MONMOUTH COUNTY PARK SYSTEM
GREEN HERITAGE
The Newsletter of Monmouth County's Open Space, Parks & Recreation Agency
Vol. 49 No. 4 Winter 2015-16

SUNNYSIDE, UP!

The Sunnyside Equestrian Center in Lincroft is the Park System's center for Equine Assisted Activities and Therapies (EAATs). Operating with extensive support from the non-profit **Special People United to Ride (SPUR),** this facility houses 18 horses; 20 support staff, animal attendants and instructors; and more than 100 volunteers. They are all dedicated to providing therapeutic riding lessons, programs, camps and events for health and wellness, featuring horses.

Meet the therapy horses of Sunnyside. View the herd in their natural setting outdoors and tour the Equestrian Center and 18-stall horse barn.

The Birth of the Therapeutic Riding Movement

The start of the therapeutic riding movement has been credited to Lis Hartel, a Danish rider with polio who won a silver medal in Grand Prix dressage* in the 1952 Olympics, inspiring European medical and equestrian professionals to implement riding as a form of physical therapy. An important milestone in its spread to the US was formation of the North American Riding for the Handicapped Association (NARHA) in 1969—later renamed the **Professional Association of Therapeutic Horsemanship, Int'l (PATH)**.[1]

Here in Monmouth County, a grass-roots therapeutic riding program was well underway by the mid-1970s. The Park System got involved when one local program asked to use the East Freehold Showgrounds site, and by 1980, the growing program—with 4 horses and more than 30 students—moved to Thompson Park. The next year in 1981, SPUR was formed to formalize their goals and direction, and in 1989 they moved to a site with more tailored equestrian facilities at Huber Woods Park.

During the 1990s, SPUR realized the need for an indoor arena as their growing program was constrained by limited outdoor lessons, offered only during favorable weather in spring and fall. They ramped up their fundraising efforts and after a string of smaller successes followed by one headline-making, celebrity-studded event in 2000 that raised an unprecedented $850,000, were soon ready to break ground on a new indoor facility.

After years of dreaming and planning, the **Sunnyside Equestrian Center** opened in 2002 with a horse barn, large indoor arena (for year-round riding) and an outdoor instruction ring. The center was completed in 2008 with additional program space and offices, and soon began inviting the public to Open Houses to introduce the new facility.

This rider puts her skills on display during Sunnyside's Annual Student Horse Show at the indoor arena, with help from a few volunteers. Another rider takes a staff-assisted ride around the scenic paths and paddocks.

(left) Early days of the SPUR program in Monmouth County, 1977; (right) Jerry Coburn (on Rocky), SPUR president Carol Dorward, SPUR founder Mary-Alice Goss, Kim Oswald (on the Cisco Kid), Carl Twitchell and Sally Vaun, 1981.

*Dressage is a competitive sport where horse and rider perform a series of compulsory exercises from memory.

Continued...

Green Heritage Staff
Editor/Writer: Lisa Bonelli
Photographer: Maribeth Gardner
Graphics: Michelle Scolletta
Questions/Subscriptions:
732-842-4000x4336;
Lisa.Bonelli@co.monmouth.nj.us

Staff take visitors for a ride and on a barn tour at one of Sunnyside's first Open House events.

Equine-Assisted Activities and Therapies (EAATs)

Sunnyside offers equestrian programs for general health and wellness, as well as natural and advanced horse care and riding skills for the public, but the core mission at this site is therapeutic programs for people with special needs. For individuals with developmental disabilities (such as cerebral palsy, MS, autism) the freedom of riding and handling a horse can improve balance, flexibility, motor control, core strength, and even vocal skills (because riding stimulates the area of the brain associated with speaking). Self-confidence is also gained by learning to safely and capably mount and ride a 1,000 lb. animal.

Because horses are sensitive to human emotion, they can also be a calm, steady presence for people with behavioral/social issues or mental health challenges. Those who have had traumatic experiences may find peace and comfort in the company of horses, while tailored programs can teach age-specific social skills and behaviors–such as self-respect and responsibility–to school-age children. Sunnyside staff offer hundreds of lessons, programs, camps and activities throughout the year for both children and adults.

• **Therapeutic Riding Lessons & Horsemanship.** These are the foundational programs at Sunnyside. Individuals (age 4-adult) work one-on-one with instructors in 8-week sessions to meet their physical, cognitive and/or emotional goals over time. Sessions begin with a leader and sidewalker in addition to the instructor, and progress towards greater independence over time.

