MONMOUTH COUNTY PARK SYSTEM
GREEN HERITAGE
The Newsletter of Monmouth County's Open Space, Parks & Recreation Agency
Vol. 58 No. 3 Fall 2024

SILENT WALKING: A Path To Mindful Tranquility & Solitude

Zack Karvelas, Assistant Public Information Officer

In a world overwhelmed by constant noise and distractions, the practice of silent walking offers a rare opportunity for peace and mindfulness. This simple exercise involves walking without conversation, technology, or external noise, allowing individuals to reconnect with themselves and their surroundings. Silent walking, while seemingly mundane, can be a powerful tool for mental well-being, offering benefits that go beyond the physical act of walking.

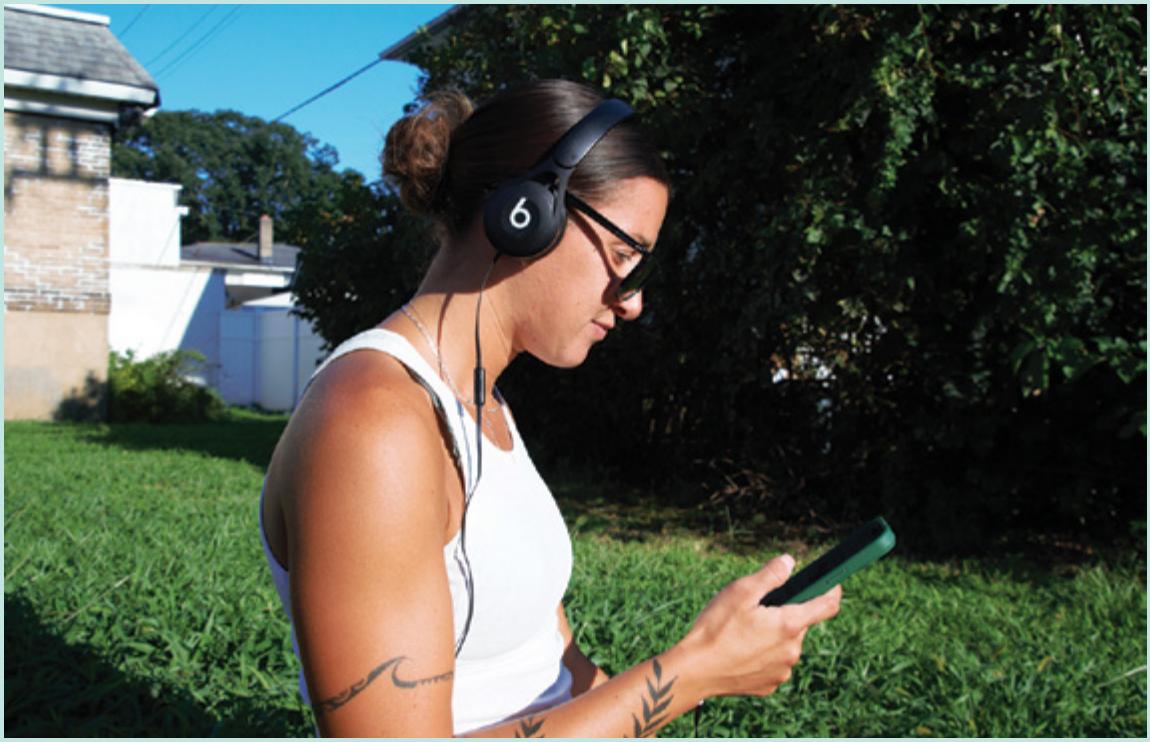
At its core, silent walking is about presence. It's an opportunity to immerse oneself fully in the experience of walking – to feel the ground beneath each step, to observe the subtleties of the environment, and to listen to the rhythms of one's own body. Unlike typical walks, which are usually accompanied by music, podcasts, or conversations, silent walking removes these distractions. This practice encourages heightened awareness of the present moment, fostering a sense of mindfulness that can be elusive in our fast-paced lives.

Research indicates that mindfulness practices, such as silent walking, can significantly reduce symptoms of anxiety and depression, enhancing overall mental well-being. This heightened awareness can lead to a clearer mind, reducing mental clutter and fostering a sense of tranquility. The practice allows walkers to process thoughts and emotions without external pressure, leading to improved mental clarity and emotional balance.

The simple act of walking in silence can also reduce stress levels. Studies show that spending time in natural environments can lower cortisol levels and reduce stress. Engaging with the natural world without distractions allows for a break from the constant barrage of information and demands. These moments of relief provide the nervous system a chance to relax and reset, promoting a sense of calm.

While the primary focus of silent walking is on mental and emotional well-being, the physical benefits should not be overlooked. Walking is a low-impact exercise that promotes cardiovascular health, strengthens muscles, and improves overall fitness. According to the American Heart Association, regular walking can improve heart health, lower blood pressure, and aid in weight management. When combined with the mental benefits of mindfulness, silent walking can contribute to holistic well-being.

Continues next page...



In today's digital age, we are bombarded with an overwhelming array of podcasts, music, and other content, all vying for our attention. Today, more listeners than ever can discover, manage, and enjoy over 100 million tracks, more than six million podcast titles, and 350,000 audiobooks a la carte on just Spotify alone. While access to such a vast selection may seem beneficial, it can be detrimental to our mental health.

