



## A GARDEN ANTIDOTE FOR OUR STRUGGLING POLLINATORS

In response to declining numbers of significant pollinator species, particularly bees and the monarch butterfly, the Monmouth County Park System has joined many other public and private land owners who have started planting special gardens to help restore their habitat, and hopefully help their populations recover. You can do the same in your gardens at home.

### If You Like to Eat, Pollinators are Important

Aside from the flowers in nature, most of the crop plants we eat (about 75%) have to be pollinated by bees to produce their fruits, nuts and vegetables,<sup>1</sup> not to mention the seeds needed to grow more plants. Pollination is when pollen is moved from the male to female parts of a plant's flower, often by insects and animals as they move from flower to flower to feed. Pollinator species include bees and wasps, moths and butterflies, birds, beetles, bats, flying foxes, and even a few reptiles.<sup>2</sup>

When farming fruits and nuts, for example, pollination can determine the yield of a crop (how much fruit is produced). So when there aren't enough natural pollinators, managed honey bee colonies are brought in to fertilize the plants or trees.<sup>3</sup> Many crops are now dependent on honey bee pollination.<sup>4</sup>

Honey bees—now among our most important pollinators—are not even native to the US.<sup>5</sup> They were introduced by European colonists in the 1600s, joining over 4,000 native bees to become a critical part of the ecosystem.<sup>1</sup>

### Monarch Butterfly & Honey Bee Populations in Decline

While the exact cause of their dwindling numbers is still being studied, research suggests the loss of healthy habitats has played a big role. The land containing their preferred vegetation (such as wildflower fields) has been developed, fragmented or degraded.<sup>6</sup>

More than 90% of the monarch butterflies have vanished over the last 20-25 years; 2013 was the lowest count on record (although numbers have rebounded somewhat since then).<sup>7</sup> Because monarchs migrate annually between the pine/fir forests in Mexico and North America, both environments have been studied for habitat loss.



It may look as though we just forgot to mow this patch of grass at **Holmdel Park**, but establishing a new wildflower field is a lot like growing your hair out—it goes through an awkward phase. Our newest Pollinator Garden at the park's Forest Edge Area was planted while the rest of the site underwent renovations.



**Deep Cut Gardens** has had a milkweed garden designated as a Monarch Waystation since June, 2009. It is located next to the Horticultural Center.



Acres of open space in the parks are designated meadows that allow native wildflower species to flourish. This, in turn, attracts pollinator species. **Thompson Park**, Lincroft

### Common Pollinators



**Native Bees:** Bumblebee on the bright orange flowers of orange milkweed (*Asclepias tuberosa*).



**Butterflies & Moths:** Black swallowtail butterfly on a lily (*Lily superbum*).



**Hummingbirds:** A female ruby-throated hummingbird sips nectar from scarlet beebalm (*Monarda didyma*). ©Joe Schneid. Louisville, Kentucky (taken June 2006). commons.wikimedia.org

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In the US, researchers suggest that a major problem is **loss of the milkweed plant**, the monarch caterpillar’s sole food source, due to over development and certain agricultural practices.<sup>9-12</sup>



The monarch butterfly on its favored plant, the common milkweed (*Asclepius syrica*).

While managed honey bee colonies in the US decreased 50% overall since the 1940s, a more dramatic and noticeable decline began in 2006.<sup>5</sup> That’s when bee keepers began to see unusually high unexplained losses, in part due to a new syndrome called Colony Collapse Disorder. CCD is defined as a dead bee colony where there are no adult bees or dead bee bodies near the hive, but there remains a live queen, usually some honey and immature bees.<sup>5</sup>

Researchers have yet to identify a single cause of CCD, and instead suggest a “**perfect storm**” of **environmental stressors such as climate change**, habitat loss (which may translate into nutritional stress), pesticides and existing diseases or pathogens that weaken the bees to the point of collapse; followed by exposure to additional stress from another pathogen, parasite and/or pesticide.<sup>5</sup>

**Pollinator Gardens to the Rescue**

Adding pesticide-free, pollinator gardens to our landscapes and filling them with the native plants and bushes favored by bees and butterflies is one way to help restore their lost habitat. These gardens, with plenty of flowers for pollen and nectar, will hopefully provide food and sanctuary where insects can nest, rest and reproduce.