• **Equine Environment for Learning (EEL).** School groups in our community visit once a week and spend 2-4 hours learning about horses, horse care, and herd behavior. Plus, they receive basic beginner riding skills. Goals are team building, respect, responsibility, safety, kindness and self-esteem.

The following programs are guided by a licensed psychological counselor and PATH Int'l. Equine Specialist in Mental Health and Learning.

• **Horses for Heroes.** Introduced for veterans and active duty military at Sunnyside in 2007, this program now works in conjunction with the *Wounded Warrior Project*. It is specially tailored for people who are suffering from the psychological impacts of service and/or who have sustained physical injury.

• **Equine Facilitated Wellness 'Stable Beginnings':** This 8-week program for 5th-8th graders is designed to promote self-esteem, emotional well-being and personal growth. Interacting with horses can naturally bring about feelings of empowerment, peace and confidence as students learn how to groom and tack a horse, herd behavior and horse handling skills in a safe and supportive environment.

Horses for Heroes

"Experiencing it…had a profound effect on me, and brought me a sense of happiness, peace and contentment that I have not felt for 40 years… Now I use that experience to ground me…to combat the PTSD symptoms that plague me every day."

— Excerpted from a Veteran

Sunnyside Management Staff


Jackie

Jackie West, now Head Instructor, started her career at Sunnyside as a volunteer in 2008. She became a PATH International Certified Therapeutic Riding Instructor in June 2011 and Equine Specialist in Mental Health and Learning in July 2013. Her goal is to create therapeutic opportunities that will best serve the need of our community, and her life-long experience with horses has proven to be an essential asset in the development of new programs to achieve that goal.


Stephanie

Stephanie Hunt, Stable Manager, joined the SPUR program as a volunteer in 2009, and became a PATH International Certified Therapeutic Riding Instructor in 2010. Her passion for and life-time of experience with horses and natural horse care has helped establish a strong foundation for therapeutic healing among riders, while honoring the physical and mental needs of each horse.

Meet the Newest Members of the Herd

Sunnyside has carefully selected and trained each member of the equine herd. Their job requires a very special disposition: calm, tolerant and enjoyment working in this environment.

When their time as therapy horses draws to an end, staff arrange for a loving retirement or semi-retirement home. In the past few years, four horses were retired and taken in by people who have known and loved them for many years, and one passed away.

Staff looked at more than 50 prospective horses to find the five that were ultimately accepted as replacements. After passing a strict set of physical and behavioral requirements, each had a trial period at the site which involved training, daily assessments, and mock lessons. Let's meet the newest additions:


Arrow


Scout


Oberon


Diesel


Woody

Arrow (May 2014), formerly a trail horse, had a desirable disposition for equine assisted therapy. He is now training to work with veterans, school groups and SPUR riders.

Scout (June 2014) is playful and friendly by nature, so we call him our "class clown." He likes to be busy, so we have kept him active since his arrival, and he represented our herd at both the 2014 and 2015 Monmouth County Fair (he's good at shows).

Oberon (July 2014) impresses the staff each day with his obvious enjoyment of therapeutic work; he absolutely loves children. A little shy at first, he has a huge heart and a willing nature to do his job well. He definitely shines when he is of service to others.

Woody (April 2015) Every now and then a horse comes along that is perfectly suited for therapeutics, and Woody is one of those horses. He knows his job, takes good care of his riders, and really enjoys the work.

Diesel (June 2015) is an all-around great horse. Staffers predict he will become a "rock-star" in terms of therapeutic work. He's stocky and able to carry larger riders and he is mature with a sweet disposition, smart and capable.


Visitors meeting the horses

If you have not already met the newest herd members, please stop by and tour the facility. Like all the Monmouth County parks, Sunnyside is open every day of the year. On your visit, make sure to check out the walking trail across the street and enjoy some exercise.

–Written with Stephanie Hunt, Stable Manager

Reference:
1. http://www.pathintl.org/about-path-intl/about-path-intl/history

TRAILS FOR EVERYONE

Have you ever been downhill skiing? Did you ride the lift to the top and tear down a double black diamond trail, or did you seek out the bunny slope marked with a green circle? The answer likely depends on your level of skill (and perhaps that of the other people skiing with you), the risks you're willing to take, and the type of experience you're looking for.

Trails are the most popular feature in the parks.