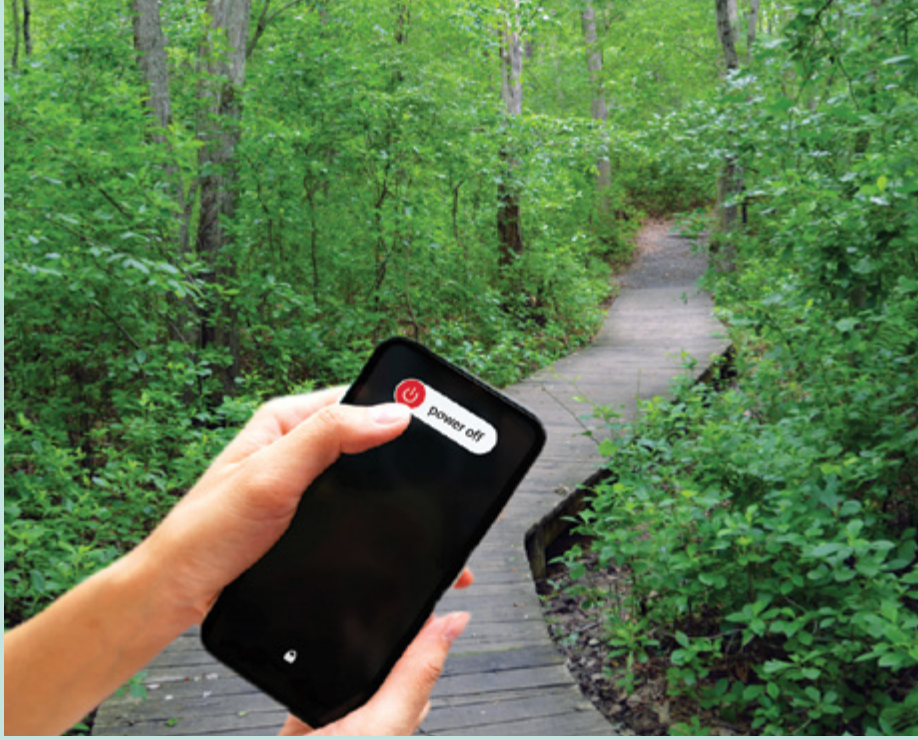
The constant need to fill every moment with audio or visual content leaves little room for silence and introspection. This over-saturation of content keeps our minds perpetually occupied, often leading to mental fatigue and reducing our capacity to focus and reflect. Research shows that time away from screens can improve sleep quality, reduce eye strain, and lower stress levels, contributing to better overall health. Silent walking offers a necessary antidote to this constant noise, allowing us to step back, disconnect, and find balance in an increasingly overwhelming world.

Without the distraction of conversation or technology, silent walkers often find their senses become more accustomed to their surroundings. Research has shown that heightened sensory awareness can enhance the enjoyment of natural environments and promote psychological well-being . The rustle of leaves, the chirping of birds, the feel of the breeze against the skin—all these sensations become more vivid and enriching, leading to a deeper appreciation of nature and the environment.

Silent walking can also stimulate creative thinking and problem-solving. A study published in the *Journal of Experimental Psychology* found that walking boosts creative inspiration, particularly in a natural environment. The unstructured nature of the walk, combined with the lack of external distractions, allows the mind to wander freely. Many people find they come up with new ideas or solutions to problems during these walks, as the quiet environment fosters a conducive space for introspection and creativity.

Incorporating silent walking into your daily routine doesn't require significant changes. Even short walks of 10-15 minutes can provide substantial benefits. Consider starting your day with a silent walk to set a calm and focused tone or use a silent walk as a midday break to recharge and reset. Evening walks can also be a peaceful way to unwind and reflect on the day's events.

Silent walking is a practice of profound simplicity, offering a break from the incessant noise of modern life. By embracing the quiet and immersing oneself in the present moment, individuals can experience a deep sense of mindfulness, clarity, and peace. Whether in a bustling city or a serene natural setting, the practice of silent walking invites us to slow down, breathe, and reconnect with the world around us and within us.



Wondering if the Monmouth County Park System has a program for such an activity? There's only one right answer – YES! Forest Bathing at Freneau Woods is currently offered in spring, fall, and winter. Check out our Parks & Programs Guide for more information.

References:

1. Keng, S. L., Smoski, M. J., & Robins, C. J. (2011). Effects of mindfulness on psychological health: A review of empirical studies. *Clinical Psychology Review, 31*(6), 1041-1056.
2. Berman, M. G., Jonides, J., & Kaplan, S. (2008). The cognitive benefits of interacting with nature. *Psychological Science, 19*(12), 1207-1212.
3. American Heart Association. (2018). Walking: Your Steps to Health. Retrieved from [American Heart Association](https://www.heart.org/en/healthy-living/fitness/walking).
4. Przybylski, A. K., & Weinstein, N. (2017). Digital screen time limits and young children's psychological well-being: Evidence from a population-based study. *Child Development, 88*(1), 290-298.
5. Kaplan, R., & Kaplan, S. (1989). *The Experience of Nature: A Psychological Perspective*. Cambridge University Press.
6. Oppezzo, M., & Schwartz, D. L. (2014). Give your ideas some legs: The positive effect of walking on creative thinking. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 40*(4), 1142-1152.

