



25 Years Later – GONE BUT NEVER FORGOTTEN

Zack Karvelas, Assistant Public Information Officer

This year marks the 25th anniversary of the September 11, 2001, terrorist attacks that ravaged our nation. The country observes a solemn quarter-century milestone in 2026 but are far from forgetting or letting go. Commemorative events, public programs, and educational series are hosted by institutions like the 9/11 Memorial & Museum and many more to honor the 2,977 victims and reflect on decades of reflective societal change.



Today, 100 million Americans are too young to remember the day that changed New York City and the nation forever. It is the collective promise, made 25 years ago, to never forget so those born after 9/11 learn its significance and lasting legacy. As we commemorate this anniversary, a new generation will learn about the unthinkable loss we experienced and the inspiring stories of bravery, compassion, unity, and service that have been witnessed, and have persevered through the decades. Here in Monmouth County, a collaborative and special memorial was built, and a service is done at Mount Mitchell Scenic Overlook in Atlantic Highlands every year. The memorial honors the 147 Monmouth County men and women who lost their lives in the terrorist attacks of September 11, 2001.

SITE OVERVIEW

Mount Mitchell Scenic Overlook has always been a special place to view the New York skyline and the Sandy Hook Bay, as well as events such as the tall ships, fireworks over the East River, and sailboat races from this high point on the Atlantic Coast.

With an elevation of 266 feet, Mount Mitchell is the highest natural point along the North Atlantic Coast south of Maine. The site is named for Dr. Samuel Latham Mitchell, a physician, scientist, educator, and politician who measured its elevation with a barometer in 1816. Dr. Mitchell lived in New York and served in the House of Representatives and the Senate.

With its majestic views of Raritan Bay, Staten Island, Manhattan, Brooklyn, and Sandy Hook, Mount Mitchell has long been a popular viewing site, and in the 1940s there was an unsuccessful effort to make it a State park. A private refreshment stand and picnic area occupied one of several lots on the site for many years, but the area was mostly barren and unkempt. The sedimentary rock forming the Highlands is prone to slumping on steep slopes, where large blocks of capstone and sand periodically slide down the cliff face, and the lack of controls allowed considerable erosion.



Aerial photo of the original site from 1992.

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A developer's proposal in the early 1970s to build two 15-story high rise towers on the site prompted many calls for its preservation. The County tried to buy the entire site, but the progress of the developer's plans raised the cost significantly. A compromise enabled the developer to build one tower (Eastpointe) and the County to preserve eight acres.

The Monmouth County Park System created the Mount Mitchill Scenic Overlook in 1973 with parking and viewing areas, along with drainage and oak and cedar plantings to help control erosion along the steep slopes and to nurture the remnant of old growth chestnut oak forest that survives there. In 1995, the Park System upgraded the Overlook with redesigned parking, viewing areas, interpretive panels, and landscaping.

Mount Mitchill first became a commemorative site in 1980 when the Park System installed flagpoles and a plaque paying homage to the eight soldiers who died during the U.S. Embassy hostage crisis in Iran.



Pergola in 1997.

GENESIS OF MEMORIAL

In 2001, the park took on a new meaning for many in Monmouth County. On September 11th the smoke from the attack on the World Trade Center was dramatically visible from Mount Mitchill. On that day, and for months afterwards, Mount Mitchill became a gathering place for hundreds of people seeking solace and reflection. Meanwhile, there was a groundswell of interest in Monmouth County to do something to honor the 147 Monmouth County residents lost on 9/11. Calls came from several entities around the county to place the memorial at Mount Mitchill, due to its vista of Manhattan and already-established role as a commemorative site.

In 2002, the County Freeholders, now known as County Commissioners, determined Mount Mitchill would be the location for the County's 9/11 Memorial, and the Park System began the process of guiding the design for the memorial and re-designing and improving the surrounding park around it.