To help visitors quickly and easily make a decision about which trail to take, ski resorts throughout the world have adopted an International Trail Marking System that features green circles, blue squares and black diamonds. This system has also been adopted by the International Mountain Bicycling Association.

Since the early 1990s, the Monmouth County Park System has also been using this same international key to help visitors navigate our trails. Huber Woods was the first, in 1991, followed by Clayton Park in 1992 and Hartshorne Woods in 1994—now 18 parks have this rating system. Trail ratings help users make informed decisions on how to find trails that match their skill level and expectations.

*The MODERATE 0.8 mile Marlu Trail at **Thompson Park** is relatively short but has lots of grassy portions and may be muddy/wet in places (blue square).*

*The EASY 1 mile Track Loop at **Thompson Park** has some tree roots and debris (green circle).*

Monmouth County Park System Trail Symbols

The EASY standard indicates certain design features: shorter distances (generally <2 miles) with gentle grades and wider treads. It also indicates maintenance standards: a visitor can expect that a green trail has been recently inspected for downed trees, erosion, and is generally pruned back. There may be some obstructions, such as tree roots and natural debris (small branches, leaves, pinecones, etc.).

The MODERATE standard indicates longer distance, steeper grades and trails that may be narrower. These trails offer a more rugged trail experience in terms of obstructions, such as tree roots and logs and are generally less well groomed (but should still be passable). Most of the trails in the Monmouth County Park System have a moderate designation, noted by a blue square symbol.

*The CHALLENGING 2.3 mile Rocky Point Trail at **Hartshorne Woods Park** has obstructions and steep grades (black diamond).*

A CHALLENGING black diamond trail will feature noticeably steeper grades in addition to obstructions such as tree roots, logs and washed out areas or impasses. For instance, the Many Log Run at Huber Woods Park may indeed have many logs to climb over! And, you can certainly expect that Rivers Edge Trail at Shark River will have washed out areas (if it is passable at all depending on recent rains).

TRAIL CLASS SYMBOL	DESIGN OBJECTIVE	DESIGN LIMITS	MAINTENANCE GUIDELINE
EASY ●	Accessible to the great majority of park users, but principally a pedestrian trail for families, seniors & those looking for easy access to park facilities & resources; a percentage are handicapped accessible trails.	**Grades:** 1:6.5 max. with sustained 1:12 for less than 100 feet. **Clearing limits:** 6'x8' – 8'x12' **Tread (width):** 3' minimum **Length:** 1/2 – 2 miles	Highly maintained with surface & clearing limits for public convenience/access with no obstruction. Bridges, benches, signage & other conveniences are common.
MODERATE ■	Designed with a level of ability that would challenge some, but be accessible to most park visitors.	**Grades:** 1:5 max. with sustained 1:6.5 for less than 100 feet. **Clearing:** 4' x 8' **Tread (width):** 24" **Length:** 1 – 4 miles	Moderately maintained for public access and resource protection. Surface & clearing limit obstructions allowed occasionally, max of 6" above tread to 36" clearance.
CHALLENGING ◆	Designed for the most hardy users & intended for able hikers, equestrians & all terrain cyclists.	**Grades:** 1:3.3 max. with sustained 1:5 for less than 300 feet. **Clearing:** 3' x 6' min. **Tread (width):** 18" **Length:** greater than 2 miles	Maintained for resource protection & public safety. Obstructions of 12" common with occasional greater obstacles.

Trail Design Philosophy

Most of the trails in the Park System have been designed to provide a variety of experiences for a wide variety of users. NJ is a heavily populated state with many kinds of people, so a uniform approach to trail design would not work. Instead, we have tailored trails for parents with children, long-distance hikers, bicyclists, walkers new to the outdoors, etc.

*As the most extensive, rugged and heavily used in the Park System, the 14 miles of trails at **Hartshorne Woods Park** require regular visits from our Volunteer Trails Team to prune back growth, replace fencing, repair eroded sections, and close off side trails, etc. to keep them in accordance with intended standards for use.*

When designing a trail system at a newly acquired park or property, planners try to follow existing service roads, farm paths (previously used by tractors and carriages), and 'neighbor trails' created by prior users. But they must match the site's intended use and be environmentally sound (won't cause erosion, disturb habitat of an endangered species, etc.). Hartshorne Woods Park was a good example of a park that kept a percentage of existing trails. Those that didn't align with intended standards were restored to natural condition with plantings, fencing and the like.

What's in a Trail Name?