Municipal Open Space Grant Programs Continue To Fund Park Improvements And Protect Open Space

Paul Gleitz, P.P. AICP, Supervisor of Land Preservation & Planning

In 2023, through the Monmouth County Municipal Park Improvement Grant Program, the Monmouth County Board of Commissioners awarded $6,503,000 in park improvement grant funds to 31 different municipalities in the county. The program continues to demonstrate the County Commissioners' support of local parks and recreation projects throughout the county.

A total of 34 applications were received requesting an aggregate total of $8,101,000. Another $6 million in grant funds, combined with $503,000 of reprogrammed grant funds, allowed the county to award a total of $6,503,000 million in grant funding.

The municipalities awarded funding through the 2023 grant round included:

TOWN	PROJECT	AWARD
Atlantic Highlands	Harbor Skate Park Improvements	$200,000
Tinton Falls	Wardell Park Restroom Building	$195,000
Colts Neck	Five Points Park Improvements	$100,000
Keyport	Cedar Street Park Improvements	$100,000
West Long Branch	Angelo Valenzano Park & Franklin Lake Park	$100,000
Aberdeen	Northland Park Improvements	$343,000
Roosevelt	Restoration of FDR Memorial Amphitheater	$330,000
Manasquan	Winterstella Park Playground Improvements	$174,000
Eatontown	Fresh Start 80 Acre Park	$151,000
Middletown	Bodman Park Field Improvements	$342,000
Hazlet	New Indoor Recreation Facility with Multipurpose Courts	$343,000
Wall	Permanent Bathroom Facilities at Orchard Park	$220,000
Matawan	Clinton Street Park Improvements	$192,000
Rumson	Meadow Ridge Park Improvements	$331,000
Oceanport	Maria Gatta Park Lighting	$330,000
Allentown	Heritage Dog Park, Sarah Barnes Park & Dr. Farmer's Park	$316,000
Avon-by-the-Sea	Inclusive Playground Project	$115,000
Monmouth Beach	Shorelands Park Improvements	$150,000
Sea Girt	Memorial Park Improvements	$150,000
Spring Lake	Marucci Memorial Park Improvements	$170,000
Lake Como	Behrman Park Improvements	$200,000
Township of Neptune	Welsh Farms Park Improvements	$326,000
Belmar	Dempsey Park Improvements	$198,000
Bradley Beach	Recreation Center Park Improvements	$265,000
Little Silver	Sickles Park Improvements - Phase II	$90,000
Asbury Park	Deal Lake Park Improvements	$225,000
Marlboro	Tennant Road Walking Trail	$172,000
Manalapan	Thompson Grove Trails Project	$54,000
Holmdel	Bayonet Farm Park Improvements	$272,000
Keansburg	Friendship Park Improvements	$80,000
Upper Freehold	Byron Johnson Recreation Park Improvements	$196,000
TOTAL		**$6,503,000**

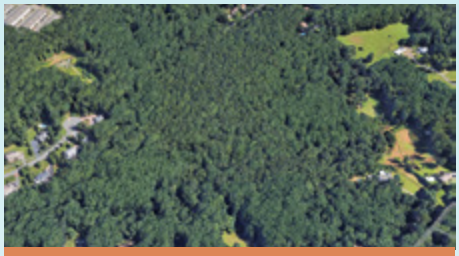
Since the inception of the program, 51 of Monmouth County's 53 municipalities have been awarded $54 million for local parks and acquisition projects. As of the 2023 grant round, 322 grants have been awarded with $32 million having been paid to the municipalities in reimbursements for successful projects. Unallocated funds due to incomplete projects are returned to the fund and reprogrammed for new projects.

Significant Land Preservation

The Monmouth County Municipal Land Preservation Incentive Program has been assisting municipalities by providing additional funding needed to preserve lands for municipal parks and open space. These cooperative projects with the Board of Recreation Commissioners and County Commissioners provide funding with 50%-75% of acquisition costs not funded by the State Green Acres Program.

Marlboro – The first project was for the acquisition of ±15.66 acres of forested land known as the American Dream Project. The county contributed $312,500, with the New Jersey Green Acres Program contributing $333,750, and the Township of Marlboro contributing $104,000 towards the purchase price. The property is adjacent to existing Marlboro open space and is within the Pleasant Valley Cooperative Project Area as described in the 2019 Monmouth County Open Space Plan.

Millstone – The Monmouth Conservation Foundation assisted in the acquisition of ±125.33 acres of agricultural fields and forested land known as the Spring Road Project. The county contributed $655,000, with the New Jersey Green Acres Program contributing $790,193, the Monmouth Conservation Foundation contributing $500,000, and the Township of Millstone contributing $655,000 towards the purchase price. The property is adjacent to existing township open space and will add significant acreage to Millstone Park, allowing for future development of recreation facilities, hiking trails, and habitat preservation.