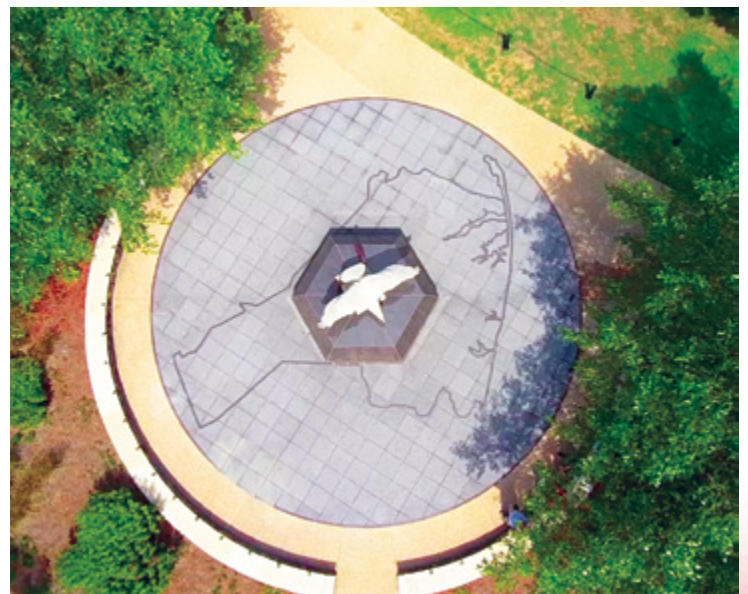
THE 9/11 MEMORIAL COMMITTEE

In 2002, the Park System established the Monmouth County September 11th Memorial Committee, which was composed of victims' family members, design professionals, building contractors, key corporate representatives, members of the Monmouth County Freeholders Board and Board of Recreation Commissioners, staff of the Monmouth County Park System, and the Friends of the Parks. The Park System's Assistant Director Bruce Gollnick, Supervising Landscape Architect Joseph Sardonia, and Supervising Planner Faith Hahn coordinated the work of the committee and the design process.

DESIGN PROCESS AND PRINCIPAL DESIGNERS

In 2002, the Memorial Committee began meeting and making plans for a fitting tribute to the victims, heroes, and events of September 11th. The group's first responsibility was to select a memorial to fit appropriately into the Mount Mitchill Scenic Overlook site. The Committee met for several months to determine design parameters for the memorial. Proposals were publicly solicited for the memorial design, and 30 proposals were received. After review, the Committee chose the proposal from Marlboro sculptor Frank Minervini for a large limestone eagle clenching a salvaged beam from the World Trade Center site.

In coordination with the design of the memorial itself, Supervising Landscape Architect Joseph Sardonia developed a new site design for the park to support the memorial and improve the overall appearance of the park.



The Memorial as designed and constructed has three symbolic components:

1. A timeline walkway to the memorial that chronicles the timeline of the tragic events;
2. A granite stone base carved with the names, ages, and hometowns of the county residents who lost their lives; and
3. Franco Minervini's limestone sculpture eagle with a nine-foot wingspan ascending into flight while clutching a fragment of a steel beam from one of the fallen towers.



Set against views of New York, the memorial reminds us of the unforgettable changes to the famous skyline as it was once known and honors both the lives lost and the fearless display of heroism by rescue teams and citizens who responded to the tragedy.

FUNDING

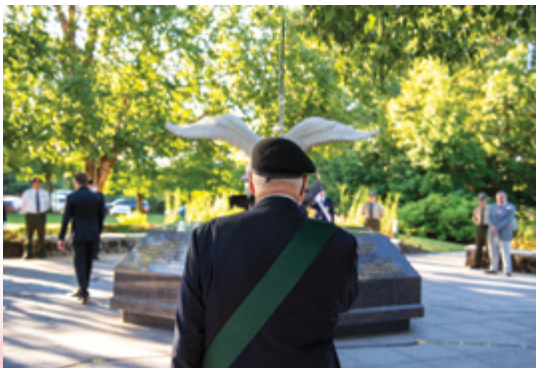
The 9/11 Committee, in partnership with The Friends of the Parks, embarked on a major fundraising effort to finance the Memorial. In addition to private and corporate donations, grants were received from the Charles Edison Foundation and the Port Authority of NY/NJ. Ultimately the group raised \$297,100 for the sculpture, granite base, and granite pavers around the memorial. The extensive site work around the memorial was funded by the Park System's Capital Budget, which totaled \$682,221 in construction costs.



CONSTRUCTION AND DEDICATION

Groundbreaking was held on September 11, 2003, and the dedication was celebrated on September 11, 2005.

Every year since, Monmouth County has held a ceremony at the 9/11 Memorial to honor that fateful day and the Monmouth County residents who perished.



Municipal Parks and Open Space Continue to Improve with County Grant Support

Paul Gleitz, P.P. AICP, Principal Park Planner

The Monmouth County Municipal Park Improvement Grant Program assists municipalities by providing additional funding needed to make park improvements in municipal parks and open space. The grant program is funded at \$6 million a year and up to \$500,000 per project.

