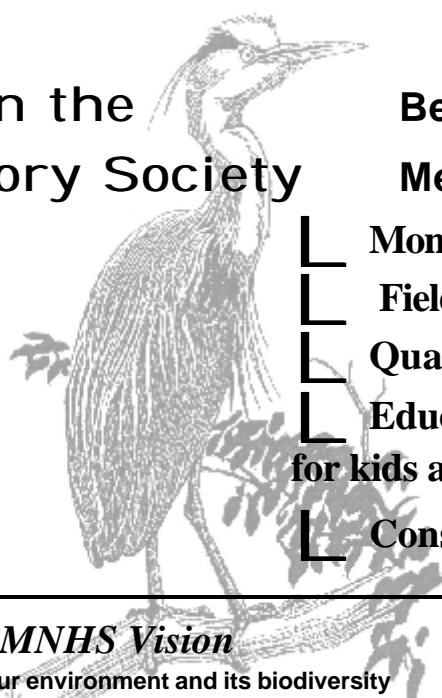
The meadow uphill from the Outdoor Education trails back of the Career Center has a number of prairie characteristics. Prairie warblers and yellow-breasted chats nest there each year and a variety of plants bloom there that are unusual elsewhere: white milkweed (*Asclepias verticillata*) with its very narrow leaves, blazing star (*Liatris aspera*) and round-leaved thoroughwort (*Eupatorium rotundifolium*) for example.

This is *Eupatorium* season and Joe-Pye-weed and mistflower were also in bloom. Grass-leaved goldenrod is not quite out, but butterfly weed (another *Asclepias*), tall coreopsis, ironweed, thistle, woodland sunflower and agrimony were all in bloom. The snowberry clearwing moth was buzzing about the Joe-Pye-weed. This day-flying moth has the wing speed of a hummingbird and a yellow patch on its butt.

I watched a family of freshly-hatched true bugs adjust to their new life-form on a stalk of the round-leaved thoroughwort. The newest hatchlings were an orange color and the older ones (by a few hours?) were considerably darker. When I came back four days later I found the egg cases all right, but the bugs had disappeared. They were probably first-instar stink bugs. They had four more stages to go through before reaching adulthood and getting wings.



Invite a Friend to Join the Marietta Natural History Society



Benefits of Membership

- └ Monthly programs
- └ Field trips
- └ Quarterly newsletter
- └ Educational experiences for kids and adults
- └ Conservancy Projects

Wood Thrush — Individual \$15

River Otter — Family \$25

Monarch — Friend \$50

Why not give a gift membership?

Mail check to address given below

The MNHS Vision

- i To foster awareness of and sensitivity to our environment and its biodiversity
- i To provide a place where people with these interests can gather for information and activity
- i To create a presence in our community representing these ideas



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