Marlboro - American Dream - Aerial

Millstone - Spring Road - Aerial

Fair Haven - Fair Haven Road

Holmdel - National Historic Landmark (NHL) Horn Antenna

Fair Haven – Another successful project assisted by the Monmouth Conservation Foundation was the acquisition of ±0.76 acres on the Navesink River known as 21 Fair Haven Road. The county contributed $1,006,875, with the New Jersey Green Acres Program contributing $447,500, and the Borough of Fair Haven contributing $335,625 towards the purchase price. The property is adjacent to existing borough open space and will add significant access to the Navesink River, allowing for fishing, crabbing, and small boat access for the benefit of all county residents.

Holmdel – One of the most interesting projects under the new program is the acquisition of ±35 acres which is believed to constitute the highest point in Monmouth County. The property is noteworthy as it houses the Horn Antenna, a large microwave horn antenna once used as a satellite communication antenna and radio telescope during the 1960s at Bell Telephone Laboratories. Notably, former Bell Labs physicists Arno Penzias and Robert Wilson utilized the Horn Antenna to detect the cosmic microwave background radiation that provided evidence of the Big Bang. In 1978, Wilson and Penzias earned a Nobel Prize in Physics for this work. In 1989, the Horn Antenna was designated a National Historic Landmark in the National Register of Historic Places and later listed on the New Jersey Register of Historic Places in 1993. The county is contributing $3,562,500 and the Township of Holmdel is contributing $1,187,500 for the purchase of the site. The county will retain a Deed of Conservation, Historic Preservation, and Public Access Easement and will enter a Memorandum of Understanding with the township regarding Historic Preservation and Planning requirements.

Monmouth Beach - This recent project is for the acquisition of ±0.34 acres known as 11 Robbins Street. The county will contribute $843,750, with the State of New Jersey Green Acres Program contributing $375,000, and the Borough of Monmouth Beach contributing $281,250 towards the purchase price. The property is within walking distance of the Monmouth Beach Municipal Building and existing open space and will provide an opportunity for a Memorial Park to honor local veterans and first responders while serving as a gathering space for municipal events.

Additional projects are underway in Aberdeen, Atlantic Highlands, Howell, Middletown, Shrewsbury, Matawan, and Oceanport. So far, through the projects listed above, the Municipal Land Preservation Incentive Program has preserved 205.9 acres of land throughout Monmouth County valued at $14,490,250 by leveraging county funding of $7,261,875 along with State Green Acres funding of $3,121,442, local funding of $2,856,932, and landowner and non-profit contributions of $1,250,000.

Notable Parks Development Projects Completed This Year

Oceanport – Community Center Park – In 2020, Oceanport received a grant for $150,000 to make improvements to Community Center Park. The project included the paving and construction of a parking area along Port Au Peck Avenue, replacement of chain link fence around tennis courts, regrading of a baseball infield, baseball fencing replacement, ADA accessible bleachers, two team benches, sidewalks, and benches.

Lake Como – Lake Como Trail – In 2020, Lake Como received a grant for $200,000 to make improvements to the permitter trail around Lake Como. The project included shoreline restoration, coir log and coir log plantings, walking path construction, 16 benches with concrete pads, 10 trash receptacles, and the installation of shoreline vegetation.

Oceanport Community Center Park

Lake Como Trail Improvements

Deep Cut Gardens
Home Gardener
152 Red Hill Road
Middletown, NJ 07748
GS Parkway Exit 114, to Red Hill Road
732-671-6050

The Cultural Significance Of Flowers And The Gardens They Grace

Stephanie Horton, Recreation Leader

The oldest surviving literary work on Earth was written nearly 4,000 years ago in southern Mesopotamia. The Epic of Gilgamesh was unearthed in 1849 as an artifact from ancient Sumer (now modern-day south-central Iraq). The epic poem was scripted in a graphic alphabet relying on carved wedges and angles known as cuneiform, gouged on clay tablets. This work, written in the earliest known alphabet, by an unknown author for an unknown audience, describes the story of King Gilgamesh's attempt to find immortality in the form of a plant at the bottom of a freshwater ocean[1]. According to the story, when Gilgamesh finds and picks this flower of immortality, it is taken by a hungry snake.

An artist's depiction of Gilgamesh diving for the flower of life.

Even the earliest form of literature couldn't resist inspiration from the allure of flowers and the power they hold. This ancient epic poem is just one example of how culture has been shaped and inspired by plant life. Through time and across various cultures, humans have acquired a positive emotional association with flowers and other plants[2]. To better understand why each culture holds significance to plant life, one must better understand how plants have come to entangle us in their story – starting from the beginning.

Flowers can be thought of as efficient and effective advertisers. Flowers have evolved over many eons to better attract pollinators so they can increase genetic diversity, thus ensuring their survival. The first known flowers appeared about 125-130 million years ago[1]. Thoughts of megaflora flourishing in the Cretaceous period with giant petals, dripping with nectar have tempted many scientists through the years; however, that is not an accurate depiction of ancient flowering plants. In fact, the first flowers were very small, on average measuring between 0.04 to 0.23 inches in diameter.

Fossilized Archaefructus liaoningensis, the earliest known flowering plant.