The Monmouth County Board of Commissioners has awarded \$6 million in park improvement grant funds to 27 different municipalities in the County through the 2025 round of the Municipal Park Improvement Grant Program. The program continues to demonstrate the County Commissioners' support of local parks and recreation projects throughout the County.

There were a total of 27 applications received requesting an aggregate total of \$8,291,500. Some requests were reduced in order to provide funding to all the applicants.

The municipalities awarded funding through the 2025 grant round include:

Town	Project	Award
Borough of Belmar	Silver Lake Recreation Trail Reconstruction Project	\$203,341
Township of Wall	Camp Evans Recreational Upgrades - Phase II	\$361,817
Borough of Spring Lake	Marucci Memorial Park Improvements Phase III	\$217,090
Borough of Freehold	Veterans Park Improvement Project	\$49,931
Borough of Fair Haven	21 Fair Haven Road Waterfront Improvements	\$361,817
Borough of Neptune City	Improvements to Memorial Park and Adams Field	\$361,817
Borough of Brielle	Brielle Eco Path	\$75,981
Borough of Allenhurst	Railroad Park Plaza - Phase III	\$144,727
Township of Freehold	Opatut Park Improvement Project	\$122,294
Borough of Matawan	Terhune Park Improvements	\$180,908
Borough of Little Silver	Markham Place Complex Improvements	\$220,708
Borough of Oceanport	Blackberry Bay Park Improvements	\$280,770
Borough of Manasquan	Winterstella Park Playground Improvements	\$344,811
Borough of Eatontown	F. Bliss Price Arboretum & Wildlife Sanctuary Bridge Replacement	\$161,370
Borough of Union Beach	Scholer Park Improvements - Phase XI	\$68,022
Township of Hazlet	Interior Fit Out of Pre-fabricated Recreation Building	\$361,817
Township of Middletown	Kunkel Park Site Improvements	\$361,817
Borough of Monmouth Beach	Monmouth Beach Memorial Park and Griffin Park Fitness Equipment	\$108,545
Township of Neptune	Improvements to Sunshine Park Playground	\$267,744
City of Long Branch	Van Court Park Improvements	\$361,817
Borough of West Long Branch	Valenzano Park	\$72,363
Borough of Highlands	Improvements at Veterans Memorial Park, Improvements at Huddy Park, and Community Center Improvements	\$225,050
Township of Manalapan	Dreyer All-Inclusive Playground Surfacing	\$54,272
Township of Millstone	Baird Homestead Improvement Project 2025	\$126,636
Borough of Rumson	Jumping Point Park - West Park	\$361,817
Borough of Red Bank	Count Basie Park Open Space Imp. Project	\$361,817
Borough of Atlantic Highlands	Improvements to Municipal Harbor Park	\$180,908
TOTAL		\$6,000,007

Since the inception of the program, 51 of Monmouth County's 53 municipalities have been awarded \$66.4 million for local parks and acquisition projects. As of the 2025 grant round, 347 grants have been awarded with \$34 million having been paid to the municipalities in reimbursements for successful projects. Any funding not allocated for projects that are not completed is returned into the fund and reprogrammed for new projects each year.

Notable Development Projects Completed This Year

Wall Township – Inclusive Playground at Community Park – In 2022, Wall Township received a grant for \$200,000 to construct and install an ADA inclusive playground with rubberized play surface, rubber play curbing, ADA pathways, fencing around the playground area, and landscaping.



Wall Township Community Park

Avon by the Sea – Inclusive Playground at Volunteer Park – In 2023, Avon by the Sea received a grant for \$106,000 to install a new playground with inclusionary features and play surface.

Neptune City – Improvements to Adams Field- Phase One and Two – In 2020, Neptune City received a grant for \$250,000 to construct a perimeter trail, field upgrades, and a new multi-purpose field. In 2021, a grant was awarded in the amount of \$200,000 to construct a replacement playground.

Borough of Oceanport – Maria Gatta Park Improvements – In 2023, the Borough of Oceanport received a grant for \$330,000 to install control panels and lighting for three sport fields.



Oceanport



Avon by the Sea



Neptune City

Land Preservation Around the County

The Monmouth County Municipal Land Preservation Incentive Program is assisting municipalities by providing additional funding needed to preserve land for municipal parks and open space. These cooperative projects with the Board of Recreation Commissioners and County Commissioners have proven to be very effective, helping towns purchase important open space with significant additional funding they would not have been able to purchase without County assistance.