**Manasquan Reservoir’s Pollinator Gardens**

It’s been a challenge to get anything to grow on the hill by the boat launch platform at the Environmental Center, but Naturalists Patrice McCoy and Susan Harasty were determined to give it a try. The first garden started with some leftover plants from the 2013 Monmouth County Fair (milkweed, penstemon, ironweed, bee balm, mountain mint, coreopsis, goldenrod and black-eyed susan). Some of the plants survived, others did not—but the naturalists learned some valuable lessons about growing conditions at this site.



A water source and resting spot for pollinators in the garden.

Improving this garden area **specifically** for pollinators made perfect sense, because pollinators need native plants and native plants are known to be especially hardy.

**The Monarch-Milkweed Connection**

Milkweed leaves are the **only** food source for monarch caterpillars. Native, wild milkweed dies back in the fall when the monarchs begin their migration.



Common milkweed (*Asclepius syrica*) and swamp milkweed (*Asclepius incarnata*), Swamp milkweed has thinner, pointier leaves.



Honey bee with a pollen basket on its leg, sitting on goldenrod (*Solidago*).

**BASIC POLLINATOR GARDEN**

- **Native milkweeds.** *Asclepias* spp.
- **Native perennial flowers and shrubs.** Joe Pye Weed, Ironweed, Virginia Sweetspire, Sweet Pepperbush, Goldenrod, Asters, Sunflowers. (Native annuals, too! Cosmos, Mexican Sunflower, Marigolds, Zinnia)
- **Stagger plant species for continuous bloom**
- **NO pesticides insecticides, herbicides or fungicides**



Ironweed in August.

During fall 2014, some Park System volunteers joined the effort with a second planting, funded by a grant from the Freehold Soil Conservation District. This time, they experimented with different species to find the best plants for the unique, hillside location. Susan was especially excited because “the plants chosen have a very good possibility of making it, plus it was great time of year to plant.”



Park Naturalist Susan Harasty (left, Patrice McCoy is not pictured) and Volunteers Ronnie Liebowitz and Lou Whitaker (right) pose with the tools of their trade.

A second pollinator garden was created in the bird viewing area. Until last year, this area only had butterfly bush (*Buddleia*) a non-native plant now considered to be invasive.



Mid-summer species (left to right) at the Manasquan Reservoir’s Main Pollinator Garden in July: Rudbeckia (tall yellow flower with brown center), milkweed (mid size stalk with white flower cluster), and cosmos (small pink and magenta flowers).



By July 2015, the Main Pollinator Garden is starting to fill in. Note, the new blue sign identifying the garden as a designated space for pollinators.

## Manasquan Reservoir POLLINATOR GARDEN October 2014 Planting

NOTE: Pine needle mulch

**Aster—easy to grow; small, colorful, daisy-like flowers, fall**

- Oblongifolius* (Aromatic, blue)
- Novi belgii* (Tall, purple with yellow center)
- Boltonia* ‘Snow Bank’ (Star-like white masses, long-lasting)

**Coreopsis—yellow flower on stalks; late spring to summer**

- C. grandiflora*

**Joe Pye Weed—tall, pink flower clusters, whorled leaves, late summer**

- Eupatorium* ‘Little Joe’ (compact variety for smaller space)

**Goldenrod—larger shrub covered with yellow plumes, summer-fall**

- Solidago* ‘Golden baby’

**Heliopsis (a.k.a. oxeye)—yellow stalked mini ‘sunflowers,’ summer**

- Helianthoides* ‘Summer Sun’

**Hyssop—taller, orange/purple tubular blooms, summer**

- Giant Yellow (*Agastache nepetoides*)
- Giant (*Agastache* ‘Black Adder’)

**Milkweed (from seeds)—hardy, pink flower clusters, summer**

- Common (*Asclepias syriaca*)—dusty rose/pale pink, broader leaf
- Swamp (*Asclepias incarnata*)—dark pink, thinner pointier leaf

**Penstemon—colorful, trumpet-shaped, flower stalks, late spring to summer**

- P. hirsutus*

**Trumpet Vine—aggressive, pink/orange flowers, dense foliage, summer**

- Campsis radicans*



Joe Pye Weed

with its nectar, it provides no nourishment for caterpillars, so we decided to remove it,” said Susan. “By replacing non-natives with natives, we hope to demonstrate how to optimize plants for the pollinator garden. The new ones will provide nectar and serve as host for caterpillar eggs.” Visitors can stop by anytime to see how these plants are doing at the Manasquan Reservoir Environmental Center in Howell. The Manasquan Reservoir is open every day from 7 a.m.-dusk. If you wish to come inside and ask questions, the Environmental Center is open 10 a.m.- 4:30 p.m.