Over millions of years, flowers got bigger, brighter, showier, and more fragrant. Before flowering plants arrived, the planet was greened by algae, liverworts, and mosses about 472 million years ago. These plants started in mat-like forms, close to the earth. They began growing taller to outcompete each other for sunlight and eventually grew into plants resembling modern-day ferns and horsetails. It wasn't until 419 million years ago that plants would start to release spores for reproduction purposes. Since the continental planet was still formed as Pangea, these reproductive spores carried across the continents and terraformed earth. It was at this time that our distant vertebrate ancestors were just starting their terrestrial journey among the leaves of these ancient plants. Without the reproductive success of plants, the planet would not have been able to sustain animal life. That fact, of course, remains true today.

A palm frond fossil found in Colorado, dating back to the Cretaceous period.

Ancient civilizations beyond the Assyrian text of Gilgamesh reveal through their artifacts how important gardens have always been to human connection with plant life. Archeologists have unearthed numerous accounts of the role flowers and gardens played in ancient Egypt. The tomb walls of King Thutmose I (1528 – 1510 BC) were carved with hieroglyphic accounts of his garden. Although not every plant of his Theban garden was represented, we know from ancient hieroglyphic text that his garden contained 170 date palms, 120 doum palms, 73 sycamore figs, 31 persea trees (evergreen genus containing species like the avocado), and two moringa trees along with many others. The date palm is associated with Re, the sun god, and the doum palm is associated with Thoth, the moon god[3]. These gods were symbols of rebirth and nourishment to Egyptians at this time. This means ancient gardens were not only beautiful to admire, but they were also an earthly connection to spiritual and religious beliefs. Persea trees and sycamore figs were not native to Egypt, but instead brought in by the wealthy to enhance, diversify and beautify their gardens. During this period in ancient Thebes, gardens were often the dominant structures surrounding ponds and encased in a stone wall. It should be noted that these gardens were also only able to be planted and maintained by the very wealthy. Gardens were often restricted to places like royal palaces, religious temples, or even tombs. Caring for a garden in a desert climate means many enslaved individuals spent all day watering and tending to the trees, flowers, and vegetables.

Scene of a gardener using a shaduf to water a garden, from the Tomb of Ipuy at Deir-el-Medina.

Half a world away from the Egyptians were the Chinese who were making significant progress in horticulture at the same time. Some of the most cherished flowers in Chinese gardens in antiquity were chrysanthemums, gardenias, forsythias, magnolias, rhododendrons, roses, and wisterias. While flowers like these and flowering trees like the peach, plum, and tree peony were flourishing in China, the West had little more than the rose in their gardens[1]. As early as the Chou Dynasty (around 800 – 1000 BC) gardens were constructed and admired less for impressive blooms, but for their meditative qualities. Even nonflowering plants were featured prominently and admired for their beauty. The goal of these gardens was to be surrounded by plant life. They were intended to refresh visitors and allow for a retreat into nature for restoration. Garden favorite flowers often held meaning significant to Chinese art and literature. Peonies represented springtime, health, distinction, and even passing one's school exams. The flowering plum meant friendship and happiness. Fruit trees from the Mediterranean region (cherries, pears, peaches, plums) were first imported and developed by the Chinese. They were brought on caravans along the 4,000-mile-long Silk Road during the Han Dynasty (206 BC – AD 220). Once these trees were only used for making furniture, but Chinese horticulturists saw their potential to become well-loved ornamentals.

Painting of scholars in a garden by Chen Hongshou.

Another culture well-known for their love of flowers and continuing use of flowers in modern tradition is the Aztecs. The Aztec Empire or the Mexica Triple Alliance (c. 1300 – 1521) was a political pact between three neighboring city-states within what is now modern-day Central Mexico. The step-pyramids, such as the Aztec Templo Mayor in modern-day Mexico City, stand as a reminder of Aztec culture. They also left behind lyric poetry describing the flowers they cultivated. True marigolds (*Tagetes spp.*), dahlias (*Dahlia spp.*), tube roses (*Polianthes spp.*), zinnias (*Zinnia*) and other subtropical blossoms were all highly regarded in Aztec poetry.

In mid-August 1521, Spanish conquistadors took the last Aztec emperor, Moctezuma II, prisoner and placed an abrupt end to the Aztec regime. After storming the capital city of Tenochtitlán, the Spaniards were astonished by the unique garden paradise. Canals, ponds, streams, grounds planted with fruits trees, many shrubs, and fragrant flowers were together described as "wonderful for its pleasantness and its extent" by the Spanish invader Hernán Cortés[1]. The neighboring city-state of Texcoco was known for elaborate mazes, fountains, scented blooms, square beds full of marigolds, and plantings including over two thousand pines. It was gardens like these which paved the way for Spanish gardens which would later influence the garden design of Europe and India.

Spanish artist Diego Rivera's depiction of the Aztec city Tenochtitlán.

Continues next page...

Mexican culture is still deeply invested in the culinary and medicinal properties of their endemic flowers. In fact, a recent survey was conducted to investigate current knowledge and edible flower consumption habits of Mexican citizens. This survey involved people from all 32 Mexican states. Researchers found that 91% of people knew about edible flowers endemic to Mexico[4]. In rural areas, people were more likely to identify the squash, agave, and coral tree flowers, whereas folks in more urban areas recognized the Mexican marigold for being edible. This could be due to a rise in contemporary marigold cuisine (teas, ice creams, soups, etc.). Of course, the marigold is highly recognized for its ornamental and spiritual significance.