The Municipal Land Preservation Incentive Program assists municipalities by providing additional funding needed to preserve land for municipal parks and open space. These are cooperative projects with the Board of Recreation Commissioners and County Commissioners with funding from 50% to 75% of acquisition costs not funded by the State Green Acres program.

Over the past year, the new Municipal Land Preservation Incentive Program has preserved three more properties in Monmouth County communities.

Town	Project	Acres	Total Price	Green Acres Share	County Share	Municipal Share
Oceanport	40 Acres Project	40.63	\$1,150,000	\$0	\$862,500	\$287,500
Middletown	Lincroft Presbyterian Church	15.33	\$5,200,000	\$0	\$3,900,000	\$1,300,000
Wall	Buser Farm	8.4	\$1,700,000	\$0	\$1,275,000	\$425,000
	TOTAL	64.36	\$8,050,000.00	0.00	\$6,037,500.00	\$2,012,500.00

Program project highlights include:

Oceanport – 40 Acres Project – 40.63 acres of forested wetlands and uplands in the center of town preserves the largest contiguous forested area of the Borough. Additional acquisitions in the area are proposed to create and even large park in the core of the Borough.

Middletown – Lincroft Presbyterian Church – 15.33 acres, which include large sections of intact forest, lawn areas, and a church building proposed to be a recreation building, are located on the north side of West Front Street directly opposite an additional 17 acres of recreational fields and forest areas, creating 32 acres of open space with recreation facilities in the Lincroft area.

Wall – Buser Farm – 8.4 acres of open fields adjacent to existing open space and the Edgar Felix bike path which connects the property to the Municipal Complex, Allaire State Park, and downtown Manasquan.

Both the Monmouth County Municipal Park Improvement Grant Program and Monmouth County Municipal Land Preservation Incentive Program are administered by the Monmouth County Park System on behalf of the Board of County Commissioners.

Deep Cut Gardens Home Gardener

152 Red Hill Road
Middletown, NJ 07748

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

THE VALUE OF SHADE TREES

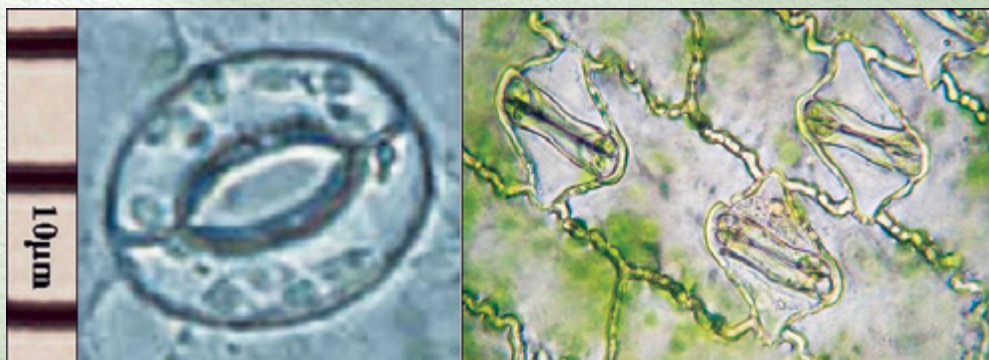
Kate B. Lepis, Ph.D. Horticulturist

If one were to search the internet on the value of trees, many results would focus on calculating the timber value of a woodland. Instead, let's consider the value of living trees – shade trees in particular. These giants can make our neighborhoods more livable and are a means for individuals and communities to mitigate the warming climate that seems all but inevitable. They do this by enhancing the air quality, cooling the microclimate felt around our homes, and purifying and increasing the availability of freshwater. However, they can only do this if we allow them to stand and manage our yards in ways that improve their health and longevity – and by planting more trees.

Trees as Air Purifiers

When we use combustible engines to generate electricity, heat our homes, or travel by car, a suite of air pollutants is released (particulate matter – PM, ozone – O₃, nitrogen dioxide – NO₂, sulfur dioxide – SO₂, and carbon monoxide – CO).¹ When other environmental conditions are right, like a hot and sunny day, these pollutants can impact human health, especially for those with underlying cardiovascular conditions. Weather apps also provide data on air quality. The top triggers measured are the common pollutants resulting from burning fossil fuels.

