

The Turk's Cap

THE NEWSLETTER OF THE DELAWARE NATIVE PLANT SOCIETY WINTER 00-2001

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HOW CAN I GET INVOLVED?

The Delaware Native Plant Society is open to everyone ranging from the novice gardener to the expert botanist. One of the primary goals of the society is to involve as many individuals as possible.

The DNPS is working on several significant projects at this time. We are working on a reforestation project at Prime Hook State Wildlife Area. A second initiative underway is the establishment of a native plant nursery. We have broken ground on this nursery and it looks great so far. We encourage everyone to participate in these endeavors.

For more information on how to get involved, call 302.674.5187, or E-mail at dnplant@aol.com. Or visit the DNPS website at

A CALL FOR ARTICLES

If you would like to write an article for The Turk's Cap, we would love to print it. With like minded individuals as an audience, The Turk's Cap is a great venue for plant or habitat oriented writings.

We'll take just about anything from gardening tips to book reviews to poetry. Of course, it has to be about native plants, or issues related to native plants; just a minor constraint. Your imagination is the real key.

Contact Eric Zuelke for more information at (ezuelke@juno.com), or Keith Clancy at 302.674.5187.



A QUIET SNOWFALL WELCOME TO OUR NEWEST MEMBERS

October through December

Brad and Amparo Baker



LETTER FROM THE PRESIDENT

Although the snow has melted, we are still in the midst of winter. The days are still short, a little too cold for my tastes, and a winter storm is on the horizon. It is during these long winter nights that I long for the spring, a time when buds burst forth with the promise of new life. A time when the forest floor is covered with blooms of may apple, spring beauty, bloodroot, or any number of other spring ephemerals. So while we all strive to keep warm and visions of spring occupy our thoughts I'll take this opportunity to briefly reflect on recent activities of the DNPS and share some thoughts on the upcoming year.

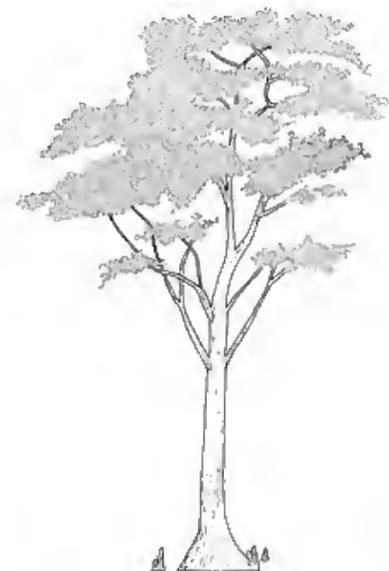
This past fall has been an active one for the DNPS. Members participated in several activities that, hopefully, will have long-lasting affects. Several members participated in collecting thousands of seeds of native trees from a mature mixed forest on Delaware Wild Lands property at Milford Neck. Many of these seeds (others will be planted in the spring) were then direct-seeded into a seed

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LETTER FROM THE PRESIDENT

The DNPS Vision

The purpose of the Delaware Native Plant Society (DNPS) is to participate in and encourage the preservation, conservation, restoration, and propagation of Delaware's native plants and plant communities. The Society provides information to government officials, business people, educators, and the general public on the protection, management, and restoration of native plant ecosystems. The DNPS encourages the use of native plants in the landscape by homeowners, businesses, and local and state governments through an on-going distribution of information and knowledge by various means that includes periodic publications, symposia, conferences, workshops, fieldtrips, and a statewide membership organized by the DNPS.



LETTER FROM THE EDITOR**BRRRRRRR!**

Winter, with all its beauty and charm is a very demanding time of the year for humans, plants and animals. If you're struggling to keep warm this winter, as I am with my dinky little furnace, this issues Plant-animal Highlight may enlighten you on how all our plant and animal friends actually make it through. If you like to botanize, you will invariably run across the need to educate yourself about the distribution of plants. Our Native Plant Highlight will be quite helpful in figuring out some of the complexities of phytogeography. And if you're like me, gardening has already crossed your mind and the Feature Article is full of good tips on organic gardening. Happy New Year. 🌿

°°°° Eric Zuelke, Editor

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PLANT-ANIMAL HIGHLIGHT**WINTER SURVIVAL**

Sometimes there are amazing similarities between plants and animals, specifically the adaptations plants and animals have evolved to survive the long, cold, dark days of winter.

Animals have evolved many different ways of handling the demands of winter depending on how they maintain their body temperature. Animals that regulate their own body temperature are known as endothermic, homeothermic or warm-blooded. Some simply migrate and head south to warmer climates, such as migratory birds. Non-migratory species have the adaptations of building up layers of fat, growing thicker coats of fur or hair, staying at an egg or larvae stage or going into states of highly reduced metabolic activity (hibernation or torpor, and usually underground). Animals that obtain heat from their environmental surroundings are known as ectothermic, poikilothermic, or cold-blooded. These species, such as reptiles, amphibians, fish and many invertebrates have adapted to be freeze-tolerant by having the ability to supercool fluids and tissues (being colder than the surrounding temperature without forming ice crystals) or just out right freezing. Surprisingly enough, the freezing process causes no damage because tissues and internal organs change the concentrations of water to the point where most of the ice crystals form outside of the organs, and the organs shrink in size. Some animals even produce glycoproteins that prevent the formation of ice crystals in tissues (a sort of glycerol-like antifreeze). Some snails and insects go into states of mammal-like hibernation.

Plants don't have the luxury of actively avoiding the cold like many animals do; however, they deal with winter survival with surprising similarities. Most species of herbaceous plants simply stop metabolism in the above ground portion of the plant and it dies away, leaving a subterranean root, tuber or bulb to pass the winter in relative safety. The first and most obvious reaction of many woody plants to shorter day length and dropping temperatures is a change in their metabolism to a quiescent or dormant state known as acclimation. The reduction in photoperiod and non-freezing, chilling temperatures combine to cease growth and reduce the amount of foliage. Woody plants must be exposed to temperatures at or below

freezing for some time before they become fully acclimated. The priority for woody plants is to preserve as much moisture in the cells and tissue to avoid the harmful effects of freezing. By dropping all their foliage, the rate of transpiration of water vapor into the atmosphere is significantly reduced. Once acclimated, many plants are quite capable of tolerating midwinter temperatures near -40 to -50° F! Plants are composed primarily of water, and that freezing of water inside living cells is fatal to individual cells and potentially deadly for the entire plant. Therefore, living tissues survive low temperatures by suppressing ice formation, or by allowing water to freeze, but only in areas of the plant that won't be injured by ice crystal formation. Many trees and shrubs have the ability to suppress ice crystal formation in their cells, even at temperatures far below the freezing point (supercooling again). This is seen in species such as oak, elm, maple, beech, ash, walnut, hickory, rose, and rhododendron. Very hardy woody species such as paper birch, red twig dogwood, willow, and quaking aspen prevent water from freezing within their cells using a dehydration mechanism. Here water moves out of the cells in response to freezing temperatures, freezing in areas between the cell walls where ice formation is not destructive. This slow dehydration concentrates solutes (sugars and other compounds) in the remaining cell sap which lowers its freezing point (similar to antifreeze again).

So the next time you turn up the thermostat on a white morning, or layer on another sweater, just remember the plight of our plant and animal friends and 🌿 the amazing adaptations they've gone through to stay with us.

°°°° Eric Zuelke, Editor

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FEATURE ARTICLE**The organic gardener's guide to pest control
Ten alternatives to poison in a healthy garden**

(Editor's note: This is a condensed version of an article, reprinted with permission, from the January 2001 online issue of Mother Earth News Magazine).

I'm not a control freak. That could be challenged by someone who knows that I like to have straight rows and pretty much square them up to the edges and have them running north and south. But if all the vegetables I like grew randomly around the area, I'd be happy to become a hunter-gatherer. I think.

Once we decide to do an unnatural thing like turning the topsoil upside down and planting seeds that aren't native to this climate, we are sucked into providing more care for the garden. We have to control the area so that nature's garden doesn't overrun ours. We have to provide the soil with additional nutrients, since our method of planting and the plants we want to grow need different things than the soil cover nature would plant and provide for.

The ultimate control would be to dig a moat around the garden, fence it and enclose it entirely in an insect netting. But that won't keep out disease organisms that float on the wind or come in on shoes or clothing. I suppose it should be a plastic- or glass-enclosed space with an air lock, where sterile clothing can be put on. That should work, but, of course, the space

would have to be water and temperature controlled. And it still needs... Oh, why go on. The more we try to control the growing conditions the more complex it gets and yet, inevitably, a disease organism or white fly or aphid or some other pest will get in. Much better, and far less expensive, is to try working with nature as closely as possible.

First, an attitude check. Don't think of the garden as a place where a wide variety of animals, miniscules and vegetables are lying in wait to attack your plantings. The vast majority of critters are beneficial. I'd even argue that everything I encounter in the garden is beneficial, including mosquitoes. It is important to remember this, lest you be tempted to spray something to kill an insect or bacterium that may be doing some damage to your crop. If you use a poison that kills on contact, you are killing hundreds of thousands of beneficial insects and microscopic organisms for every one of the critters you have identified as a problem. That said, let's begin.

Identification

Both knowing and spotting your culprits is the first step in any sensible method of pest control in the garden. The easiest and surest means of identification is to catch the pest in the act--whether it be ground ivy creeping into the garden or a rabbit eating lettuce.

Animals can also be identified by footprints, manure, sometimes scent, fur and, finally, their habits. Insects are most often identified by what they eat, as most have favorite foods and do not eat indiscriminately. Some insects are very hard to see, whether due to camouflage, size or because they don't wait around to be seen. Some of them generate telltale manure. Others can be identified by the part of the plant they eat or the way they eat.

Miniscules, or microscopic organisms, are fungi, bacteria, viruses and nematodes. The work of these organisms can be seen in wilting, curling, mottled, discolored, spotted, blistered, white or powdered leaves; in lumpy, swelling, oozing or pinched stems; in fruit or flowers with spots, lumps, watery places or rot; and in plants that are stunted, dying or wilting. If you've never gardened before, a list like that could cause your interest to wither. But rest assured it takes more than the mere presence of disease organisms to cause a plant to become diseased. Before anyone gives up on growing, consider that both Mother and I have been gardening and writing about it for over 25 years and have never, to the best of my recollection, tried to combat a disease in the same season it was recognized. I don't recall ever losing a crop, though yield has been decreased at times.

I consider a disease in my garden much like a disease in my body. It will run its course, and I will try to be wiser and take better care of my body so I don't get caught again.

I hope you got my "animals, miniscules and vegetables" reference as a takeoff on the game 20 questions--"animal, mineral or vegetable?"-- because I'm going to bail out on vegetable pests after this paragraph. Let's face it, natural control of weeds is mechanical-- either through cultivation or smothering with a mulch. Most weeds do not need to be identified to be controlled naturally. You do need to know how they propagate, however. Bind weed and witchgrass propagate through underground rhizomes and will come up through most mulch materials. To rid a field of these mechanically, it needs to be tilled several times at two-week intervals. This brings the rhizomes to

NATURAL QUOTES

'A man's nature runs either to herbs, or to weeds; therefore let him seasonably water the one, and destroy the other.'

Francis Bacon

the surface, where they will dry out and die. In a garden, you have the luxury (ha!) of chasing them by hand whenever and wherever they pop up until they are all gone. You need to know what they look like to do this. Weeds that propagate from seeds are best controlled by shallow cultivation every ten days in the spring and by keeping them from going to seed in the fall, or with a mulch.

Research

You will need a reference book to identify some pests. My favorite for many years has been *The Gardener's Bug Book*, 4th edition, by Cynthia Westcott (Doubleday, 1972). It has three features that make it wonderful. First in importance is actually the last chapter in the book, "Host plants and their pests." I may not be able to identify an insect, but I can surely identify the plant that is being damaged. Since most insects have favorite plants, this is the best place to start looking.

The bulk of the book is a listing of insects by type. I usually look up the plant first to find the most likely suspect, look up the suspect in the index, then turn to the description of the damage the insect does, its life cycle and how to control it. The controls are generally chemical, though not always. No matter, because the life cycle and description are what I'm most interested in. The third feature is color plates that help to find and identify the insect in the garden.

I have a half-dozen garden insect books that are newer, but Cynthia's is always my first choice. If you can't find a copy, look for a garden-insect reference book that is organized like it.

Once you can name the insect, any book describing controls will work fairly well. Of my more modern books, *The Organic Gardener's Handbook of Natural Insect and Disease Control* edited by Barbara W. Ellis and Fern Marshall Bradley (Rodale Press, 1992) is my favorite for organization. It has the advantage over *The Gardener's Bug Book* in that it also covers diseases and offers organic solutions.

Other gardeners are also good sources of information. If they have been gardening in the area for a few years, they will probably be able to quickly identify your problem and, though their solutions may not be natural, may provide some useful insights. The Cooperative Extension Service, listed under U.S. Government in the phone book, can also be helpful.

Ask at a local garden store and you're likely to get a recommendation for a general purpose poison. "Here--spray this and it'll kill whatever's eating your plants." Yeah, it will. It'll also kill whatever's eating the whatever's eating your plants and millions of other innocent and helpful insects and miniscules.

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FEATURE ARTICLE

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Your garden is not a good place for chemical warfare.

Understanding

Once you know what pest you are dealing with, you can figure out how best to approach the problem. How does it get into the garden? Does it walk, fly, burrow, float on the wind, ride on your clothes? To use an expression from my youth: Was it born, hatched or did it slowly accumulate in the garden? Will more follow? Will it multiply several times over the summer? How much damage is it likely to do? Will ignoring it this year be regretted next year?

But absolutely the most basic question is: "Does it need to be controlled?" Kind of silly to build a barrier or change the way you garden to control something that will pretty much go away if you ignore it. Even if an old timer who has been gardening in the same area for many years tells you an insect will devastate one of your crops, it doesn't mean it will. Your garden soil, your practices, your seed variety, the plants that are next to the one you are worrying about may all be different. Even the weather may be different. Plan a strategy for control if necessary, but use it on only part of the row and keep part for comparison.

For example, when cabbage leaves are being eaten and you have identified the culprit to be the cabbage worm, hand pick the worms that you can find. Do this for a few days just so you get an idea of how fast they are growing or how difficult they are to find. See if you can find some eggs, after looking in your reference book and learning that they are white, small and laid singularly on the underside of leaves. If you are worried the problem will get ahead of you, get an acceptable spray so you have it if needed. If real panic sets in, spray part of the row. No matter what happens to your crop, if you have been observant, you will have gained considerable knowledge for next year.

Controls

Make your garden a heaven on earth where healthy plants resist disease and beneficial insects predominate. The way to have a healthy plant is to make sure it gets the nutrients it needs in the proper amounts at the proper times. Sounds complicated, but nature will take care of the timing if we provide it with the raw materials. One of the most important materials is water. Will it rain at the proper intervals throughout the season? Not likely. Do we need to monitor rainfall closely and turn on the sprinkler anytime a week goes by without a significant rainfall? There are a number of reasons not to do that. A better solution is to turn the garden soil into a sponge that will soak up excess water during heavy rains and hold it in the root zone for plants to find when they need it.

You can also do your part to ensure that the 18 or more elements plants need are available in the root zone for them to find. First, there is a basic difference between water soluble fertilizers and nonsoluble fertilizers. Chemical fertilizers are generally water soluble, though chemists have made some time-release fertilizers. Fresh manure is partially soluble. The problem with water soluble fertilizers is that they are leached out of the soil in heavy rains. If the soil is sponge-like, less water will percolate through the soil and more of the soluble nutrients will be retained in the root zone.

Nonsoluble fertilizers are converted to a usable fertilizer over time. Some of them, such as rock phosphate, dissolve

very slowly. Others, like the organic matter of manure and bedding, will be converted through the activity of microorganisms and insects. Nutrients in compost can be converted through a symbiotic relationship with roots. When the roots come into contact with the compost, they are able to absorb nutrients through cation exchange.

I am pretty close now to being in over my head, chemically. All we need to know is that if we put organic matter on our garden soil, it makes the soil feel nice, and nice soil does a pretty good job of keeping our plants healthy. Get the soil tested every few years and correct any imbalance as necessary.

Don't encourage pests to come into your garden. I have attracted deer and skunks to the garden with seaweed. Spread in the spring, that fresh, salty taste brought in the herd. Seaweed has to be dug in right away or composted to avoid this problem. I also had some rotting seaweed that attracted flies. The flies laid eggs, which hatched into maggots. I used them under tomato seedlings. Bad plan. Though they were buried several inches down, a skunk was able to detect the maggots and dug up my tomato seedlings to reach the food it wanted.

Crows love corn and have great eyesight. Don't let them see you plant and don't leave any seeds exposed. This will only entice them to come looking for more.

Slugs mostly eat dead plant materials and they need a moist shelter during the day, which makes the environment under mulch perfect for them. I am pleased to have gotten my slug population under control, while still mulching more than half of my garden. Unhealthy plants will attract insects to the garden. That may sound crazy but research has verified it.

Discourage pests from coming into your garden. If the pest is a mammal, it probably finds the garden strictly by chance. The odd deer, raccoon or groundhog is foraging for food, takes a taste and moves on. If the taste was to its liking and it didn't get sick, it will be back. A vigilant gardener will detect the animal quickly and make the second trip unpleasant.

One way to do this is to season the pest's favorite vegetables with hot sauce. Mix a tablespoon of liquid detergent and half a bottle of hot sauce in a watering can full of water. Sprinkle this on the vegetables the animal has sampled and any others that are likely to attract attention. The detergent will help the hot sauce stick to the leaves. The plants need to be reseasoned after a rain. The hot sauce will discourage most animals returning for round two at your garden buffet. However, should you allow them more than one pleasant experience, they are likely to become more difficult to discourage.

Night foragers can be discouraged by lights, sounds and activity. When an old friend stopped gardening, he gave me a homemade shielded light he'd constructed for keeping raccoons out of his corn. He had fashioned a cone around a 100-watt lightbulb, lined the inside with foil and suspended it on a stake so it shone into his corn patch. He put a Christmas-light flasher in the line, so the bulb flashed a bright light into the rows. It worked for him for many years.

You've probably heard the one about the fellow who put his radio in the garden tuned to an all-night talk show. When he got up in the morning the radio was on an all-music station and the corn had been well picked over by raccoons.

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FEATURE ARTICLE

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bed at our native plant nursery at the St. Jones Estuarine Research Reserve. Members also participated in collecting seeds of native tree species from a mature forest at Prime Hook State Wildlife Area and then directly planting these seeds in an adjacent field that is being reforested. Most of the seeds collected and planted were of various oak species (primarily white, red, and southern red) with only a small percentage that included hickories, tulip poplars, or other hardwoods. Lynn Parks did an excellent article on the DNPS and this project that appeared in the October 18, 2000 issue of the News Journal.

We will be watching closely this spring to see how these projects are doing and will take an active role in making sure they succeed through the installation of tree tubes if necessary.

In addition, several members collected seeds from their own properties and these have been cleaned and are being given a cold treatment prior to their germination at the nursery this spring.

The native plant nursery continues to take shape as planting beds were established or expanded. The "rescued" plant bed was enlarged to accommodate additional plants that had been previously transplanted from a doomed forest and we established a direct-seed bed where we planted nearly 2000 acorns and hickory nuts. We will be watching with bated breath this spring to see whether or not this venture was successful.

The first year of the new millennium is full of opportunities for our society. While we continued our participation in the Biodiversity Implementation Strategy Working Group (BISWG) last fall we especially look forward to participating in the upcoming Biodiversity Symposium scheduled for February 20, 2001 and hope that this symposium will lead to aggressive efforts that serve to protect and conserve Delaware's landscape and its biodiversity (see Upcoming Events section for additional information). Another activity taking place this February (on the 22nd) that is sure to be of interest to DNPS members is the workshop: Using Natives in the Landscape: how, when and where (also see Upcoming Events section for more information). Our developing nursery holds great promise for being an excellent source for native plant material for restoration projects throughout the state as well as for the home landscaper. Finally, we have an excellent opportunity to participate in a national botanical gathering taking place this June in Delaware. There will be extensive all day field trips, to habitats throughout the Delmarva Peninsula, and evening lectures during 5 days in late June. This, the annual Joint Field Meeting of the Botanical Society of America (N.E. Section), the Philadelphia Botanical Club and the Torrey Botanical Society, is an excellent opportunity for DNPS members to meet many professional botanists and to learn more about the native flora and natural communities of Delaware. I for one am eagerly looking forward to these field trips and botanical lectures.

I hope that our paths may cross sometime during 2001 as we all strive to enjoy Delaware's native plants. While these cold winter days may make one long for warmer climes they also provide an excellent opportunity to begin planning for native plant gardening activities as well as botanical field trips throughout the state. Stay tuned for news on our spring field trips.

Sincerely,

Keith  Clancy

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The new motion detectors are interesting and probably more effective than the older methods. A woman I know rigged a garden sprinkler to come on whenever motion was detected. I can't remember how she did that, but she assured me that deer don't like surprise showers.

There are plants that some people feel deter insects. I remain somewhat skeptical, but I always plant green beans and potatoes side by side because supposedly the Colorado potato beetle shies away from green beans and the Mexican bean beetle is repelled by potatoes. I have no evidence to support this, but I plant them together anyway because I do think that larger patches of anything are probably not a good idea. The beans break up what would otherwise be the largest single crop in the garden.

Marigolds and nasturtiums are supposed to repel some insects, though we plant them in the garden more because they are pretty. Garlic is supposed to repel insects up to three feet away; there's no harm in planting it close to something that may be particularly susceptible to insect damage.

The best-known garden pest deterrent is the scarecrow. Inflatable snakes and plastic owls belong in the same category. I'm not sure any of these are very effective. I have found that once crows learn that pulled up corn seedlings will bring up a corn kernel, the best deterrent is deeper planting.

Put up barriers.

The electric fence that I string around my garden--one strand at woodchuck nose height and one at deer nose height--works best if put up early to ensure an unpleasant first visit. Once the animal knows that there is a reason to get through, over or around the fence, the fence has to be better--lower, higher, arching outward, below ground. Below ground won't work for an electric fence, of course. If you are using a mesh fence, you need to know the size of the animals. Shrews and moles can get through a one-inch mesh. A raccoon can climb over a mesh fence if it is strung too tightly. Leave a foot or so at the top unattached so it flops back on the climbing animal.

Slugs depend on moisture to get around. Dry areas are barriers to them. That is why I keep the grass short around the garden. I cultivate the lettuce and cabbage rather than using a mulch because the dry, dusty soil surface is very unappealing to them. Diatomaceous earth is a powder that will act as a barrier in wet weather when the dry soil does not. It is the calcareous remains of tiny sea animals that are sharp and cut the slugs.

One-inch netting will keep birds from eating berries. A fine mesh or gauze can be used to protect most plants from insects, since most get there on wing. I generally plant broccoli seed directly in the garden rather than in flats, mostly because I'm lazy and would rather have nature take care of light and

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moisture. Flea beetles frequently wipe out these plantings at the baby-seedling stage when there are just two small tender leaves. If the plants have the chance to get their first true leaves, they will grow vigorously enough to outgrow the beetles. A small

piece of gauze held down with a few stones for the first few weeks of their life will do the trick.

After the year potato leafhoppers spread blight and drastically reduced my potato crop, I spread gauze (using some Remay that I had) over half the patch and tried to hold it down with boards. I left the other half of the potatoes uncovered to see if doing nothing would work as well as doing something (my usual approach). It did that particular year, but still, if I see leafhoppers, I will take some action. Barriers laid over rows of fairly mature plants are hard to keep in place because of the wind. I was also interested in what might be happening underneath the gauze. Were there potato beetle eggs hatching under there? To find out, I had to lift the covering.

Poison only those that feed on your plants.

Bacillus thuringiensis (BT) can be used on the same insects that I prefer to kill by handpicking. The Colorado potato beetle can be controlled with the strain BTSD and BTK, which will kill the larvae of any moths or butterflies that eat it. You don't have to worry that you will kill monarch butterfly larvae when you spray BT on tomatoes or cabbage because the monarch will not lay eggs on those plants. The monarch does, however, lay eggs on milkweed plants.

Occasionally, I will feel the insects getting ahead of me though. This usually happens after several very hot, humid days when the insects hatch and grow faster, and I move more slowly. It might also follow a time when I have been too busy or away for a few days. It's then that it is helpful to have BT as a tool. It is a safe spray, as the bacteria is not at all toxic to humans, only affects very specific target insects and breaks down in the environment fairly quickly.

There is reason for not spraying it whenever the urge strikes, however. The more exposure insects have to it, the sooner they will develop a new strain of insect that will be resistant.

Use traps.

For animals, I find all traps to be lacking except mouse traps, which are effective but have to be set so no domestic animal will get hurt. Slugs can be trapped in a dish of beer, as they are attracted to fermenting liquids. They'll crawl in, and stay in, until they drown. Not all that appealing, a dish full of stale beer and slugs. Any moist, dark area where they can hide from the midday sun can be a trap for slugs. One time when my garden was overrun by them, I put down boards for my walkways. During the day I would turn the boards over and skate back and forth until I figured most of the slugs were dead. I wasn't gardening barefoot in those days.

Insect traps often use a sticky substance like the old-fashioned fly traps. Tanglefoot can be spread around the trunk of a tree to trap insects that winter on the ground and crawl up the tree trunk. It can be spread on red spheres hung in apple trees to attract and trap flies that lay eggs in apples.

Flea beetles are attracted to yellow--so yellow cards covered with Tanglefoot will trap them, as will a yellow dish filled with water.

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FEATURE ARTICLE

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The electric zapper traps are likely to kill more benefi-

NATIVE PLANT HIGHLIGHT

PHYTOGEOGRAPHY

Phytogeography refers to the geographic distribution of plants. When considering the overall native geographic distribution of the eastern flora of North America, Delaware could be referred to as a "floristic crossroads" between the north and south. Of the 1564 native species of vascular plants known to occur in Delaware, 439 have a more southern distribution. In other words, 439 species are at or near their northern limits of natural geographic distribution. In comparison, 335 have a more northern distribution and are at or near their southern limits. The southern flora of Delaware comprises 28% of the known native flora of the state, and the northern flora comprises 21%. Within the Piedmont physiographic province, (the northern portion of Delaware, 93 species have northern affinities, while 22 have southern affinities. In the Coastal Plain physiographic province, the southern portion of the state, 307 have southern affinities, and 120 have northern affinities. Considering the rare and uncommon flora of Delaware: 256 species are more southern in their distributions, and 232 species are more northern in their distributions.

The primary limiting factor in a plant species overall distribution is climate, i.e., temperature and precipitation. Species with a more southern distribution obviously prefer warmer temperatures, and vice-versa for species with northern affinities. Delaware has a mild, temperate climate which is moderated by the effects of the Atlantic Ocean and Delaware Bay, and temperatures are fairly consistent throughout the state. The coldest month of the year is January, with an average temperature in northern Newark of 31.2°F and 34.5°F in Lewes. July is the warmest month with average temperatures of 76.0°F in Newark and 75.9°F in Lewes. Precipitation is distributed fairly evenly throughout the year with average annual rates of 43.3 inches (110.0 cm) at Newark and 45.5 inches (115.6 cm) at Lewes.

Soils, and hydrology are other factors that work to define overall species distributions. Soil chemistry, as related to pH and available nutrients have a strong influence on species distribution. Many species of the Coastal Plain prefer sandy, acidic soils which could prevent them from migrating further north into the Piedmont or Mountains. In these regions, there are many soil types that tend to be more nutrient rich with higher pH values. Regional hydrological conditions, such as tidal or non-tidal can determine which species are able to become established and persist, thus influencing their overall distributions.

Some examples of native Delaware species that are more southern include: *Aster tenuifolius*, perennial salt-marsh aster; *Solidago fistulosa*, pine barren goldenrod; *Woodwardia areolata*, netted chain fern; *Quercus falcata*, southern red oak; and *Taxodium distichum*, bald cypress. Some examples of native Delaware species that are more northern include: *Aster novae-angliae*, New England aster; *Vernonia noveboracensis*, New York ironweed; *Dryopteris marginalis*, marginal woodfern; *Betula lenta*, sweet birch; and *Acer saccharum*, sugar maple.

0000 Wil-  liam McAvoy, DNPS member

Thanks to Pete Bowman for compiling the climate data.

UPCOMING EVENTS

TUESDAY, 20 FEBRUARY 2001 – DELAWARE'S FIRST BIODIVERSITY SYMPOSIUM, AT THE SHERATON DOVER HOTEL AND CONFERENCE CENTER, FROM 8:30 A.M. – 4:15 P.M.. RECEPTION FROM 4:15 P.M. – 6 P.M. SPEAKERS INCLUDE GOVERNOR RUTH ANN MINNER, RENOWNED AUTHOR THOMAS HORTON, AND DR. THOMAS LOVEJOY OF THE SMITHSONIAN INSTITUTION, WITH BREAKOUT SESSIONS SUCH AS ANALYZING LEGISLATIVE NEEDS AND EXISTING PROGRAMS TO PROTECT BIODIVERSITY, INCORPORATING BIODIVERSITY CONSERVATION INTO LAND USE PLANNING AND THE ECONOMICS OF BIODIVERSITY AMONG OTHERS. FOR MORE INFORMATION OR TO REGISTER CONTACT CONNIE MOORE AT 302.739.3423 BY 5 FEBRUARY 2001.

THURSDAY, 22 FEBRUARY 2001 – USING NATIVES IN THE LANDSCAPE: HOW, WHEN AND WHERE. THE DELAWARE NURSERY & LANDSCAPE ASSOCIATION IN COOPERATION WITH THE DELAWARE INVASIVE SPECIES COUNCIL WILL BE HOLDING THIS ONE DAY WORKSHOP FROM 8 A.M. TO 4 P.M. AT THE DELAWARE DEPARTMENT OF AGRICULTURE, 2320 S. DUPONT HWY, DOVER, DE. THE WORKSHOP INCLUDES PRESENTATIONS FROM INDUSTRY PROFESSIONALS, HANDS-ON TRAINING, GROUP ACTIVITIES, INTERACTIVE LEARNING, AND ON-HAND PROFESSIONAL ADVICE. REGISTRATION IS LIMITED TO 50, SO REGISTER EARLY (THE REGISTRATION FEE OF \$20 INCLUDES BREAKFAST AND LUNCH). FOR MORE INFORMATION OR TO REGISTER CONTACT HEATHER APOSTOLOS AT 302.739.4811 OR HEATHER@DDA.STATE.DE.US.

24-28 JUNE 2001 – JOINT FIELD MEETING OF THE BOTANICAL SOCIETY OF AMERICA (NE SECTION), THE PHILADELPHIA BOTANICAL CLUB AND THE TORREY BOTANICAL SOCIETY WILL BE HELD AT WESLEY COLLEGE AND DELAWARE STATE UNIVERSITY IN DOVER, DELAWARE. ALL DAY FIELD TRIPS WILL TAKE PLACE ON MONDAY, TUESDAY AND WEDNESDAY IN AREAS OF BOTANICAL INTEREST THROUGHOUT DELAWARE AND MARYLAND'S EASTERN SHORE. ON SUNDAY THROUGH WEDNESDAY THERE WILL BE EVENING PROGRAMS OF BOTANICAL AND ECOLOGICAL INTEREST PLUS A TOUR OF THE CLAUDE E. PHILLIPS HERBARIUM AT DELAWARE STATE UNIVERSITY. THE REGISTRATION FEE OF \$230 INCLUDES ALL EVENTS, DOUBLE OCCUPANCY LODGING, MEALS (SUNDAY DINNER THROUGH THURSDAY BREAKFAST) AND FIELD TRIP TRANSPORTATION. EVERYONE INTERESTED IN NATIVE PLANTS IS WELCOME TO ATTEND. A SEPARATE COMMUTER PACKAGE IS AVAILABLE WITHOUT LODGING. TO REQUEST A REGISTRATION FORM OR FOR FURTHER INFORMATION CONTACT TIM DRAUDE AT 717.393.7233 OR DR. LARRY KLOTZ AT LHKLOT@WHARF.SHIP.EDU.

cial insects than pests. Pheromone traps fool male insects into thinking they are about to find a suitable female.

Mobilize beneficial insects.

Lady beetles and praying mantids are the beneficial insects most often cited, probably because they are such voracious eaters of other insects. Praying mantids probably eat more beneficial insects than potential problem insects. Lady beetles eat their weight in aphids every day or some such incredible amount--good to have around if you have a lot of aphids.

The garden is a special place for me, providing so much more than healthy food. It is a partnership with nature. It is not a place to do battle or to be afraid. It is a place for contemplation, for solving puzzles, for creating and perhaps being created. It is a place where self-respect flourishes, as does the life that abounds.

oooo *Mort Mather, for Mother Earth News*

NATIVE PLANT COMMUNITY HIGHLIGHT

(Editor's note: For this issue of The Turk's Cap, we decided to give the Native Plant Community Highlight a vacation. Stay tuned for more fascinating plant community descriptions starting with the next issue).

DNPS WEBSITE

The DNPS website is continuing to experience a bit of a lag at the moment. Your continued patience is appreciated. A notice will be placed here in a future issue when the website has been updated. Until then, if you want to revisit any past newsletter articles for Vols. 1 and 2, you can check them out at www.delanet.com/~dnpswp.

Membership Application

DELAWARE NATIVE PLANT SOCIETY

Member Information

Name:

Business Name or Organization:

Address:

City and Zip Code:

Telephone (home/work):

E-mail address:

" Individual \$15.00

" Full-time Student \$10.00

" Family or Household \$18.00

" Contributing \$50.00

" Business \$100.00

" Lifetime \$500.00

" Donations are also welcome \$_____

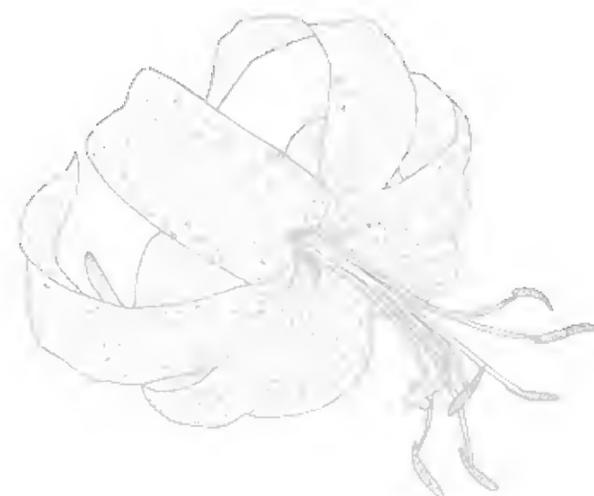
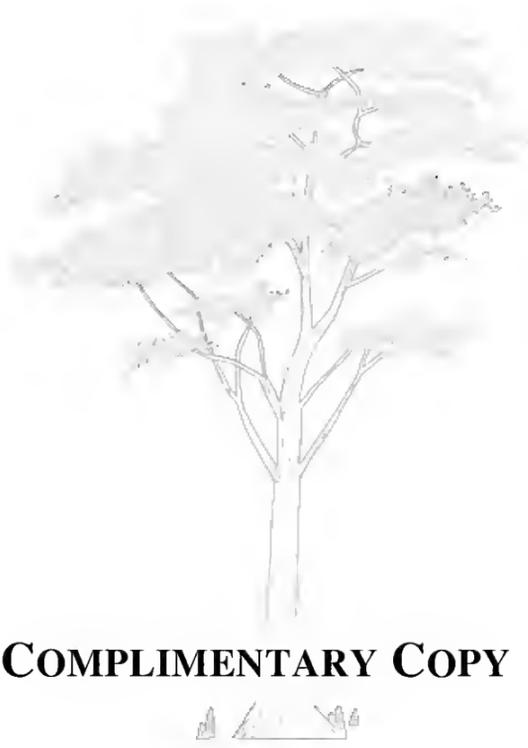
Membership benefits include:

- * The DNPS quarterly newsletter, The Turk's Cap
- * Native plant gardening and landscaping information
- * Speakers and field trips

Total Amount Enclosed: \$

**Make check payable to:
DE Native Plant Society
P.O. Box 369, Dover, DE 19903**

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