As we go to press in August (peak Monarch season) park staff are just starting to report on seasonal butterfly activity; the native bees were active much earlier. Please see the **Nature Corner** on page 10 for your guide to local butterfly imagery.



The Bird Viewing Area Pollinator Garden, July 2015.

### Footnotes

(1) USDA Bee Basics. [www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb5306468.pdf](http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5306468.pdf) (2) US Fish and Wildlife Service. Pollinators. [www.fws.gov/pollinators/index.html](http://www.fws.gov/pollinators/index.html). (3) Agricultural Research Service. Bee Benefits to Agriculture. [www.ars.usda.gov/IS/AR/archive/mar04/form0304.pdf](http://www.ars.usda.gov/IS/AR/archive/mar04/form0304.pdf). (4) American Beekeeping Federation. Pollinator Facts. [www.abfnet.org/?page=14](http://www.abfnet.org/?page=14). (5) USDA. Honeybee Health and CCD. [www.ars.usda.gov/News/docs.htm?docid=15572#history](http://www.ars.usda.gov/News/docs.htm?docid=15572#history). (6) US Fish & Wildlife Service. Threats to Pollinators. [www.fws.gov/pollinators/PollinatorPages/Threats.html](http://www.fws.gov/pollinators/PollinatorPages/Threats.html) (7) For the Monarch, A Long Road Back. [www.nytimes.com/2014/11/18/science/monarchs-may-be-loved-to-death.html](http://www.nytimes.com/2014/11/18/science/monarchs-may-be-loved-to-death.html) (8) Monarch Butterflies Rebound in Mexico, Numbers Still Low. [www.nytimes.com/2015/01/27/world/americas/ap-it-mexico-monarch-butterflies.html?\\_r=0](http://www.nytimes.com/2015/01/27/world/americas/ap-it-mexico-monarch-butterflies.html?_r=0) (9) World Wildlife Federation (WWF). Monarch Population Hits Lowest Point in 20 Years. [www.worldwildlife.org/stories/monarch-population-hits-lowest-point-in-more-than-20-years](http://www.worldwildlife.org/stories/monarch-population-hits-lowest-point-in-more-than-20-years) (10) Monarch Watch (Why Monarchs Need Milkweed) <http://www.monarchwatch.org/waystations/> (11) Monarch Population Rejuvenated After Last Year’s Record Low. [www.npr.org/2015/03/04/39075757/monarch-butterfly-population-rejuvenated-after-last-years-record-low](http://www.npr.org/2015/03/04/39075757/monarch-butterfly-population-rejuvenated-after-last-years-record-low) (12) Project Milkweed. Xerces Society. [www.xerces.org/milkweed/](http://www.xerces.org/milkweed/)

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## The Health Benefits Of GREEN SPACE

When it comes to discussing the benefits of open space, there are plenty of different points of view. Environmentalists speak about preserving biodiversity, improving air quality and ensuring a clean water supply; while economists discuss the value that comes from supporting tourism and natural resource dependent industries, and increasing property values.

### MEASURING GREENNESS

These studies used a Normalized Difference Vegetation Index (NDVI) to describe an area's "greenness" or relative density and health of vegetation. Satellites with sensors measure wavelengths of light absorbed and reflected by green plants. Certain pigments in plant leaves absorb light in the red end of the spectrum. The leaves themselves reflect wavelengths of near-infrared light (NIR), invisible to human eyes. By comparing the relative strength of red to NIR, algorithms can assign values based on the relative density of vegetation: low values for bare rock, medium values for shrubs and grasslands, and high values for coniferous or temperate forests.

### Cognitive Improvement

One study that has garnered some attention lately was published in the March 2015 edition of the *Proceeds of the National Academy of Sciences*. Titled, "Green Spaces and Cognitive Development in Primary Schoolchildren", this large study followed 2,500 schoolchildren (2<sup>nd</sup>-4<sup>th</sup> grade) in 36 Barcelona, Spain schools for a year. The researchers used spatial analysis of high resolution satellite data to determine the density of green spaces, or "greenness," in the children's neighborhoods, schools and their commute to schools. Then, they used computerized tests throughout the school year to assess memory and inattentiveness levels. **The study found enhancements to memory and reductions in inattentiveness in students with a higher exposure to green space in their surroundings.**

The Barcelona Study went a step further and looked at the impact of air pollution as a part of the study. By adding information about a traffic-related air pollutant (elemental carbon), they concluded there was a strong link between the quality of the air the students breathed and the amount of green spaces in the student's environment.