The air filtration that vegetation provides works in a few ways. Leaves trap particulate matter (PM) with hairs present on the leaf surface. When suspended in the air, these small particles can get deep into our lungs causing inflammation. PM trapped by leaves are instead washed away with the next rainfall. Other gaseous pollutants are absorbed into leaf tissue as plants breathe. Instead of lungs, plants use stomata which are tiny pores on the leaf surface. Plants actively respond to their environment by opening and closing these pores. When the sun is shining, most plants have their stomata open while they breathe in carbon dioxide (CO₂) and other common pollutants. CO₂ is funneled to photosynthesis while the other chemicals are absorbed by plant tissue. The larger the tree the more effective it is at filtration.

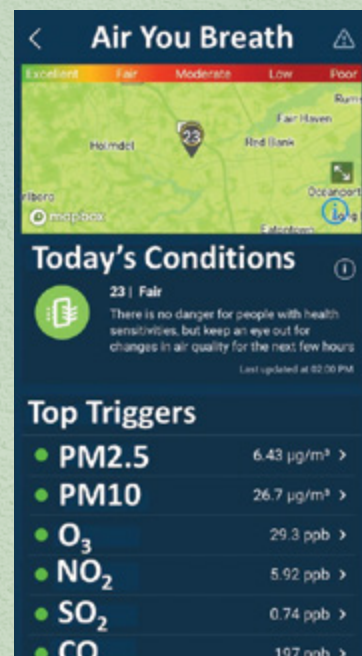


An open stoma (left) and several closed stomata (right).²

Nature's Air Conditioners

The shade that a large tree provides can cool buildings, people, and the surrounding air. Protection from the sun's energy is one facet. Tree canopies absorb nearly 95% of the sun's UV radiation. This not only helps keep things cool under their shade, but UV exposure is also a contributing factor to skin cancer and cataracts.⁴ Blocking solar radiation prevents buildings and other hard surfaces from accumulating heat that radiates back out into the night air, increasing nighttime temperatures.³

Another cooling facet occurs when stomata are open and gas exchange is taking place. As CO₂ moves into the leaf tissue, oxygen (O₂) and water (H₂O) are being released. For most plants, H₂O is constantly evaporating off leaf surfaces throughout the day. This process, called transpiration, cools the leaf tissue in a similar way that our bodies keep cool when sweat evaporates



The CO₂ that photosynthesis scrubs from the atmosphere and stores in woody tissue also helps mitigate future climate change. Large trees can improve air quality indirectly by cooling the buildings blessed with their shade. These structures require less air conditioning which translates into less fuel burned/pollution produced at the powerplant. Strategically planting trees and shrubs near buildings can cut air conditioning costs by 15-35%.³

off our skin. When transpiration occurs on the scale of a large tree or forest canopy, the surrounding air is cooled in a similar way to the relief provided by an air conditioner.

This past summer the air temperature at Deep Cut Gardens was recorded outside, in the sun on June 25, 2026, at 1:45 pm. The photos show by comparison the air temperatures felt in the display greenhouse: the cactus room in full sun, the air-plant room covered with 40% shade cloth, and the houseplant room shaded by a mature willow oak (*Quercus phellos*).



Outside Temperature

The glass of the greenhouse traps heat

even with all Willow oak and greenhouse



the windows open, making the cactus room uncomfortably warm. As you move into the air-plant room it is noticeably cooler with the protection of the shade cloth. The houseplant room is cooler still from the denser shade provided by the oak, but also due to the evaporative cooling that is taking place in the canopy. Next summer, visit the greenhouse on a sunny day and experience it for yourself.

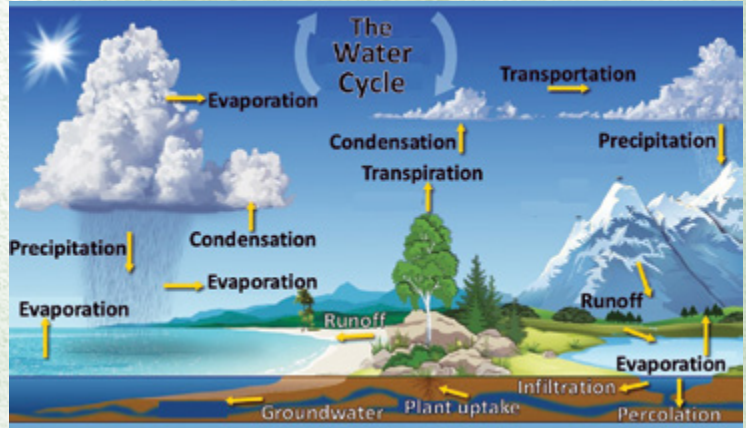
The Water Cycle⁵

This cycle describes the continuous movement of water from the Earth's surface to the atmosphere and back to Earth – renewing the freshwater supply we rely upon. The sun's energy **evaporates** water off the Earth's surface. Moisture also moves into the atmosphere via **transpiration**. Water vapor cools and **condenses** forming clouds. Wind **transports** clouds and the water they contain around the globe. When atmospheric conditions are right **precipitation** falls back to Earth. **Runoff** flows over the land surface during and shortly after a precipitation event. This surface flow feeds streams, rivers, lakes, and



Courtesy of NJ American Water.

wetlands. Precipitation can also **infiltrate** the soil and move underground. Water that **percolates** deeper into the subsoil recharges groundwater aquifers. The land that drains into a body of water is its **watershed**. The Swimming River Reservoir Watershed spans 49.2 mi² (green outline). Areas outlined in red designate smaller watersheds of brooks that feed into this drinking water source. Bodies of water within the same watershed on the surface and below ground are interconnected.



Trees – Vital to Our Freshwater Supply

Forests have a large influence on the water cycle. The groundwater their roots absorb move through their bodies and evaporate out their stomata. When enough trees are doing this together, they have the ability to produce clouds – increasing the chance of rainfall and providing additional cooling via cloud cover. While the ocean also plays a large role in cloud formation and the water cycle, most of the water that falls on land is derived from land – with more than half of that moisture resulting from plant transpiration.⁶



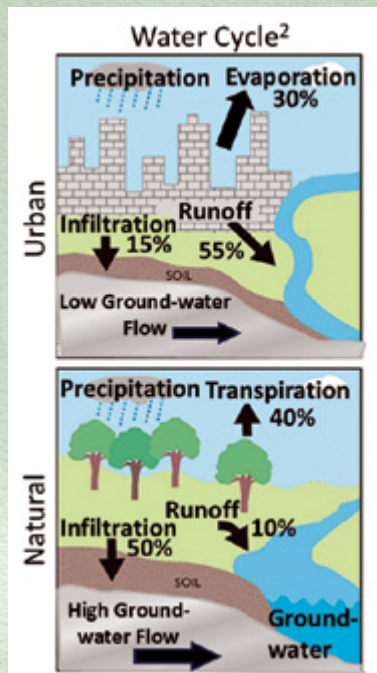
Cloud forest in Costa Rica.²

The relationship between deforestation and diminished rainfall has been demonstrated in the Amazon Rainforest Basin.⁷ The value of trees in promoting productive watersheds does not stop with their cloud forming abilities.

Land covered by trees and shrubs has an increased capacity to store water in the ground. This slows the flow of water through the watershed and lessens the chance of flashfloods and decreases the threat of drought. Multilayered plant growth slows water movement down further. Raindrops that land on a tree canopy drip from

leaves and down bark – significantly reducing the speed and force with which water hits the ground. This increases the chance that water will infiltrate into the ground as opposed to acting as runoff. In the soil, plant roots and other life act as a filtration medium – cleansing the water as it slowly moves downhill to settle in an aquifer, river, lake, or wetland.

Even in a suburban area, the amount of impervious surface is significant: roofs, blacktop, sidewalks. When rain lands there it acts as runoff – traveling across the surface, picking up pollutants as it drains into a storm sewer that usually leads directly to a nearby waterbody.⁸ Urban/suburban runoff degrades our drinking water resources and the health of waterways throughout a watershed. Rain that falls on our lawns has a better chance of infiltrating the soil, but the short stature and shallow root system of this landscape feature limits its effectiveness. If that lawn is treated with fertilizers and pesticides, then it likely behaves more as a pollution source. Rain that falls on tree/shrub beds has the highest chance of moving into the soil. This can be improved further by allowing the leaves that fall in autumn to remain in those beds each year. Leaf litter acts as an additional layer to slow the movement of water and nurture life in the soil. **Living soil acts like a sponge; lifeless dirt does not.**⁹ All these factors explain why so much water behaves as runoff in urban areas and so little infiltrates into the ground compared to natural areas.



The Giving Tree is not just a children’s book. Trees have the capacity to improve the living conditions of our communities in the future – one that is not predicted to look like the past. Consider planting trees in your yard. The true rewards of your actions will be felt by your children and grandchildren. It is a legacy that could last centuries and potentially millennia. An old Chinese proverb says, “The best time to plant a tree is 20 years ago. The second-best time is now.”

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TREE PLANTING BASICS

Kate B. Lepis, Ph.D. Horticulturist

Tree Choice

Early spring or fall are the best times to plant a tree. Species native to our area are more desirable. They are adapted to the environmental conditions of our region and do a much better job of supporting the local ecosystem. For more information about the benefits of native species look to the Green Heritage Home Gardener article in the Spring 2022 issue (available on our website). Regardless of nativity, the right plant in the right spot will greatly increase long term success with minimal care.

Ask these questions when choosing the species that will perform best in your yard.

- **What type of soil is present?** Is it clay, silt, or sand dominated? Each poses their own challenges. Look to the Green Heritage Home Gardener article, Fall 2023, to learn more about soil. Most plant profiles include information about the preferred type of soil.
- **How much light is appropriate?** Plants are categorized by the light levels they flourish in: full sun (6-8 hours per day), partial shade (6-4 hours per day), and full shade (less than four hours per day). Not all light or shade is equal. Morning sun is not as intense as afternoon sun. Some species require afternoon shade. There are also different types of shade – the dappled shade of an existing tree canopy is much different than the dense shade on the north side of a building.
- **What are the water requirements?** This can be described as: dry, medium, or moist soil. The best way to determine a species’ needs is their Wetland Indicator Status. Most native species have been categorized based on the likelihood of occurring naturally in wetlands.¹ Trying to match the water regime on site to species preferences will ensure that, once established, irrigation will not be required.

Young saplings are the best choice of plant material. Large trees are very expensive to purchase and require a team of professionals to install. A large tree that is balled and burlapped or in a pot has a limited root system not big enough to support the canopy. These trees will take years to grow a root system big enough to support the aboveground body. Saplings 1-2 years old are small but can establish themselves sooner (i.e. needing less irrigation) and grow quicker than larger stressed trees. Plus, just about anyone can dig a hole for a young sapling.

Choosing the Spot

Before you dig, contact New Jersey One Call at 811 or 800-272-1000 to get someone to come flag underground utility lines. You will need to determine where your sprinkler lines are. Consider the Arbor Day Foundation's recommendations regarding tree distance from overhead/underground utilities and structures.²

Digging the Hole

Creating a quality hole is as important as starting with a healthy sapling:

- Hole depth should equal the soil line in pot.
- Hole width should be two times as wide as the root ball.



- Amend soil with organic matter.
- Once planted, use excess soil to create a berm circling the tree. This forces water to infiltrate down around the root system where needed.
- Spread a 2-3" layer of mulch around the planting area. Do not allow the mulch to touch the trunk of the tree.
- Protect the tree from deer.



Just Say, "NO!" to Mulch Volcanoes

Mulch volcanos are very common. They might look nice, but they can kill even the biggest trees. If the trunk of your tree goes straight into the mulch like a telephone pole you have conditions that can kill your tree. Instead, allow the root flare (base of the trunk that meets the root system) to remain exposed.



Mulch Volcano



Proper mulching

Excessive mulch causes the formation of girdling roots that grow in a circular fashion instead of out into the soil. Over time, they constrict the flow of water and nutrients as they grow around the trunk. Mulch against the bark can also cause rot.



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If planting larger specimens, look to The Morton Arboretum's tree guide³ for additional advice.



Megan Orens, Park Naturalist

Every few years, forests seem to erupt with seeds. Acorns carpet the ground beneath oaks, pinecones hang heavily from branches, and wildlife feasts on an abundance of food. Then, just as suddenly as they appear, the bounty disappears the following year, leaving trees producing only a fraction of the seeds they did before. This dramatic cycle of boom and bust is known as masting, a remarkable reproductive strategy used by many tree species.



Red oak acorns

Masting is a natural phenomenon that helps trees outsmart seed predators, improve pollination success, and ensure the survival of future generations. Understanding why trees synchronize these massive seed producing events offers an intriguing look into the hidden rhythms that shape forest ecosystems.



Red oak tree

Red oak trees, for example, typically mast every two to five years, with a single tree capable of producing up to 10,000 acorns during a bumper crop, and this phenomenon can occur across whole plant populations within large geographical regions. A red oak in Monmouth County could be dropping large quantities of acorns at roughly the same time as a red oak in a nearby state. The last significant red oak mast in our area occurred in the fall of 2023. Some experts predict that this fall could be another strong acorn year, or we may not see another mast until 2028. Other tree species that experience this include beech, hickory, walnut, maple, ash, and conifers such as Norway spruce and red spruce.

While it is difficult to predict a mast year with complete certainty, environmental cues, particularly weather patterns, play an important role in triggering this synchronized behavior. A warm, dry spring can significantly increase flower production and seed yield by creating ideal conditions for flowering and successful pollination. Trees must invest tremendous amounts of energy to produce these bumper crops. After a mast year, their energy reserves are depleted, and they often enter a period of low seed production while rebuilding the resources needed for the next large-scale event.

Underground fungal networks also play a role in mast events. Many trees form symbiotic relationships with mycorrhizal fungi which connect the roots of multiple trees underground, helping trees absorb water and nutrients, while receiving sugars produced by photosynthesis in return.

Scientists believe these fungal connections may allow trees to share carbon, nutrients, and even chemical signals across a forest which could contribute to synchronized seed production.



Morels emerging after some warm spring rain

By producing massive, synchronized seed crops, trees overwhelm seed predators such as squirrels, mice, chipmunks, raccoons, and birds. While these animals consume large quantities of seeds, they cannot eat them all, leaving thousands untouched to germinate into new saplings. During the years between mast events, the reduced seed supply often causes predator populations to decline, creating less pressure on the next bumper

crop when it arrives. This evolutionary strategy is called predator satiation and can have a dramatic impact on wildlife populations, creating what ecologists sometimes refer to as a “resource pulse.” The sudden abundance of acorns, nuts, seeds, and fruits provides an enormous food supply for many species, often improving survival rates and reproductive success.



Chipmunk at Huber Woods Park

Small mammals such as squirrels, mice, chipmunks, and voles may produce larger litters or experience higher overwinter survival following a mast year. These increases can ripple through the food web, benefiting predators such as foxes, hawks, owls, and other animals that feed on small mammals. White-tailed deer, black bears, wild turkeys, and numerous songbird species also take advantage of the seasonal bounty, building fat reserves that help them survive winter and reproduce successfully the following spring. While these population booms are often temporary, they demonstrate how a single mast event can influence entire ecosystems for years afterward.



Blue Jay

During mast years, trees release enormous quantities of pollen at the same time, flooding the air and increasing the chances of successful fertilization. This strategy is called pollination efficiency. It helps wind-pollinated species overcome distance barriers and ensures that a higher percentage of flowers receive pollen. Rather than expending energy on a steady but less effective production of flowers and pollen each year, trees concentrate their resources into a single, highly productive bloom. Animal-pollinated plants can also benefit from synchronized flowering, as large displays of blooms and scent are more effective at attracting pollinators than scattered blossoms.



Bee pollinating flowering dogwood flowers

Although oaks and other wind pollinated trees are often associated with masting, the phenomenon also occurs in grasses, shrubs, and many other plant species. Masting is not limited to autumn and can occur at different times of the year depending on the species. Some plants produce what is known as soft mast,

which includes fleshy fruits, while others produce hard mast, such as nuts and seeds. Serviceberries, black cherries, blueberries, and elderberries are all examples of soft mast producers. These fruits are typically rich in sugars, vitamins, and carbohydrates, providing an important energy source for wildlife. During migration periods and drought years, soft mast can be especially valuable, supplying both nutrition and moisture when other resources are scarce.



Blueberries starting to ripen

Masting is one of nature’s most fascinating survival strategies. By synchronizing seed production across entire populations, trees increase pollination success, overwhelm seed predators, and improve the odds that future generations will take root. These boom-and-bust cycles influence everything from wildlife populations to forest regeneration, demonstrating how deeply connected the natural world truly is. The next time acorns blanket the forest floor or berry laden branches bend under their weight, it may be more than just a productive year, it may be evidence of a remarkable ecological event unfolding across the landscape.

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GREEN HERITAGE

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Monmouth County Park System

Programs for Groups



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WILL YOUR
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ADVENTURE
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25 Years Later –
Gone But Never
Forgotten

Municipal Parks
And Open Space
Continue To
Improve With
County Grant
Support

The Value Of
Shade Trees

Tree Planting
Basics

The Great Seed
Drop



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