Dating back from pre-Hispanic Aztec tradition to today, the annual Day of the Dead or Día de los Muertos holiday in Mexico or in Mexican communities anoints altars for loved ones who have passed away with the vibrant and distinctive marigold. These altars give offerings to the dead which can include photos, candles, tequila or mezcal, food, skulls, and the marigold or cempasúchil – the Aztec name of this Mexico native[5]. The marigold is used for its vibrant orange color and distinctive musky odor which is said to guide the spirits of the dead back home. Every year, the night of November 1 is marked with the thick, musky scent of this flower which lights up the night for more than one global cultural tradition.

A colorful Día de los Muertos altar, or ofrenda, with marigolds, food, and candles.

The marigold is native to Mexico, but has become a global floral phenomenon since Spanish conquerors brought them back home in the mid-16th century. They have become naturalized in both tropical and subtropical regions[6]. Now, they are used around the world in religious ceremonies and cultural traditions. In India, marigolds are used as temple offerings, to beautify pooja places, and as marriage decorations.

For most Hindus, cremation is a mandatory practice. Traditionally, after cremating the deceased, the ashes are scattered on the sacred Ganges River or at sea. Mourners will also place bowls with ash remains and flowers, sometimes scattering flowers into the river as part of the ritual[1]. This is not unlike the tradition of bringing flowers to a loved one's grave in a western-style cemetery.

In India, marigold garlands are made for ceremonies and offerings.

Victorian practices are the precursor to the U.S. funeral industry's relationship with flowers. Before embalming practices. Strongly scented white lilies (derived from Lilium speciosum) were used to mask the scent of death during long, elaborate funeral ceremonies. There were also folk tales in the Victorian era marked with flowers. They said that if someone lived a proper life, then colorful flowers would grow from their grave[1].

Flowers have existed alongside humanity to inspire, heal, and even light the way in death. Their existence is linked with ours in a very significant way. We have evolved alongside each other and have grown more complex in our relationship. With each passing day, it seems as though we are always uncovering new uses for the flowers we have known for millennia. It makes you wonder what else we have left to discover about the flowers we think we know well. It also makes you consider plant life as the ultimate cultural equalizer. We may all practice different traditions, but those traditions are still rooted in the soil we share.

References:

1. Buchmann, S. L. (2015). The reason for flowers their history, culture, biology, and how they change our lives. New York ; London ; Toronto Scribner February.

2. Huss, E., Yosef, K. B., & Zaccai, M. (2017). The Meaning of Flowers: A Cultural and Perceptual Exploration of Ornamental Flowers. The Open Psychology Journal, 10(1), 140–153. https://doi.org/10.2174/1874350101710010140

3. Servat-Fredericq, M. (2024). Gardens in Ancient Egypt. National Museums Liverpool. https://www.liverpoolmuseums.org.uk/stories/gardens-ancient-egypt

4. Stanislav Mulík, María Hernández-Carrión, Pacheco-Pantoja, S. E., & Ozuna, C. (2024). Endemic edible flowers in the Mexican diet: Understanding people's knowledge, consumption, and experience. Future Foods, 9, 100374–100374. https://doi.org/10.1016/j.fufo.2024.100374

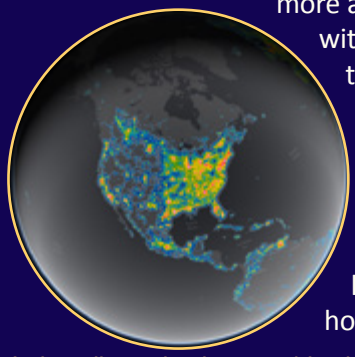
5. Romo, V. (2021, October 30). Why marigolds, or cempasúchil, are the iconic flower of Día de los Muertos. NPR. https://www.npr.org/2021/10/30/1050726374/why-marigolds-or-cempasuchil-are-the-iconic-flower-of-dia-de-los-muertos

6. Mir, R. A., Ahanger, M. A., & Agarwal, R. M. (2019). Marigold: From Mandap to Medicine and from Ornamentation to Remediation. American Journal of Plant Sciences, 10(02), 309–338. https://doi.org/10.4236/ajps.2019.102024

Minimizing The Impacts Of Light Pollution In The Garden

Kate B. Lepis, Ph.D., Horticulturist

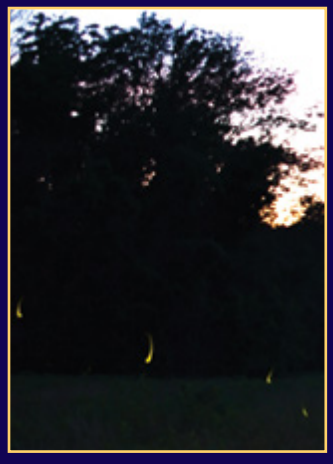
Using artificial lighting at night is essential. It has freed us from the limitation of darkness and our ill-equipped night vision imposed on our ancestors. Artificial lighting has enriched our lives for generations, but with urban sprawl and the use of brighter LED technologies the negative impacts of outdoor artificial lighting at night (ALAN) are more apparent. In the U.S., 80% live with light pollution levels that thoughts of the Milky Way are more of a fairytale than something to enjoy on a clear night. Excessive exposure to ALAN can have negative impacts on human health-like symptoms associated low hormonal levels of melatonin[2].