In other words, it wasn't just the green spaces that helped the students, but the improvement in air quality the green spaces provided.

City Planners have been developing parks for centuries to meet the human need for green space in a built-up environment, and philosophers have mused about the intrinsic value of open space for the human condition.

While the general consensus is that there are health benefits from exposure to the natural environment, there is now growing empirical data to support that claim. Researchers have conducted several new studies to investigate the question, "How important is green space to human health?"



*Green space might be a misnomer here in the parks, where each season, location and time of day offers a new palette.*



*Clayton Park*

*Ultimate Green space: This mid-summer forest at Clayton Park in Upper Freehold represents the broadleaf woodland mentioned in the British study (next page). The short, Holly Grove trail at Tatum Park in Middletown is perfect site for a quick, lunchtime walk.*



*Tatum Park*

*Summer camps at Thompson Park, Lincroft feature walks and bike rides on the trails that expose children to quality green spaces. The fields pictured here also represent the kind of improved grassland linked to more positive health outcomes by British researchers (next page).*



## Lower Levels of Depression

Another large study published in the January 2015 edition of the *Journal of Epidemiology & Community Health* titled “Access to Green Space, Physical Activity and Mental Health: a Twin Study” suggests that greater access to green spaces is associated with lower levels of depression.

Researchers at the University of Washington studied more than 2,000 pairs of twins from their Community Based Twin Registry. Participants were asked to self-report depression, stress or anxiety and this was compared to their neighborhood access to green space (again using satellite data to determine “greenness”). After adjusting for income, physical activity, neighborhood type and population density, results showed that:

- When treated as individuals, access to green space was significantly related to lower levels of depression, stress and anxiety.
- When the data was analyzed between identical twins, the same reduction in depression was found, but not for stress or anxiety.

**The results suggest that increased access to green space has a strong association with lower levels of depression, but less of an impact on levels of stress or anxiety.**



*Fishing is a favorite pastime to relax on Marlu Lake at Thompson Park.*

## Better Birth Outcomes

*Environmental Health Perspectives* published a study in 2014 titled “Residential Greenness and Birth Outcomes: Evaluating the Influence of Spatially Correlated Built-Environment Factors”. Researchers, using the same type of satellite data for “greenness” within 100 meters of the test subject’s homes, studied nearly 65,000 singleton births in Vancouver, British Columbia from 1999 to 2002. They also adjusted their study to account for ‘other factors’ that could be associated with increased “greenness” and that could influence birth outcomes, such as air and noise pollution, distance to the nearest park, and the walkability of their neighborhood.

**The results indicated that an increase in the “greenness” of the neighborhood was associated with higher term birth weights and decreases in the likelihood of lower term birth weights, very pre-term or pre-term birth.**



*One Park System goal is to have a beautiful park within 10 miles of every Monmouth County resident.*

It is important to note that the “other factors” also had a strong association with the same outcomes, but when the results were adjusted, there was still a measurable impact from the level of neighborhood “greenness.” This led investigators to conclude that maybe there are psychological impacts associated with “greenness” that have positive health outcomes.

## The Greener the Space, the Better the Health

This final study took a different approach, measuring the impact on human health by the type and quality of the green space. In April 2015, the *International Journal of Health Geographics* published “Beyond Greenspace: an Ecological Study of Population General Health and Indicators of Natural Environment Type and Quality”. These British researchers wanted to explore whether all green spaces were the same, would the type or quality of the “greenness” have an impact.

To measure this, they developed an index of environmental indicators across Great Britain and compared them against 2011 Census data that captured good or bad health, while correcting for income and urban versus rural living.

**In this study, good health was indicated with the density of broadleaf woodland, arable and horticultural lands, improved grassland, saltwater and coastal green spaces. Bad health was indicated in areas without these landscape types, with the exception of saltwater green space.**

The diversity of habitat, biodiversity, and the density of preserved open space were also associated with positive health outcomes. Notably, surface water quality was inversely related to overall health, with poorer water quality areas associated with better health outcomes. This finding suggests that the interaction between green space and human health is more complex than previously anticipated and further study is certainly warranted.



*A beachside trail is an unexpected bonus at Fisherman's Cove Conservation Area, Manasquan, a coastal green space.*



*A crisp sunny day in autumn at Huber Woods Park, Middletown.*

## 'WELL-BEHAVED' NATIVE PLANTS FOR YOUR GARDEN

Diane Allen, Park Horticulturalist

Some people are wary of introducing native plants in their gardens, believing they can be “weedy looking” and aggressive. Although some do, unfortunately, deserve that reputation, there are many native plants and cultivars of native plants (now called “nativars” by some) that are tidy and well-behaved enough to be included in the home garden. In fact, you may be surprised to learn that some plants often seen in gardens and garden centers are natives.

Except as noted, these native plants are low maintenance, have average to low water needs, are attractive to butterflies and bees, and provide sustenance for birds in the form of berries, seeds or the insects that feed upon the plant. For greatest benefit to pollinators, try planting in clumps or drifts, and select a variety of plants to provide food sources spring through fall.

### **Aster, New England (*Aster novae-angliae*)**

With their late bloom time, asters are a delight in the late summer to autumn garden. Pinching back the stems several times before July will help produce a fuller, more compact plant. Stems may be cut back to the ground after flowering for a tidy garden and to prevent self-seeding. Performing best in full sun, asters will adapt well to a half day's sun. *Asters are an important nectar source for many insects, especially the migrating monarch butterflies (see front cover article).*

### **Bee Balm (*Monarda didyma*)**

A member of the mint family, this one tends to run, but can be controlled and is worth the effort. The aromatic leaves and petals are used in teas and salads. Best in full sun and a medium to wet soil, monarda will adapt very well to part shade and drier soil – where it is easier to keep in bounds. Deadhead to prolong summer bloom and prevent self-seeding. Rhizomes that have spread to unwanted areas are shallow and easy enough to pull and discard or share, or divide the plant every three years or so. *Brilliant red flowers attract hummingbirds, butterflies and bees.*



*Bleeding Heart: This foliage provides a nice contrast when planted next to the bold-shaped leaves of hosta and hydrangea.*

### **Bleeding Heart, Fern Leaf (*Dicentra eximia*)**

In its element on the forest floor, dicentra will do best in a moist, humus-y soil in dappled shade. Nodding, pink heart-shaped flowers hover above the fern-like gray-green foliage from April until summer's heat sets in, then return as weather cools in late summer or early fall. May naturalize by self-seeding.

### **Blue false indigo (*Baptisia*)**

This is an herbaceous perennial with a shrub-like habit. Long clusters of bluish purple flowers in May-June give way to interesting green seed pods that turn black by autumn. Shearing after bloom helps maintain rounded shape, but eliminates those interesting seed pods. Best in full sun, baptisia will adapt well to part shade and tolerates drought and poor soil.

## Native Plant Cultivars (a.k.a. “nativars”)

There is still some question about whether cultivars of native plants are as attractive to and nutritious for pollinators as the straight species. The Mt. Cuba Center in Delaware, in collaboration with the University of Delaware, is currently conducting two studies to try to answer these questions. In the meantime, until information to the contrary is available, we will assume that native plant cultivars are preferable to many (but not necessarily all) non-native plants.



*New England Aster: a pollinator garden 'classic.'*



*Bee Balm: *Monarda didyma*, flower stalks.*



*Blue false indigo in flower.*

## **Bluestar, Common (*Amsonia tabernaemontana*)**

An outstanding plant with three-season interest: tiny star-shaped, powder blue flowers in spring, fine-textured foliage all summer, turns a glowing, golden yellow in autumn. This plant is happiest in full sun but will adapt to part shade. Shearing after bloom will help maintain a thick, shrubby form. *This plant is a nectar source for mourning cloaks and other early butterflies.*

## **Columbine (*Aquilegia canadensis*)**

Nodding red and yellow flowers in mid-spring are held above fernlike bluish-green foliage that persists until frost. This plant thrives in well-drained soil in part shade to full sun. Remove spent flowers if you want to prevent self-seeding. There are now cultivars, both single and double-flowered, in many colors. Leaf-miner damage will not harm the plant.



*The unusual columbine flower, up close.*

## **Coreopsis, Threadleaf (*Coreopsis verticillata*)**



*Coreopsis, a low grower that's bright and textured.*

This wonderfully textured, low-growing plant can be woven through the garden or planted in rock gardens in full to part sun. It has fine textured foliage dotted with yellow flowers; peak bloom is usually June-August, but shearing after bloom will trigger rebloom. This tough plant tolerates deer, drought, dry soil, shallow rocky soil, humidity and heat. Depending on variety, coreopsis may spread by rhizomes, but can easily be kept within bounds.

## **Coral Bells or Alumroot (*Heuchera americana*)**

Tiny flowers borne in summer in airy clusters are almost overlooked for the handsome foliage below. There are many cultivars – and more in the making – that provide foliage ranging from chartreuse through greens to plum and even caramel, some with a silver veil or dark veining. Thriving in full sun to part shade, these plants are drought tolerant and low maintenance, Heuchera is excellent as an edging plant or massed as a ground cover.



*Coral bell foliage is an attractive groundcover, yellow-green and purple are just a fraction of the range of colors.*



*The tubular flowers of this honeysuckle look like they are just minutes from opening (a few on top already have).*

## **Honeysuckle, Coral or Trumpet (*Lonicera sempervirens*)**

This enthusiastic vine will need some guidance to keep it tidy looking, but will reward with a full season of tubular flowers, coral-red outside and yellow inside. It will grow to 20 or more feet in sun or light shade, producing its first flush of flowers in late spring with a continual lighter flush until frost. *This plant produces a full season of hummingbird and butterfly attracting nectar.*



## **Phlox, Summer or Garden (*Phlox paniculata*)**

Phlox is an old garden favorite that is best in full sun, but will fare well in part shade, blooming throughout the summer months. Like monarda, phlox is prone to powdery mildew, so good air circulation is recommended, and avoid overhead watering. Or select a resistant variety – 'David' is one of the most resistant. Remove spent flowers to prolong the bloom period and prevent self-seeding. Cultivars come in white, lavender, pink, rose, red and bicolor.

**Early Autumn is a great time to start or add to your garden.**

*Garden phlox 'Franz Schubert' is a garden favorite.*



*The common bluestar is a superstar: three seasons of visual interest AND a friend to butterflies.*

## Phlox, Moss-pink (*Phlox subulata*)

Undemanding and high-performing, this evergreen ground cover is vibrant March through May with blossoms in white and shades of pink, lavender, violet, and purple. Performing best in full sun, it will nevertheless do very well in part-shade, especially the shade of deciduous trees (so it gets a healthy dose of sunlight before the trees fully leaf out). It grows well in sandy soils and tolerates hot, dry exposures and air pollution well. It is rarely necessary, but if plant seems leggy, cut back its creeping stems after flowering by one-half to promote dense growth.



*Covering the ground with a phlox is a popular garden choice.*

## Purple Coneflower (*Echinacea purpurea*)

Combining well with other garden plants, echinacea produces its purplish-pink daisy-like blossoms June through August, and sometimes beyond. Most prolific in full sun, it will adapt to part shade and tolerates deer, drought, heat, humidity and poor soil. Remove spent flowers to improve appearance and eliminate prolific self-seeding, or leave them for seed-eating birds – goldfinches are especially fond of these seeds.



*Purple coneflower is a colorful and finch-friendly choice.*

## Turtlehead (*Chelone*)

Tight blossoms that resemble a turtle's head bloom in late summer to early autumn. Flowers are white with a pink tinge; the cultivar 'Hot Lips' is vivid pink (pictured). Chelone will form a nice clump of lustrous, dark green leaves. Preferring some shade and a moist soil, it will adapt to more sun and a drier soil, which will also curtail its spread via rhizomes. In shaded areas, pinching back the stems will produce a more compact plant.



*Chelone was a nymph who refused to attend the wedding of Zeus and Hera, preferring to stay home instead. So they turned her into a turtle, forcing her to forever carry her home on her back.*

## DONATION DOUBLES DEEP CUT'S BONSAI COLLECTION



*Donor Leslie Lincoln (left) and Alexandra Knott (center) talk with Deep Cut Gardener Beverly DeFelice (right) about the new bonsai collection. The staff at Deep Cut were thrilled with the new additions.*

Deep Cut Gardens recently received a generous donation of 40 bonsai trees from Leslie Lincoln of Massachusetts. Consisting of both evergreen and deciduous specimens, and representing many styles, the gift has doubled Deep Cut's collection, making it one of the largest and most diverse in the area.

Members of the Deep Cut Bonsai Club have been helping to settle the trees into their new home. The winter-hardy trees will be on display next to the Display Greenhouse until mid-October, when they will be placed in the cold-frame for safe wintering-over. The tender bonsai are on display inside the greenhouse. Please stop by to see the collection!



*This black pine is 50 years old, the oldest in the donated collection.*

## Great Fall Perennial Plant Swap

**Saturday, September 26**

Plant Intake: 8:30-10 a.m.; Plant Exchange: 10 a.m.-1 p.m.

It's the gardening event of the season! It's fun, free & easy. Bring your perennials in 1-quart, 1-gallon or 2-gallon containers and trade them in for different plants of the same size. Houseplants may also be exchanged. NO annuals or invasives, please. Label all plants. Call 732-671-6050 for more information.

## Drop-in Surprise Story Time

**First Saturday of the Month: Oct. 3, Nov. 7 & Dec. 5, 11-11:45 a.m.**

Join us for a reading from a nature or garden related book. If it's cold or rainy, we'll be inside the Horticultural Center, but if it's fair we will be out in the garden. A clue at the entrance will lead you to the secret spot! Recommended for children ages 3-7.



*The plant swap can be a great learning experience.*

# IT'S TIME TO...



## October ✓

- Plant grass seed until mid-month. Apply low-nitrogen lawn fertilizer if not done this fall.
- Prepare new beds for spring planting: have soil tested for fertility and pH, then work in amendments according to recommendations.
- If houseplants are still outdoors, place them in partial shade to begin to acclimate them to indoor conditions and clean thoroughly before bringing indoors.
- Plant new trees and shrubs now so they can develop some new roots before the soil cools; mulch and water well.
- Lift corms and bulbs of begonia, caladium, calla and gladiola; lift dahlia and canna after blackened by frost.
- **Clean up gardens and discard foliage of any disease-prone perennials, leaving some disease-free specimens that provide winter interest and seeds for the birds.**
- This is a good time to be sure plants are labeled.
- Plant pansies, ornamental cabbages for fall color, bulbs for next spring.
- Poly-spun frost cloth or a sheet will protect the last fruits in the garden from a light frost.
- Plant garlic cloves about 4-6" apart in a rich sandy loam.
- Water lawns, beds, shrubs and trees only if needed to ensure they go into winter well hydrated.
- An application of compost or composted manure over beds will improve the soil and plant vigor next growing season.



*Time to tidy up the vegetable garden.*

## November ✓

- Apply mulch or leaf mold to gardens after the first hard frost.
- Turn your compost pile after frost hits to deter over-wintering rodents.
- **Do a final clean-up of beds and lawns. Set aside interesting pods to incorporate in seasonal décor.**
- Plant any remaining bulbs.
- Clean and store tools until spring. Store fertilizers and other materials where granulars will stay dry and liquids frost-free.
- Pot amaryllis bulbs every few weeks beginning mid-month for blooms through the winter.



*A final clean-up of beds and lawns.*

## December ✓

- Apply a winter mulch of shredded oak leaves around azaleas, rhododendrons, pieris and other acid-loving plants.
- Ventilate cold frames when the weather is mild.
- Keep houseplants dust-free and fertilize at half-strength until active growth resumes.
- Feed the birds, especially when the ground is snow-covered, and provide fresh water.
- **Sign up for a winter program with us, [www.monmouthcountyparks.com](http://www.monmouthcountyparks.com)**



*Join us for a wreath-making or topiary class.*

## Home Composting Workshops

**Saturdays: Oct. 17 & Nov. 14, 10 a.m.-12 p.m.**

This original form of recycling conserves resources, reduces waste and contributes to beautiful, healthy plants. Workshops are offered at Deep Cut Gardens by the Monmouth County Office of Recycling. Attendance is free but pre-registration is required by calling 732-683-8686 ext.6721. Composting bins are available at a discounted fee of \$35.

## Photography Exhibit 2015-16 – Weather or Not

**Entries accepted: October 23 – November 20. Exhibition: January, 2016**

This year's event theme will look at the transformative effects of weather on the features and gardens at Deep Cut. Open to all photographers ages 18 and up.

Rules and entry form available on Deep Cut Gardens' page at

**[www.monmouthcountyparks.com](http://www.monmouthcountyparks.com).**



*This winter photo was taken during a routine Park System helicopter fly over for the deer count (ideal conditions: a sunny day with no wind and 6-12" snow). Park Ecologist Ken Thoman captured this pattern of the snow-covered parterre.*

**SILVER  
SPOTTED  
SKIPPER**

## Common Butterflies Of Monmouth County

**B**right colors, interesting patterns, conspicuous eyespots—learn how to recognize some of the county's most commonly sighted butterflies. These photos were taken by Park System staff at one of Monmouth County's 43 park sites.



The mottled brown underside and serrated wing edges of the **QUESTION MARK** (*Polygonia interrogationis*, 1.50-2.75") resembles a dead leaf, for camouflage. Photo by Naturalist Sam Skinner at Hartshorne Woods Park. The **MOURNING CLOAK** (*Nymphalis antiopa*, 1.75-3.25"), has a similar dull underside with serrated wing edge, but this photo illustrates its striking upperside markings. Note the bright, white edge. Photo by Ecologist Anna Luiten at Thompson Park.



People often confuse the **MONARCH** (*Danaus plexippus*, 3-4") photo by Naturalist Ericka Bozza at Huber Woods Park with the **VICEROY** (*Limentis archippis*, 2.5-3.5") photo by Naturalist (retired) Bob Henschel at the Manasquan Reservoir. The Viceroy has a band across the lower wings.



The small **PEARL CRESCENT** (*Phyciodes tharos*, 1.25-1.75") is recognized by its contrasting black and orange/yellow pattern.



The delicate spotted pattern of the beautiful **VARIEGATED FRITILLARY** (*Euptoieta claudia*, 1.25-3"). Photo by Naturalist Sam Skinner at Hartshorne Woods Park.



The **AMERICAN LADY** (*Vanessa virginiensis*, 1.75-2.5") has two spots on the underside of its bottom wing. Photo by Bob Henschel at Deep Cut Gardens), while the **PAINTED LADY**, (*Vanessa cardui*, 2-3") photo by Bob Henschel at Holmdel Park, has 4 spots, 2 large, 2 small. This difference is one of the few ways to tell them apart.



The **COMMON BUCKEYE** (*Juonia coenia*, 2-2.5") is named for its large and obvious eyespots. Photo by Bob Henschel.



The drab brown color of the **LITTLE WOOD SATYRE** (*Megisto cymela*, 1.5"-1.75") that helps it blend in the woods is offset by large eyespots on the edge of the wings. Photo by Naturalist Sam Skinner at Huber Woods Park.



The smallest North American butterflies, "jewel-like" with iridescent color, the **EASTERN TAILED-BLUE** (*Cupido comyntas*, <1") photo by Naturalist Sam Skinner at Hartshorne Woods Park and **AMERICAN COPPER** (*Lycaena phlaeus*, 1-1.5") photo by Naturalist Joe Reynolds at Bayshore Waterfront Park, are easy to recognize.



The male **EASTERN TIGER SWALLOWTAIL** (*Papilio glaucus*, 3-5.5") is mostly yellow with black tiger stripes. Photo by Horticulturist Diane Allen, Deep Cut Gardens.



Among the most common small butterflies, the **CABBAGE WHITE** (*Pieris rapae*, 1.25-2.5") was actually imported from Europe. Of similar size and shape with the same midwing spot, and often sighted near each other, the **CLOUDED SULFUR** (*Colias philodice*, 1.25-2.5") is closely related. Photos by Park Ecologist Ken Thoman in the fields at Tatum Park.



Note the iridescent blue on back of the **RED SPOTTED PURPLE** (*Limentis arthemis astyanax*, 2.5-3.5"). Photo by Naturalist Chris Lanza at the Manasquan Reservoir.



Note the classic yellow and blue, and the less common dark phase, of the female **TIGER SWALLOWTAIL**. Photos by Chris Lanza.



Can you tell the difference between this **SPICEBUSH SWALLOWTAIL** (*Papilio troilus*, 3-4") left, the **BLACK SWALLOWTAIL** (*Papilio polyxenes fabricius*, 3.75-4.25") right, and the Tiger Swallowtail, far left. Photos by Joe Reynolds and Bob Henschel.

References  
 Butterflies and Moths of North America (species profile). [www.butterfliesandmoths.org/learn](http://www.butterfliesandmoths.org/learn)  
 Wernert SJ, et al. (ed.) Reader's Digest. North American Wildlife. Pleasantville, NY. 1982. Pp. 264-269.





# GREEN HERITAGE

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## *Autumn Exercise*

**IN THIS ISSUE:**

*Understanding Pollinator  
Gardens, Green Spaces  
and Your Health...  
Butterflies for Everyone*



*The tree-lined, 1-mile Track Loop trail at **Thompson Park** is a popular running site, and incredibly scenic this time of year.*



Visit [www.MonmouthCountyParks.com](http://www.MonmouthCountyParks.com)