A trail's name may give some clues to its natural features. Laurel Ridge is named for the seasonal mountain laurel shrub prevalent at Hartshorne Woods Park, while Hidden Creek at Shark River is so named because this water body has a lot of surrounding vegetation. A trail name may also be based on a historical element of the park, Hartshorne Woods Park's Battery Loop contains an actual WWII gun battery and the Bunker Loop (pictured) contains a bunker. Holmdel Park's Steeplechase Trail was commonly used as a horse run by local equestrians.

Trail names can provide a sense of character or intrigue, and let the trail user know what to look for. However, they do not give information regarding the experience ahead. That's why the classification system is so important; it helps visitors decide which trails to take based on actual conditions.

Specialty Trails: Paths with Purpose

To meet even more specialized needs, there are miles of trails designed and maintained for a particular use.

*The cross-country trails at **Holmdel Park** are nationally recognized. This site hosts thousands of runners each fall. (right) A runner on "the bowl", a particularly notorious portion of its cross-country trail.*

***Holmdel Park** (pictured here), Shark River Park and Turkey Swamp Park all feature Fit Trails, with guided fitness stations along the route.*

*The Bracken Trail at the **Manasquan Reservoir** (pictured) and the Discovery Path at Huber Woods Park are short trails with noteworthy plant/wildlife features for nature exploration.*

The Park System now has more than 30 miles of paved trails for users who want a smooth, wide surface. There are other types of "finished" trails which are compacted and covered with crushed rock.

*Paved or Compacted Rock, You Decide! Runners race along part of **Thompson Park's** 4.2 mile paved trail (top left), while runners at the **Manasquan Reservoir** run on compacted gravel (right).*

Finally, there are miles of mowed field edges (at Holmdel, Huber and Thompson Parks especially) that—while they look a lot trails—are not actually trails. They are found almost exclusive along field edges. While they may seem a bit confusing to new users because they are unmarked, they provide exceptional birding opportunities and other passive trail experiences. They also serve as 'buffer trails' providing public access around agricultural leases, a requirement of state Green Acres funding.

Deep Cut Gardens
Home Gardener

152 Red Hill Road
Middletown, NJ 07748

GS Parkway Exit 114, to Red Hill Road
732-671-6050

RAISING MONARCH BUTTERFLIES

Diane Allen, Park Horticulturalist

There is something about butterflies that brings out the child-like wonder in all of us. This is especially true of the monarch butterfly, with its beautiful colors, interesting life cycle and incredible 2,500-mile migration.

Deep Cut's milkweed garden and "Monarch Waystation" is located next to the side door of the Horticultural Center, in front of the sunroom windows.

For the past few years, monarch numbers have been in noticeable decline. The staff at Deep Cut have taken special steps to protect the monarchs in the Monarch Waystation milkweed garden beside the Horticultural Center. Rearing these beautiful butterflies from egg or caterpillar to adult has also delighted, engaged and educated our visitors. Although the summer of 2014 was disappointing, 2015 was a marked improvement with 37 caterpillars reared and released as butterflies.

The caterpillars (larva), rescued from the garden as eggs were placed in a container and fed milkweed leaves.

Grown caterpillars then attach themselves head down (in a 'J' shape), shed their outer striped skin, and transform into a green pupa (chrysalis).

Initially, our intent was to bring in only a few to raise indoors. But upon finding that eggs and young caterpillars were being carried off by spiders and wasps, we began bringing inside all that we found for protection. We are aware there is developing concern that rearing large numbers of butterflies in captivity may have an adverse effect on the wild population. There can be greater exposure to disease and a negative effect on the gene pool by reducing genetic diversity and fostering genetic adaptations inappropriate for survival in the wild. However, reports so far indicate that raising a limited number – under 50 – is not expected to be detrimental, if done carefully.

A very good close-up of the newly-formed chrysalis. Note the silk attachment pads; the white shell in back is empty (already hatched).

*Per **Monarch Watch** instructions, we relocated some errant caterpillars who attached in weird locations to a more secure spot in the container using string. Note the darker color and iridescent golden dots.*

Caterpillars Eat a Lot!

It is essential to keep a steady supply of fresh, clean, pesticide-free milkweed leaves available – the only food that will sustain these caterpillars. While the youngest will consume a leaf every few days, by the time they have reached their final growth state, they may be consuming several leaves a day. A word of caution: milkweed sap contains latex and can cause pain and even corneal damage if it gets in your eyes. Wash hands thoroughly after handling milkweed!

As the caterpillar grows, it will shed its skin. When it has reached the final, fifth instar stage it is ready to form its chrysalis. First, it will spin a pad of silk and use it to hang up-side down in a J shape. Then, it will shed its skin one last time (leaving behind its head, mouthparts and legs!), revealing a beautiful jade-green chrysalis with iridescent gold markings. It will hang defenseless like this for 10-14 days. About one day before the butterfly emerges, the chrysalis becomes transparent revealing the monarch within, wrapped in its orange and black wings.

The chrysalis turns transparent about 24 hours before the butterfly is ready to hatch out.

The Birth of a Butterfly

Once the adults emerge from the chrysalis, they need room to spread their wings and fly, and in about 24 hours will need food.

When the butterflies first emerge, they are moist and wrinkly (still compacted). It takes time for their wings to pump up and start working.

Most of ours were released within several hours of emergence, once the wings had fully expanded and dried. Since they do not fly in the rain or in cold weather, if weather is inclement, they can be held over for a short time. Per **Monarch Watch** recommendations, we provided a buffet of freshly cut flowers from Deep Cut's gardens, fresh fruit, and a sponge soaked with a 20% solution of honey and water. Again, it is important to change the food daily.

To track the progress of these monarchs, we ordered a tagging kit from **Monarch Watch**. Each adult was affixed with a tiny adhesive tag that bears an 800 number, web address and a unique code. If it should be captured, dead or alive, anywhere along its journey, the code number will allow researchers to match the caterpillar with the rearing and release information that we have filed. Such information can help answer unanswered questions regarding migration patterns, effects of weather, and differences from year to year. Citizen science projects like this help further our understanding of habitats critical to the survival of the monarch butterfly and other wildlife.

Tiny little tags and forms for tracking the monarchs.

A monarch with its tracking tag attached. Photo courtesy of Bill Jones.

On a few occasions, we were able to invite visitors to assist with tagging and release. Photo courtesy of Bill Jones.

Continued next page...

Cleanliness is Crucial-Monarchs Susceptible to Disease

Caterpillars are susceptible to all sorts of diseases (as if loss of habitat and severe weather weren't enough of a challenge!) and they are not well-suited to living in high-density conditions. Caterpillars poop a lot (the excrement is called frass–there's a good Scrabble word for you), and it can get moldy and/or carry disease. Caterpillars can also throw up and get diarrhea. Sick or deceased caterpillars can also leak liquids that can drip onto others or contaminate food sources.

One way to minimize disease transmission is to be scrupulously clean – the cage, your hands … some people even wash the milkweed leaves before putting them in the cage to remove any pathogens they might be carrying. A couple of layers of newspaper or paper towels on the bottom of the rearing cage makes frequent cleaning easier – daily is recommended. Also change the water in the containers holding the milkweed stems.

A deformed monarch butterfly - may have been OE.

Some of the diseases to which monarchs are susceptible are:

- nuclear polyhedrosis virus (shortened to NPV and also referred to as "wilt disease")
- pseudomonas (the same bacteria that causes "swimmer's ear" in humans)
- ophryocystis elektroscirrha (shortened, understandably, to OE) a protozoan parasite

Any caterpillars or chrysalids showing symptoms of illness should be removed from the cage. We removed any suspicious for disease to a separate quarantine cage, kept in another room.

Caterpillars are also subject to insect parasites like tachinid flies and braconid wasps. Eggs are deposited inside the caterpillar, where they hatch and feed, usually emerging just as the caterpillar is about to form its chrysalis, leaving behind the withered, brown body of the caterpillar and a few threads by which the larvae descend to enter their own pupal stage. As disappointing as this is to see, remember that these flies and wasps also parasitize caterpillars of pests, such the gypsy moth and hornworm.

This stunning close-up of a monarch at Deep Cut was taken by Photographer Bill Jones.

Next Step: The Long Journey to Mexico

There will be several generations of monarchs throughout the summer. Each butterfly in a breeding generation lives 2-4 weeks, until cooler temperatures and shortened daylight hours trigger a physiological change from a breeding to migrating generation. These butterflies will not mate and lay eggs. Instead, they will set out in September and October and fly to the Oyamel fir forests in central Mexico…the same place their great-grandparents came from.*

The migrating monarchs will live 8-9 months. After overwintering in Mexico, warmer temperatures signal them to migrate northward again. They will mate and lay eggs as they go—the beginning of the end for this generation. They will live only a few more weeks, and will never see the northern states again. But their progeny…and theirs after them…will continue to move northward, breeding as they go, producing four generations and reaching as far north as southern Canada, to begin the cycle again.

**This holds true for monarchs east of the Rocky Mountains. Those west of the Rockies migrate to southern California.*

Further Reading: *Rearing Monarchs Responsibly: http://monarchjointventure.org/images/uploads/documents/Monarch_Rearing_Instructions.pdf Monarch Larva Monitoring Project: http://mlmp.org/Project Monarch Health: http://monarchparasites.org/Journey North www.journeynorth.org and Monarch Watch: www.monarchwatch.org*

2016 PHOTOGRAPHY EXHIBIT
WEATHER OR NOT

Opening Reception:
Saturday, January 2, 1-3 p.m.

Meet and speak with the photographers. Light,warming refreshments will be served.

Open Daily: January 3-31, 10 a.m. – 4 p.m.

Deep Cut Gardens, Middletown

A look at some of the many ways the weather transforms Deep Cut's gardens and its elements, whether it be the glistening rays of sunshine or the raindrops falling. Enjoy the beauty of Deep Cut Gardens as captured by some of our many visiting photographers. Weather permitting, take a stroll through the gardens and discover textures and colors revealed by the starkness of winter.

Deep Cut in winter

Did You Know? There's a Deep Cut Gardens blog on the Park System website. See what's going on during the winter months and throughout the year. ***Visit our "In the Garden" page by clicking "Natural Resources" at www.monmouthcountyparks.com.***

IT'S TIME TO...

January ✓

- Throughout winter, check for winter mulches and plants displaced by the weather and replace as necessary. Gently remove snow from evergreens to prevent damage.
- **Remember the birds; fresh water is essential. Seeds and suet will provide nourishment as natural food supplies dwindle.**
- Increase humidity around houseplants by grouping them together or setting them on pebble trays.
- Plan for next season: browse the catalogs, narrow your wish list, sketch plans, make your seed list.
- Test leftover seeds for viability by placing several between moist paper towels or coffee filters, keep warm and moist.
- Get ready for spring: check your garden shelves and properly dispose of any old chemicals, get rid of junk. Clean and oil your garden tools now to add years to their life; take your mower for service before the rush.

The tufted titmouse will appreciate some winter seed

February ✓

- **The greenhouse at Deep Cut is open year round and is filled with orchids, succulents and houseplants.** Peak orchid flowering season is mid February-March.
- Turn the soil in your vegetable and annual beds now to expose insect eggs to foraging birds and the ravages of winter. Next month, add well-rotted manure or compost if not done in the fall.
- Dust the foliage on your houseplants and stay on the lookout for insects. Feed any plants that are actively blooming or showing new growth.
- For a taste of spring, force branches of flowering trees or shrubs like forsythia, cherry, apple or quince.
- Insect and disease control is important for fruit trees – pesticide recommendations and spray schedules are available from the Rutgers Cooperative Extension Service (732-303-7614 or online at www.njaes.rutgers.edu/garden).
- Pick up any twigs and other debris from winter storms; watch for and pull any early weeds like henbit, chickweed and shepherd's purse.
- On a mild day, begin pruning branches from trees and shrubs that have been damaged during winter
- When the snow has melted, sow an early crop of spinach.

Bring your camera, take photos in the greenhouse

March ✓

- Repot and fertilize your houseplants as needed.
- Indoors, start seeds for broccoli, cabbage, cauliflower, eggplant, lettuce, parsley, peppers and tomatoes.
- Fertilize trees and shrubs, if not already done, after soil temperatures have reached 40˚ F, but before new growth begins. Apply dormant oil spray on a calm day above 40˚.
- Weather is uncertain, so be cautious about uncovering beds. Proceed gradually, removing leaves and winter mulch in layers rather than all at once.
- Don't work the soil until it will form a ball that crumbles when pressed with your thumb.
- If not done in the fall, get a pH test and apply lime if needed.
- Divide and transplant perennials as needed, fertilize established ones when new growth appears, pot up extras to bring to the Deep Cut Spring Perennial Swap on April 23.
- Outdoors, direct-sow seeds for cool crops like peas, beets, Swiss chard, lettuce and seeds of cold-tolerant annuals.
- Pull out and clean pots and bird baths: scrub with a brush then soak in a 10% bleach solution for 15 minutes, then rinse thoroughly.
- **Consider making or purchasing a rain barrel to catch those "April Showers."**

Rain barrel, with and without camoflage

Nature Corner

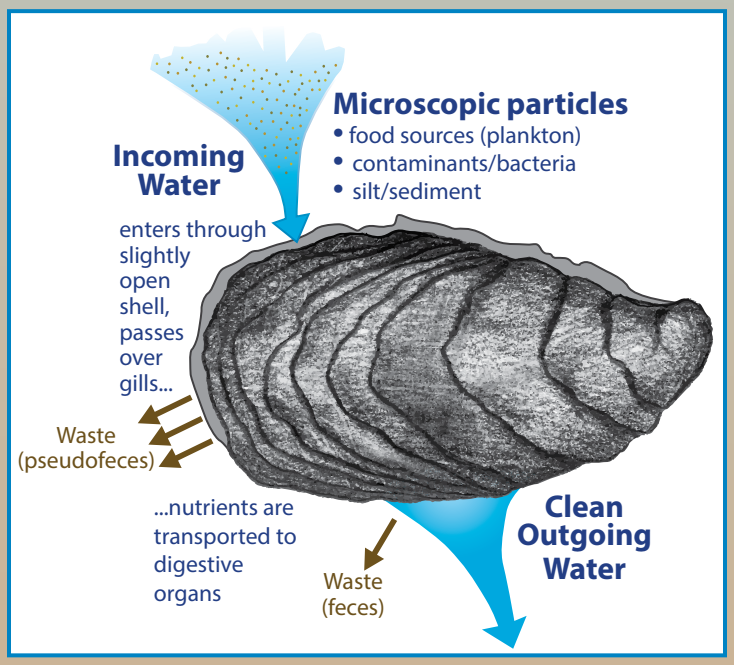
Nature's Native Water Filters: *Oysters, Clams And Mussels*

Albin Wicki, Park Naturalist

Nothing screams summer in New Jersey quite like a bucket of fresh steamers, a tray of oysters, or a couple dozen littlenecks on the grill. Even those with shellfish allergies or who just don't like seafood can appreciate these tiny mollusks: if not for their food value, then for the important role they play in keeping our waters clean and healthy.

Bivalves: 2-Shelled Filter Feeders

Oysters, clams and mussels are among a group of mollusks known as bivalves. In the same way a bicycle has two wheels, a bivalve is simply an animal that has two shells. They may look different, but all are filter feeders, working to clean the water.



The eastern oyster *(Crassostrea virginica)*, once the most common shellfish in Monmouth County, is a good example to illustrate how this process works. As incoming water passes over the oyster's gills and through its body, microscopic particles are removed including food sources such as phytoplankton and zooplankton, as well as bacteria, silt and any other organic matter that may be in the water.

The oyster uses what nutrients it can, and recycles the remaining matter to deposit as pseudofeces or waste. The clean water then passes back into the surrounding water. Clams and mussels go through a similar process, siphoning in water, removing and retaining particles, and pumping out filtered, "clean" water.

*On top of helping to clean the water and provide habitat for other creatures, **oyster reefs** help protect the shoreline by preventing erosion and absorbing potentially harmful wave energy. PHOTO SOURCE: US Marine Corps, Pfc. Jackeline M. Perez Rivera*

Strength in Numbers

But how much water can these tiny shellfish actually filter? After all, the largest of oysters grow only to be 10-12 inches, and that is only if they are left to grow undisturbed for years on end. Most are either harvested for human consumption or fall victim to natural predators before they even come close to that size. Many mussels grow only 4-6 inches before falling victim to harvest or predation, and clams are even smaller, with many growing no more than 3-4 inches.

For their size, however, these shellfish are incredibly efficient at filtering water. A single adult oyster, for example, can filter upwards of 40 gallons of water each day.

A single adult oyster can filter 40 gallons of water each day.

Clams and mussels are slightly less efficient, filtering between 10-20 gallons of water each day, depending on the species. Still, given the dense colonies these shellfish often form, they play an incredibly important ecological role, helping to clean our waters by removing excess nutrients and bacteria that could otherwise lead to unhealthy and unsafe conditions.

*The U.S. Army Corps of Engineers created an **artificial reef off Governor's Island in New York** in fall of 2006 in order to test the viability of restoring oyster populations in the New York/New Jersey Harbor Estuary. PHOTO SOURCE: US Army Corps of Engineers*

Oysters Like Snowflakes?

Believe it or not, oyster shells and snowflakes have more in common than you might initially think. Much in the same way that no two snowflakes will ever have the same shape, you will never find two oyster shells that look exactly the same either. As a snowflake falls, a number of factors contribute to its shape, including air temperature, wind speed, wind direction and air pressure. The changes in these conditions throughout the atmosphere contribute to the unique shape of each individual snowflake; no two snowflakes are ever subject to the exact same conditions from the clouds to the ground.

An oyster grows by filtering nutrients out from the water column, and depositing new shell material onto the lip of the shell. The shape of an oyster shell is influenced not only by available nutrients, but water conditions such as salinity, pH, water temperature, the speed of the current, the direction of the current, and where exactly the oyster is situated on the reef. As water conditions can vary widely from day to day, week to week and year to year, no two oysters are subject to the exact same conditions throughout their life, and no two oysters will ever grow in the exact same way.

Oyster shell

Bivalves Benefit Local Ecology & Economy

The growth habits of bivalves also make them critical to the local ecology, as other species depend on the dense clusters they form for habitat and hunting grounds. Ribbed mussels, for instance, form dense colonies along the banks of creeks or within the inter-tidal zone of salt marshes, sometimes to the tune of 1,000 mussels per square meter. These mussels form the base of the food chain, with mud crabs, fiddler crabs, blue-claw crabs, and a variety of shore birds feasting on their dense colonies. Oysters grow to form great reef structures, with nooks and crannies that provide a safe haven for juvenile fish and small forage fish, along with hunting grounds for a number of larger predators.

The harvest and sale of oysters, clams and mussels from New Jersey waters is an industry that brings in tens of millions of dollars each year. And, in turn, the habitat these shellfish create supports species important to both commercial and recreational fishermen, including blue claw crabs, winter and summer flounder, bluefish and striped bass.

*Some groups have begun creating **artificial oyster reefs** in hopes of improving water quality and restoring native oyster populations. The reef in the **Alligator River National Wildlife Refuge in North Carolina** is just one of many such experimental man-made reefs on the eastern seaboard. SOURCE: US Fish and Wildlife*

Checking a Dramatic Decline

Historically, the Sandy Hook Bay and its many tributaries supported vast populations of oysters. However, a combination of overharvesting and a degradation of water quality have all but eliminated these shellfish from the waterways of Monmouth County. The beds that do still exist are restricted for harvest due to poor water quality.

With the realization of their importance, some oyster-rescue groups have sprung up to help repopulate our waters with nature's native water filters. Groups such as the New York/New Jersey Baykeeper have been working for years to restore area oyster populations by building artificial reefs and "seeding" waterways with juvenile oysters. And while progress may be slow, it is worthwhile for the future health of our waterways.

Visit the tidal waters of Bayshore Waterfront Park in Port Monmouth, Claypit Creek at Hartshorne Woods Park in Middletown, or Fisherman's Cove in Manasquan to keep an eye out for evidence of these incredible creatures. And the next time you order a bucket of steamers, or oysters on the half shell, please remember to appreciate these tiny mollusks not just for their delicious flavor, but for the role they play in keeping our waterways clean and healthy.

Many oyster restoration projects rely on the work of volunteers to implement, monitor and record progress.

References:
The Big Oyster: History on the Half-shell; Mark Kurlansky, The Penguin Group 2006.
Vertical structure and predator refuge mediate oyster reef development and community dynamics; Thomas M. Soniata,*, Christopher M. Finellib, Jenny T. Ruiza; Journal of Experimental Marine Biology and Ecology 310 (2004) 163– 182.
Restoration of coastal habitats: expectation and reality Courtney T. Hackney Ecological Engineering 15 (2000) 165–170.
Beneficial use of dredged material for habitat creation, enhancement, and restoration in New York–New Jersey Harbor David J. Yozzoa,*, Pace Wilberb, Robert J. Willc Journal of Environmental Management 73 (2004) 39–52.

GREEN HERITAGE

805 Newman Springs Road, Lincroft, NJ 07738-1695

Volume 49, No. 4 Winter 2015-16

G15598-11/15

Seasonal Scenery

IN THIS ISSUE:
Getting Healthy with Horses… Trail Names & Symbols… More on Monarchs… Oysters, Oysters Everywhere

When the snow falls at ***Sunnyside Recreation Area***