Light pollution levels across North America. Red to white indicate the highest intensities.[1]

Like humans, wildlife exposed to ALAN can interrupt day/night rhythms and function as a physical barrier with some species avoiding well-lit areas altogether. Our neighbor the little brown bat is one such species. Even at 75 meters (82 yards) away, residential-scale LED flood lights are bright enough to reduce feeding activity[4]. They avoid well-lit areas to reduce the risk of becoming a meal themselves. Light pollution can degrade an area that otherwise would serve as a great habitat. Their population has dropped 90% since 2006 after a European fungus (White-nose Syndrome) was introduced to caves in the Northeast[4]. They need all the help they can get.

Little Brown Bat (*Myotis lucifugus*).[3]



Lightning bugs at Tatum Park.

Lightning bugs are also threatened by increases in light pollution. ALAN can impact their ability to communicate using their amazing bioluminescence. Each species has a different light pattern which is how they find a mate. Certain females mimic the light pattern of other species and instead of mating with the lured male feed on him instead. Those species sensitive to ALAN will not bioluminesce if pollution is too great - decreasing their chances of reproducing or attracting a meal[7]. Other insects, like moths, that incessantly fly around a light source, fail to feed or mate and often reach exhaustion. Their importance as a food source for others cannot be ignored. If moth populations decline those who feed on them will too.

Migrating birds are also in the crosshairs. Songbirds migrate at night to avoid predation. Nights with low cloud cover cause low flying birds to get disoriented by the light emitted by dense urban areas. Like moths they are drawn to the light and encircle sources endlessly using up precious energy reserves and greatly increasing their chances of a deadly building collision.

New York's 9/11 Tribute in Lights has presented a unique threat to migrating birds. Volunteers monitor the shafts of light; when more than 1,000 birds are counted circling in the light columns, they shut them off for 20 minutes, so the birds move on. When you're viewing the Tribute in Lights and you notice them go off for brief periods, it's important to know that the operators are mitigating the disruption to hundreds of birds' natural migration.

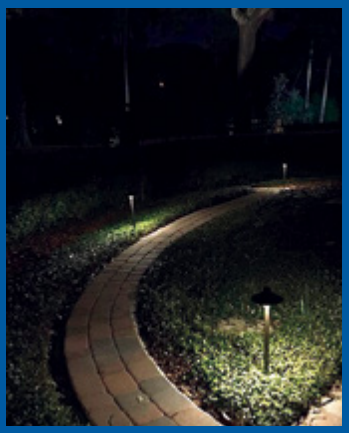
The World Trade Center Tribute in Light Memorial. The white flecks are birds trapped within the light source.[3]

Minimize Your Impact[8]:

Turn off unnecessary lighting. Decorative landscape lighting can be illuminated on special occasions or used more in winter when impacts are minimal.

Use motion censored lights that come on only when needed. Angle flood lights down and install light shields to keep light focused where it's needed.

Look for LED bulbs in longer wavelengths (amber/yellow) they reflect and scatter less than shortwave light (blue).



Example of landscape lighting that minimizes the negative impacts, but still lights the way[3].

References:

[1]NOAA. 2016. Milky Way Now Hidden from a 3rd of Humanity. https://www.noaa.gov/stories/milky-way-now-hidden-from-third-of-humanity

[2]National Geographic. Light Pollution. https://education.nationalgeographic.org/resource/light-pollution/

[3]Wikimedia Commons. https://creativecommons.org/licenses/by-sa/2.0/deed.en; https://creativecommons.org/licenses/by/4.0/deed.en

[4]Seewagen CL, et al., 2023. Far-reaching displacement effects of artificial light at night in a North American bat community. Global Ecology and Conservation: 48, e02729 https://www.sciencedirect.com/science/article/pii/S2351989423003645#

[5]Sachs, JS. 2023. Needing the Night. Wildlife: National Wildlife Federation. Summer: 22-29.

[6]Fallon et al., 2022. State of the Fireflies of US &Canada. Xerces Society.

[7]Barnard, A. 2019. The 9/11 Tribute Lights Are Endangering 160,000 Birds a Year. NYTimes. https://www.nytimes.com/2019/09/09/nyregion/911-tribute-birds.html

[8]Patel K. et al., 2024. LED lights are meant to save energy. They're creating glaring problems. The Washington Post. https://www.washingtonpost.com/climate-environment/interactive/2023/glaring-problem-how-led-lights-worsen-light-pollution/

Nature Corner

NATURAL ANIMAL BEHAVIORS

Megan Orens, Park Naturalist

Animals exhibit a fascinating array of behaviors shaped by both innate instincts and learned experiences. These behaviors not only aid in survival and reproduction but also highlight the intricate interplay between genetics and the environment. Innate behaviors are closely controlled by passed down genes and have little to no environmental influence. They are genetically programmed and do not require prior exposure, and typically exhibit uniformity within a species, whereas learned behaviors occur because of an experience or practice.

One of the most well-known, and fascinating examples of an innate behavior, is the monarch butterfly (*Danaus plexippus*) migration. They can sense and respond to environmental cues. As summer transitions into fall, decreasing daylight and falling temperatures trigger physiological changes in the butterflies. This hormonal shift prompts them to prepare for migration, including increased fat storage to fuel their long journey. Humpback whales (*Megaptera novaeangliae*) are another animal that makes a remarkable migration, often covering thousands of miles between feeding and breeding grounds. These migrations are guided by a combination of preprogrammed navigational abilities, and they use environmental cues such as Earth's magnetic field and ocean currents.

Monarch butterfly on a purple coneflower.

Turtles, like the Eastern box turtle (*Terrapene carolina carolina*) on the other hand, are not always an animal we think of when talking about innate behaviors. Turtles need to survive on their own from the moment they are born and are not cared for by their parents. When a box turtle is born it will find a place to hide under the leaf litter and eat mostly insects for the first three years of its life. Other species, like the sea turtle, will use the moonlight when they first hatch to guide them to the ocean. This is an instinct they are born with and automatically know what to do. Humpback whales are not born with that same instinct. The calves rely on their mothers for most of the first year of their life. The mother humpback will need to feed, protect, and teach her calf important skills (breaching, tail slapping, and hunting).

Male box turtle taking a rest.

Hibernation is another common innate behavior, a prolonged state of dormancy that certain animals enter during specific seasons, typically winter, when food is scarce and environmental conditions are harsh. Bats, bears, and hummingbirds are just a few animals that need to hibernate to survive but are not all true hibernators. Some species of bats, like the little brown bat (*Myotis lucifugus*), are true hibernators, characterized by long periods where animals significantly reduce their metabolic rate and body temperature. Commonly bears are used as the textbook example for hibernation, but in New Jersey, black bears (*Ursus americanus*) are not true hibernators and can be active all year long. Instead, they enter a state of winter dormancy called torpor. During this state they metabolize their body fat to produce the calories and water they need but may also emerge from their dens on a bright, sunny day in the middle of winter to look for food.

Little brown bat sleeping.

Green frog sunning itself by a pond.

Similar to torpor, amphibians like the green frog (*Rana clamitans melanota*) will go through brumation during the colder months and also have the ability to wake up during the winter if the weather gets warm enough. This can be dangerous for cold-blooded animals, giving them a false sense of spring-like weather, and may not be able to survive extreme changes in temperature. Ruby throated hummingbirds (*Archilochus colubris*) also use torpor to protect themselves from low overnight temperatures. They fall into a deep or shallow sleep state which varies between a few hours or the entire night and can begin coming back from it or "waking up" just minutes before sunrise. These instinctive behaviors are essential for the survival of many animals, but unfortunately with temperatures rising we may see a negative effect on the population of some of our more environmentally sensitive animals.

Ruby throated hummingbird at a feeder at the Manasquan Reservoir Environmental Center.

While some behaviors come programmed, some need to be learned. The red fox (*Vulpes vulpes*) is commonly found throughout Monmouth County and exhibits learned behaviors in hunting and foraging. They adapt their strategies based on local prey availability and environmental conditions. Around three months, fox kits will begin to eat solid food and start to learn hunting techniques alongside their parents, though some aspects of hunting come naturally through playing with their littermates. They can hone their hunting skills by engaging in tug-o-war and pouncing on one another.

Fox foraging early in the morning at Huber Woods Park.

Many bird species will also learn complex behaviors like migration routes and mating displays from older individuals or learning to fly through trial and error. As young birds learn to fly, they commonly stay on the ground hopping around, using camouflage to avoid predators while they await their parents to return and feed them. Eventually they learn how to fly and how to imitate other birds to learn how to find food on their own.

Though piping plover chicks are ready to walk and feed themselves within only a few hours of hatching, they remain under the watchful care of their parents.

Looking into innate and learned behaviors in animals provides insights into their ecological role and natural abilities. By learning more about the species that live in Monmouth County, we gain an understanding of their unique behaviors and why they do what they do. Many animals are born with the ability to survive on their own while others may need help from their parents. So, it is important to remember to always observe from a distance and you might have the chance to see something special like a turtle laying eggs, a bird being fed by its parents, or a fox looking for food.

References:
Geiser, F. (2013). Hibernation. CB/Current Biology, 23(5), R188–R193. https://doi.org/10.1016/j.cub.2013.01.062
Nebel, S. (2010). Animal Migration. Nature Education Knowledge. https://www.nature.com/scitable/knowledge/library/animal-migration-13259533/

GREEN HERITAGE

805 Newman Springs Road, Lincroft, NJ 07738-1695

Volume 58, No. 3 Fall 2024 24475 9/24

Volunteers are the heart and spirit of the Park System.

Make a positive impact on your community by volunteering with us in the parks!

To register as a volunteer, scan the QR code and fill out an application. For more information on becoming a Monmouth County Park System volunteer, contact volunteer@monmouthcountyparks.com or call 732-842-4000, ext. 4283.

In This Issue: