



GREEN HERITAGE

The Newsletter of Monmouth County's Open Space, Parks & Recreation Agency

Vol. 43 No. 2 Summer 2009

We Asked, You Answered!

91% of Monmouth County residents recently surveyed said they visited a Monmouth County park in the last 12 months. Have you? Learn more about how your neighbors have been using the county parks on page 4.

A flowering meadow at Weltz Park, Ocean Township

Perspectives On Open Space: What's In A Name?

Have you ever really thought about what the term "open space" means? For some, it is large, pristine, undeveloped parcels of land protected from development or conserved as a water resource or animal habitat. Others have a more modest definition—any parcel of land without buildings on it, such as a local playground or patch of forest.

Land has also been considered open space for aesthetic reasons. If it is "green" (has trees, plants and grass, etc), is clear of any obstructing views and/or is undeveloped, then it qualifies—whether or not you can recreate on it. The key to this definition is that it has to offer visual relief from modern or man-made structures

such as buildings, roads, parking lots, etc. So, then...does that forested strip of land between your neighborhood and the next qualify as open space? What about a grassy drainage basin for storm water runoff? Is farmland open space?

If wide open spaces or thick healthy forests provide an opportunity to visually get away from it all—then what about noise? *Continues next page*

From large tracts of pristine, undeveloped land to your neighborhood playground—what constitutes open space?

Sometimes, people define open space by how the land is used, specifically if it is used for recreation. If you can run around and breathe fresh air in it, play frisbee or walk your dog on it—then it's open space. By this definition, would you consider a skatepark to be open space? What if the skatepark were located alongside the beach? What about a paved trail around a condo community? A basketball court?



The Park System's Skateplex is located right next to the beach at Seven Presidents Oceanfront Park in Long Branch. Does that make it any more or less likely to be considered open space?

Monmouth County Board of Chosen Freeholders


Barbara J. McMorrow, Director
John D'Amico, Deputy Director
Robert D. Clifton
Lillian G. Burry
Amy A. Mallet

Monmouth County Board of Recreation Commissioners

Edward J. Loud, Chairman
Frederick C. Kniesler,
Vice Chairman
Michael G. Harmon
Fred J. Rummel
Violeta Peters
N. Britt Raynor
Kevin Mandeville
Thomas E. Hennessy, Jr.
Michael W. Brim
James J. Truncer,
Secretary-Director

Green Heritage Staff

Editor/Writer: Lisa Bonelli
Photographer:
Maribeth Gardner
Graphics: Mary Ann Goodwin
Questions/Comments/
Subscriptions/Cancellations:
732-842-4000x4336;
lbonelli@
www.monmouthcountyparks.com

 Printed on recycled paper
with eco-friendly ink.

"A perfect summer day is when the sun is shining, the breeze is blowing, the birds are singing, and the lawn mower is broken."

--James Dent



Top: Aside from a few bridge underpasses as you paddle southeast, the Park System's Manasquan River Greenway in Howell is a beautifully quiet ride.

Left: This hayfield and other farmland in and around Holmdel has helped create the character of this community.

Right: The Park System leases some land, like this plot in Perrineville Lake Park in Millstone, to local farmers.

Does a parcel of land need to be large enough so that when you enter it, you are effectively "cut off" from the noisy outside world? Should the sound of cars speeding by or the smell of exhaust disqualify a parcel of land from being considered open space? Does it have to be quiet and visually refreshing, or is one of these good enough? And, is defining open space according to your senses a sensible approach?

WHAT ARE YOUR THOUGHTS ON OPEN SPACE?

Maybe, after considering these questions, you've decided your definition of open space depends on certain conditions (how much other open space is nearby, if there is a quiet place to walk, etc.) Perhaps your definition has changed over

time. Have your requirements for what qualifies as open space recently expanded or contracted? Or, perhaps you never thought about open space at all until now.

If you are a long time Monmouth County resident and voter, however, chances are you have thought about open space. At the county level, there have been four voter referendums on open space in just the last 22 years.

Whatever the definition, Monmouth County voters have demonstrated time and time again that they like open space and are willing to pay for it.

The first, in 1987, established a dedicated county tax of \$4 million per year for an

Open Space Trust Fund; another in 1992 increased the fund from \$4 to 10 million. In 1996, county voters approved another increase to \$16 million and, in 2006, they approved a change from a flat amount to a rate based on property values (so the tax would increase along with the price of land). These referendums all passed by an impressive margin. Voters in Monmouth County demonstrated time and time again that—whatever their definition—they like open space and are willing to pay for it.

IT'S OUR JOB TO THINK ABOUT OPEN SPACE

Recognizing early on that the land that wasn't preserved would be developed, the county Park System was formed in 1960 to begin acquiring and managing property. Originally, the county parks were established by land purchased by the Board of Chosen Freeholders through the county's capital budget program, as well as a few generous land donations, and funding assistance from state (Green Acres) and federal (Housing and Urban Development) programs. The Freeholders would "bundle" prospective land purchases together every few years so the county could prepare a bond initiative to pay for them. Over time, however, it became apparent that this wasn't the most efficient or expedient way to buy land. A more stable and continuous source of funding was needed.

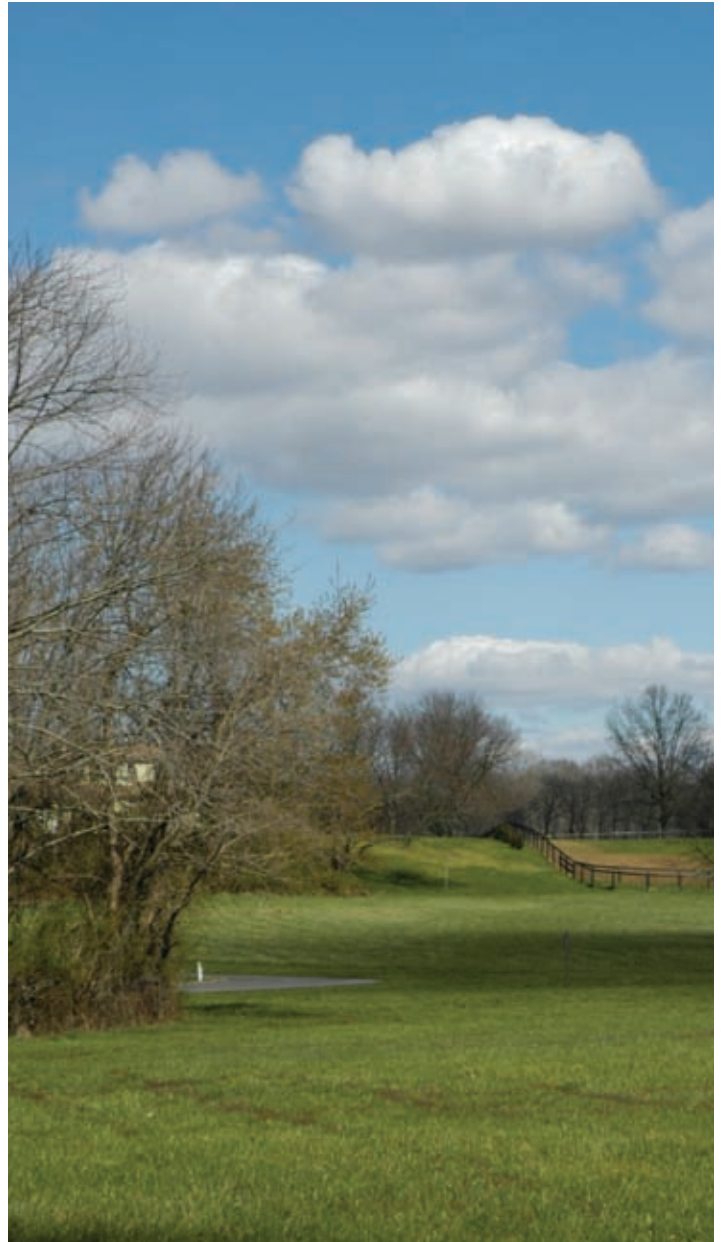
In the 1980s, the Freeholders spearheaded New Jersey's first effort to establish a dedicated fund for county parks and open space. The result was the enactment of state legislation to permit the county to establish a specific tax for open space. After county voters passed the referendum and legislation was in place, Monmouth became the first county in NJ to have a dedicated Open Space Trust Fund.

Monmouth was the first county in NJ with a dedicated fund for open space.

Since that time, legislation has been amended to include other counties and municipalities. All the counties in NJ now have open space funds, as do 21 of Monmouth County's 53 municipalities. Further amendments have allowed referendum questions to include farmland and historic site preservation, as well as property maintenance and improvements.

Photo Right: Did you know? Protecting the land next to certain parks is also an important concern. Consider Historic Walnford—a former mill village carefully preserved to reflect almost 200 years of local history. This site's quiet, pastoral landscape would certainly be compromised by a large housing development or mall next door, so the Park System preserved the surrounding pasture and farmland to protect its scenic vistas, in this instance through use of a conservation easement.

If you would like to read more about how open space is defined and protected in Monmouth County, please visit the Park System at www.monmouthcountyparks.com and click "About Us," to read the county's Open Space Plan.



OPEN SPACE, AS DEFINED BY THE STATE

Purchase of Open Space in Monmouth County must occur in accordance with the county's Open Space Plan and adhere to the state's legal definition:

"Open Space" means land or water areas to be retained in a largely natural or undeveloped state, for purposes of, among other things, providing parkland or green spaces, protecting ecologically sensitive areas, preserving flora and wildlife, or protecting or preserving areas of scenic, historic or cultural value, while at the same time affording, whenever practicable, public outdoor recreational opportunities for county residents. "Open Space" may include a recreational area such as a golf course if the acquisition subserves the objective of this act of protecting a largely undeveloped area from future development. (New Jersey Statutes Annotated, NJSA 40:12-16.)

Once purchased, open space is protected in perpetuity and cannot be used for any other purpose.

HOW ARE WE DOING? *Monmouth County's Citizen Opinion And Interest Survey*

Those of you of a certain age may remember former New York City Mayor Ed Koch's frequent query of his constituents, "How am I doing?" As a public servant, Koch understood that the only measure of his performance that really counted was the opinion of the public he served.

As a public agency, the Monmouth County Park System serves not only those people who visit the County parks and attend the Park System programs, but all the residents of Monmouth County. One of the ways we find out how our customers think we are doing is by periodically conducting citizen surveys.

One of the ways we find out how our customers think we are doing is by conducting surveys.

The most recent survey was administered in the winter of 2008/2009 by Leisure Vision/ETC Institute, a research firm that has done more than 600 such surveys in 46

states: 614 surveys were completed, resulting in a 95% level of confidence with a margin of error of +/-4%. One important benefit that Leisure Vision/ETC Institute was able to provide, from their previous experiences administering many similar surveys, is a series of national benchmarks. These benchmarks offer a standard against which to compare our own results. In essence, this can tell us how we stack up against other park agencies around the country.

Some key survey findings, and their national benchmarks, are summarized below. To view the complete survey report, visit the Park System's website at www.monmouthcountyparks.com and click "About Us."

The Monmouth County Park System received the highest rating for customer satisfaction ever seen by the research firm consultant--45% of survey respondents described themselves as very satisfied with the overall value received, compared to a national average of 24%.

- The Park System is the most used provider of indoor and outdoor parks and recreation activities in Monmouth County. (Q8) More households (45%) use the Monmouth County Park System for indoor and outdoor parks and recreation activities

than use any other public, non-profit or private recreation provider.

- 91% of respondents visited a Monmouth County park in the last 12 months, compared to a national average of 72%.

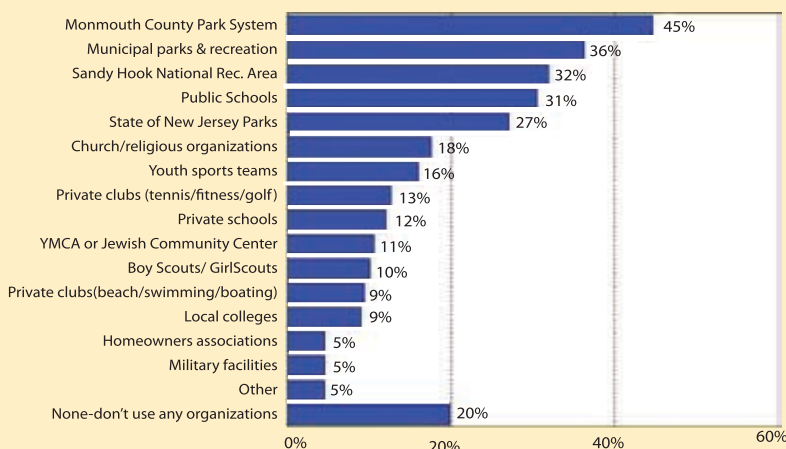
- 51% rated the condition of the parks they visited as excellent, (Q6) compared to a national average of 30%. The consultant found this especially impressive given the high volume of use at the parks.
- The top three facilities visited by respondent households were paved trails (55%), unpaved trails (49%), and playgrounds (41%).

- 24% visited a Park System golf course in the past 12 months.
- Over 90% of respondents favor the acquisition of open space. The high level of support for the County's open space program was consistent across all genders, ages, household types, regions of the county, and lengths of residency.

- Preserving open space/ environment and protecting forested areas from development were the top two benefits that parks provide. (Q14)

Q8. Organizations Used for Indoor and Outdoor Parks and Recreation Activities During the Past 12 Months

by percentage of respondents (multiple choices could be made)



So, it appears that the answer to the question, “How are we doing?” is “Pretty good.” Monmouth County residents are using the parks, liking the experience, and telling their friends and family about it.

Monmouth County residents are using the parks, liking the experience, and telling their friends and family about it.

These survey respondents appreciate the quality of the parks and understand that a continued investment in the existing park infrastructure is necessary to maintain that quality. They are committed to resource preservation and support the County’s acquisition of open space for park purposes.

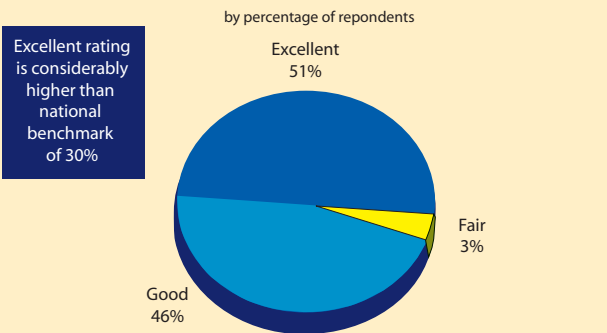
The challenge to the Park System is to keep doing what we’re doing well and to improve those things we could do better.

Don’t wait until the next survey to tell us how we’re doing - send an e-mail to info@monmouthcountyparks.com or call 732-842-4000, ext. 4256.



Visitors like the Monmouth County parks, according to recent survey results.

Q6. How Would You Rate the Condition of All the Parks in the Monmouth County Park System You Have Visited?



Typically, improving physical health and fitness ranks as the number one benefit to households in similar surveys, suggesting that Monmouth County’s residents have a higher than average interest in resource preservation and protection.

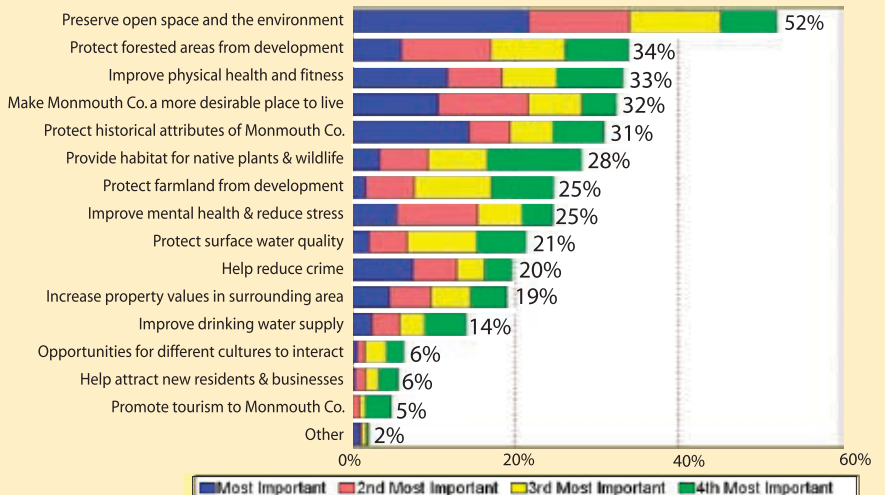
- Operating and maintaining County parks and facilities was the single most important function performed by the Monmouth County Park System, with 86% of respondents describing it as

very important and 40% listing it as their first choice among a range of functions.

- Friends, family and neighbors are the primary source of information about Park System programs and activities (50%), followed by newspaper articles (46%) and brochures (33%). 26% of respondents use the Park System website for information compared to a national average of 14%.

Q14. Potential Benefits That Are Most Important to Respondent Households

by percentage of repondents who selected the item as one of their top four choices



Deep Cut Gardens

Home Gardener



As Healthy As It Gets: Growing Your Own Food

Randy McHaney, Senior Gardener

There is something extremely symbolic about the growing of vegetables. It is both primitive and exciting to bring together knowledge of the sky and earth to grow plants to perpetuate your being. But in order to feed more than just our immaterial essence, we need to grow big, healthy plants.

There is no profound secret to growing good vegetables. Adequate light, proper soil and water are all that is needed. Disease and insects can be controlled by crop rotation every three years, along with use of particular pesticides. And, proper siting goes a long way to establishing a healthy garden.

WHERE TO PLANT VEGETABLES

6 HOURS OF FULL SUN Vegetable plants, just like ornamentals, have specific light requirements. A large number of the more popular vegetables grown in this area require approximately six hours of full sun per day. Since a vegetable garden is never a monoculture, this is probably a good average light requirement when selecting a site.

WEED-FREE SITE The site should be free of weeds which rob the area of nutrients. Weeds could also harbor disease elements and destroy the garden's visual appeal. Of course, there is that old saying, "a weed is just a plant in the wrong place." So, a working weed definition might include plants that are obnoxious, invasive, and have no aesthetic qualities.

GOOD AIR CIRCULATION Another important siting element is good air circulation – this will reduce the relative humidity and assist the drying of plant material during wet weather. Along with adequate plant spacing and watering early in the day (so that plant material dries quickly), good air circulation can go a long way to reducing downy mildews and other debilitating leaf diseases.



Downy mildew

SOIL TYPE & QUALITY Once a nice sunny, weed-free area with good air has been selected, soil should be the next consideration. Vegetables can be grown in a variety of different soils, but in general, the soil should be one that has water and nutrient holding capabilities, is well drained, and does not remain soggy. A heavy clay soil that never dries out can be as damaging as a sandy soil that doesn't stay wet.

continues next page

Deep Cut Summer Events

Daylily Day

Saturday, June 27

10am-2pm

The Monmouth County Park System and Garden State Daylily Growers present

- Free horticultural advice,
- Displays • Garden design ideas and so much more

Bonsai Day

Sunday, September 20

1:30-4:00pm

The Deep Cut Bonsai Society and Deep Cut Gardens invite you to enjoy the Bonsai experience!

- Demonstrations • Exhibits
- Talk to the experts.
- Visit Deep Cut Gardens' Jane Scott Bonsai Collection

The Great Fall Perennial Plant Swap

Saturday, September 26

10am-2pm

It's the gardening event of the season! It's Fun, Free and Easy.

Swap perennials and houseplants. Bring your plants in one-quart, one-gallon or two-gallon containers and trade them for different plants of the same size. Please label all plants. Sorry, no annuals.

- Free admission, • Free parking
- Call 732-671-6050 for more information

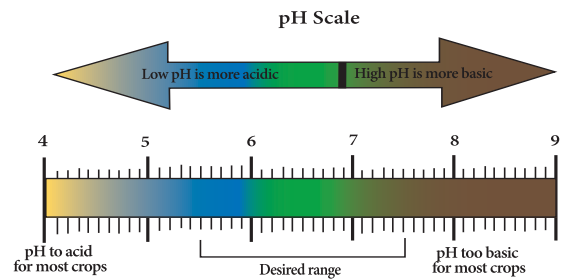
The soil should form a soft ball without falling apart. It should also feel gritty to the touch--that's from the sand. If the soil forms a hard ball that doesn't fall apart with pressure, it's probably too heavy and will need to be amended. Whether too sandy/light or clayish/heavy, both types can be corrected with the addition of good clean compost, topsoil, or well-seasoned horse manure.

TESTING THE SOIL: AN IMPORTANT FIRST STEP

Nutritious soil that contains all the major and minor minerals is necessary for plant growth. A soil test is advisable to determine the suitability of your soil and whether it will need to be amended with an organic fertilizer. Remember, plants can make sugars for food through photosynthesis, but only the soil can provide the minerals necessary for plant health.

Remember, plants can make sugars for food through photosynthesis, but only the soil can provide the minerals necessary for plant health.

Another important test number when establishing a new garden is the soil's acidity. Your soil test will give you a pH number. On a scale of 1 to 14, a good garden soil should have a pH of 5.5 to 7.5. A number outside this range is usually unsuitable for growing most vegetables. Most soils in this area are within this range, but some will need to be amended. A free soil pH test, and complete soil analysis for a nominal fee are available at the Rutgers Agriculture Extension in Freehold.



Adapted from: www.ncagr.gov/agronomi/dofig21.htm

RAISED BED VEGETABLE GARDENING

For a number of reasons, a raised bed is highly recommended when planting your first vegetable garden. First, it can solve a lot of problems, especially if the soil is less than perfect. Compost and other amendments can be added on top with less digging, which is a lot of work. Raised bed gardens heat up a little earlier, and this will speed up growth early in the season. The bed also brings the garden up to a more workable height, which is easier on the back. Finally, it is efficient and gives a neat and tidy appearance to the garden.

The shape of the beds and material used is a decision based on your site and needs. In general, a height of 16 inches and a width of four feet is a good working dimension to start—you can make the length whatever you like. The width must be narrow enough so that you can easily reach into the bed (if bending is a problem, raise the bed and

Continues next page

A raised bed garden. (below, left)

This illustration (far, right) shows how a raised bed, near a stone footpath, could be oriented.

A beneficial ladybug is shown here (right) eating aphids--a common and destructive garden insect--on this milkweed.



narrow it). The beds should run length-wise from North to South, with three-foot paths in between. This way, taller plants will not shade shorter plants. Cedar and especially non-treated woods are recommended for outlining the bed.

Vegetable gardening is humbling and sometimes frustrating especially when things don't work out the way we had hoped. Critters (squirrels and rabbits, etc.) can become your worst enemies, but a cool-headed approach makes the most sense. It is just part of the process and once you accept

that, you can really start to enjoy your vegetable garden. Fences and netting are options. Blood meals and other organic products will help deter critters.

Pyrethrum products, which are sprays derived from the *Chrysanthemum cinerariaefolium* plant, are also helpful. However, make sure to read all labels and pre-test any product on a leaf before using it on the entire plant to check for phytotoxicity. And remember: not all insects are bad: Beneficial insects, such as ladybugs, should be encouraged.

As far as insects are concerned, you can make your own garden spray repellants.

- Mix 1 tsp. liquid detergent with a 1 cup of vegetable oil, shake well and add to a quart of tap water.

- Mix 1 tsp. liquid detergent to 1 cup of rubbing alcohol and add to 1 quart of tap water.

- Steep crushed hot peppers in a cup of hot water.

- Mix 3 tbs. hot Tabasco with 1 cup of water.

Easy Edibles

Randy McHaney, Senior Gardener

There are a number of plants that are "tried and true" here in the Monmouth County area. If this is your first vegetable garden or if you want to build up your confidence, try these and you probably won't be disappointed.

The modern day **Tomato** (*Lycopersion esculentum*) is the descendant of a plant domesticated in Europe and later in North America. It originated in the highlands of Peru as an herbaceous plant with small green fruits. Warm weather and full sun are its primary requirements. Tomatoes take well to a variety of types of soil, but it should be well drained. Too much water can dilute its rich full flavor. Allow slight wilting between watering.



Extremely easy to grow, **Swiss Chard** has become a popular plant in our Northeast gardens. Chards originated in the Mediterranean regions and have been grown there for over a thousand years. They are nutritious and high in fiber and antioxidants. A member of the beet family, chard is a plant that can be harvested from spring to fall. The tastiest leaves are found during the cooler parts of the growing season. *Beta vulgaris* var *cicla* 'Bright Lights' plays a double role: it is both edible and ornamental. It should be kept evenly moist. Harvest the leaves continuously to keep the plant growing all season.



Nasturtiums are colorful flowering annuals that are popular in our modern-day gardens. These South American plants from Peru and Mexico are both easy to grow and beautiful additions to salads, as a garnish, or chopped into pasta dishes. The seed was once used as a substitute for pepper. *Tropaeolum majus* is considered a good companion plant and will attract aphids away from other plants. It can be grown in full sun or light shade and, though tolerant of dry conditions, does best in evenly moist but well-drained soil.

IT'S TIME TO

July ✓

- Take note of any gaps in your garden and decide which plants you will want to divide in the fall or next spring. If you aren't keeping a garden journal, consider starting one.
- Check plants for insects/disease and use Integrated Pest Management (IPM) methods for dealing with problems. (Visit the Deep Cut Library to learn more.)
- Apply/replenish mulch to conserve water and suppress weeds.
- After bloom has finished, dig and divide irises, lily of the valley, Oriental poppies and bleeding hearts.
- Late-season "finds" at the nursery are hard to resist. Water thoroughly before and after transplanting any container-grown plants.
- To keep vegetable gardens producing, harvest ripening produce regularly and make sure that plants have 1" of water weekly.
- Keep lawn at least 2.5-3.5" high and do any watering in the morning (deeply and less frequently for a stronger, healthier lawn).



Dig and divide irises after they bloom

August ✓

- Consider allowing some seeds to ripen for wildlife or to save for next year; otherwise, continue deadheading.
- Fertilize late summer and fall flowers such as chrysanthemums.
- Sow late crops of lettuce, kale, spinach, Chinese cabbage, and turnips.
- Start planning for Deep Cut's Fall Perennial Plant Swap, Sept. 26.

September ✓

- Fertilize lawns late this month. Now is the best time to reseed or renovate if necessary.
- Continue to harvest vegetables regularly for greater yield.
- Plant cool-weather crops such as radishes, spinach, lettuce, kale and cabbage.
- Plant evergreen and hardy shrubs; mulch and water well.
- Plant spring-flowering bulbs in groups or drifts for best effect next spring.
- Acclimate houseplants to lower light conditions before bringing them indoors this month. Thanksgiving and Christmas cactus may be left out until just before the first frost.
- Plant mums and pansies for fall color. Look for two-season pansies that will bloom again next spring.
- Stop watering amaryllis; allow the bulbs to rest before re-blooming.





Bird Migration And The Return Of The Osprey

Tanya Dinova, Park Naturalist

Birds—like all animals—need food, water, protective cover, and a sheltered place to nest and breed. However, as the seasons change, winter can transform a favorable environment into an unlivable one where food and water disappear, plant cover vanishes and competition with other animals increases dramatically, thus limiting the chance of survival.

Wild animals, therefore, face the problem of occupying a habitat that is suitable for only a portion of the year. However, nature has provided methods for coping. One is hibernation, which involves entering a dormant state during the winter season. Another is migration, which involves escaping the area entirely. Due to the power of flight, most birds have adapted to seasonal changes in the environment by migrating. Only one bird, the Common Poorwill found primarily out west, hibernates.

THE MIGRATORY OSPREY

Many migratory birds are remarkably faithful to previous nesting and over-wintering places. One of these species, the Osprey, has chosen to make the Manasquan Reservoir its home for more than 20 years. One of the largest birds of prey in North America, the Osprey has been returning here to breed and raise its offspring since 1988.

There are over 360 nesting Osprey pairs in New Jersey according to the 2008 NJDEP Fish and Wildlife Division Osprey report. Spring migrants appear from mid-March to May, with a peak during mid- to late April. But the Ospreys that live at the Manasquan Reservoir return predictably around March 17 every year.

There have been as many as five nesting pairs here at the same time. The female Osprey stays at the nest during incubation, while the male is constantly providing food for her. On average each pair parents two chicks per year. Ospreys mate for life. But in October, after the breeding season is over, partners will fly their separate ways for six months and reunite during the next breeding season. Research has shown that the separated parents and chicks from New Jersey will overwinter as far south as the Amazon River. *(Continued, back cover).*

References: 1. Akesson, Susanne and Hedenstrom, Anders. How Migrants Get There: "Migratory Performance and Orientation". *BioScience* 57(2):123-133. 2007. 2. Wallraff, H., Papi, F., Loale, P., Benvenuti S. "Magnetic field affect pigeon navigation only while the birds can smell atmospheric odors." *Naturwissenschaften* vol 73 April, 1986. 3. "Research Team Is First to Model Photochemical Compass for Bird Navigation" National Science Foundation Press Release 08-071, April 30, 2008. Available at: www.nsf.gov/news/news_sum.jsp?cntnid=111509 4. "International team of researchers explain how birds navigate." Arizona State University Press Release. 30 Apr. 2008. Available at: www.eurekalert.org/pub_releases/2008-04/asu-ito043008.php 5. Lohmann, Kenneth J., Lohmann, Catherine M. F. and Putman, Nathan F., "Magnetic maps in animals: Nature's GPS." *The Journal of Experimental Biology* 210, 3697-3705. 6. Beas E. Bruce and Niles, Larry. 2003. "Endangered and Threatened Wildlife of New Jersey", Rutgers University Press. 7. "Sixth sense: Study shows how migrating birds navigate." Princeton University News Release, April 28, 2004. Available at: www.princeton.edu/pr/news/04/q2/0428-wikelski.htm.



Harsh winters at the Manasquan Reservoir drive birds such as the Osprey to migrate to find friendlier conditions. (top, left)

When the weather warms up in spring, the Ospreys return to their nesting site at the Reservoir. Can you spot the nest in the center tree? (bottom, left)

Osprey nesting at MREC (above)

THERE AND BACK AGAIN: THE "TOOLS" OF BIRD NAVIGATION

Every year around the globe millions of birds venture from one place to another, but always return to the same familiar site at the same time each year. So, how do birds know how to get to their winter getaways? More importantly, how do they find their way back to their summer breeding grounds the following season?

Scientists have discovered that birds have a navigational "tool box" available to them. It is both varied and powerful. All birds use different combinations of these tools.

The sun. Some birds, like Starlings, rely heavily on clear skies and the view of the sun. They appear to become confused on cloudy days. Even birds that migrate during the darkness of night rely on the setting sun to orient themselves, using polarized light to calibrate their internal compasses.¹

The stars. Night-migrating birds like warblers, hummingbirds and flycatchers can determine direction under clear, starry skies. They use the spatial relationship between constellations to orient themselves, rather than information supplied by any single star.¹

Odor Map. Some short-distance migrants use an "odor map" to return to nesting and wintering sites.

Studies show that young pigeons learn the odors - carried by the wind - to reach their homes.²

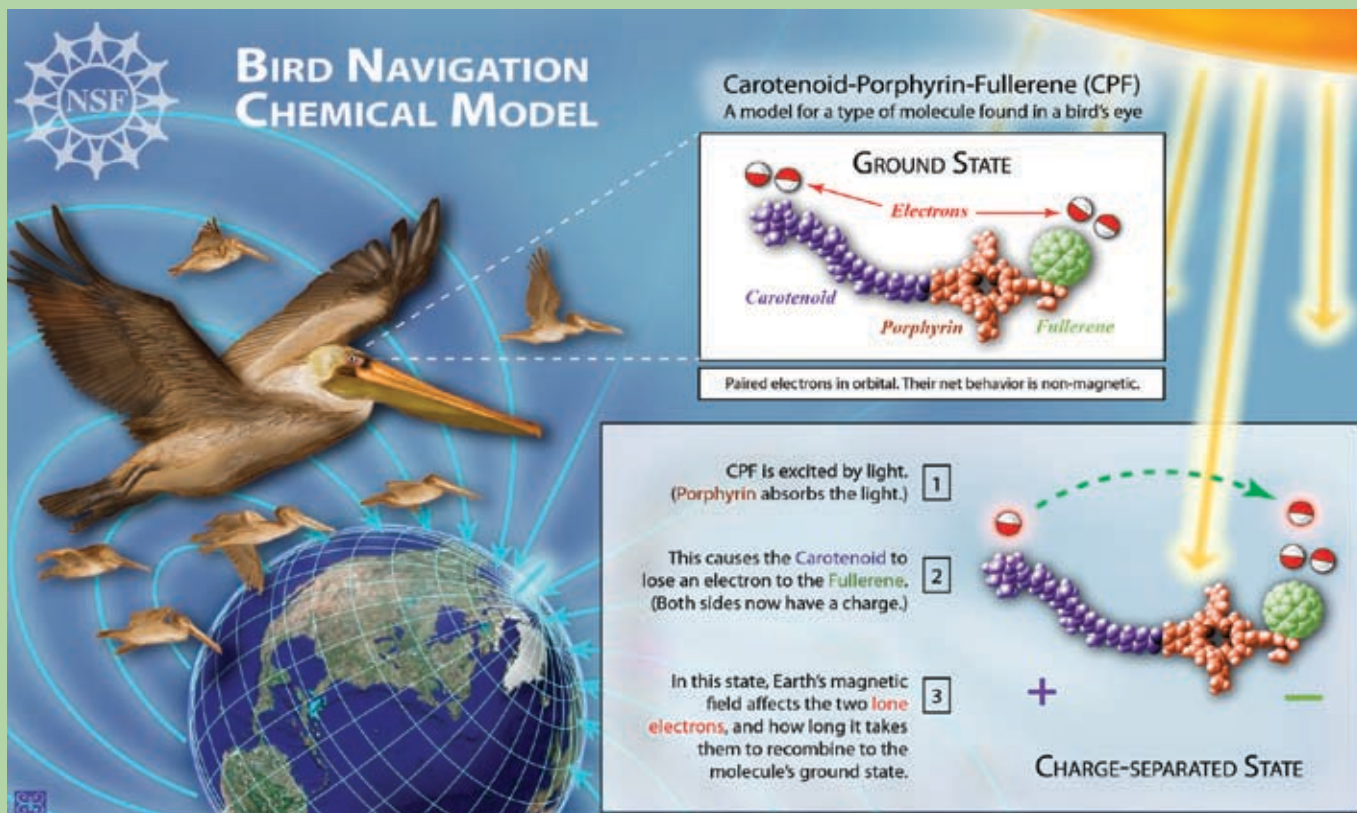
Magnetic Compass. Birds tested in a controlled environment showed they knew which direction to migrate even without the sun or the stars. Scientists have studied migratory birds, specifically the chemistry of their eyes, and hypothesize they can orient themselves using a type of built-in magnetic compass. This is thought to be done through a special cell in the retina that is sensitive to the magnitude and direction of a weak magnetic field—like that of the Earth—when exposed to light. In contrast to other tools, Earth's magnetic field is present all the time, and is not influenced by weather, time of day, or season; and it exists everywhere on earth. To explore how this might work, a team of researchers recently tested a synthetic photochemical compass molecule. (CPF, see diagram below).^{3,4}

The molecule is made of 3 different compounds. Under normal conditions it has a neutral charge. But when it is exposed to light, it becomes polarized,

with opposite charges in each end. In this state the molecule can respond to the direction and magnitude of weak external magnetic forces, like those of the earth's magnetic field.³

A compass alone, however, is not a sufficient way to navigate. There is a second tool that also works off the Earth's magnetic field, providing an ability to determine geographic position.

Magnetic Map. Birds, like many other organisms (from bacteria to vertebrate animals), have a built-in virtual representation of the earth's magnetic field organized into a so-called "map." In conjunction with the magnetic compass, the map can help provide a geographic position and compute the direction to a specific location. Migratory birds may rely on an instinctual map to find their way back to nesting or wintering sites. Disturbances in the earth's weak magnetic field produced by power lines and communication equipment may interrupt these abilities.^{4,5}



This diagram shows how the chemical compass molecule in a bird's eye could become sensitive to a weak magnetic field. Based on research by scientists at Arizona State University and the University of Oxford.

Reprinted from www.nsf.gov/Credit: Zina Deretsky, National Science Foundation.



GREEN HERITAGE

805 Newman Springs Road, Lincroft, NJ 07738-1695

Volume 43, No.2 Summer 2009

PRSR.T. STD.
U.S. POSTAGE
PAID
MONMOUTH CO.
PARK SYSTEM

Where Do Ospreys Go Each Winter?



A9178 -5/09 Summer 2009

The osprey or “fish hawk” is a threatened bird commonly found in nearby waters, but only during the warmer months. Each winter, it embarks on an incredible journey to South America...

By fitting them with satellite-tracked radio transmitters, researchers found that Ospreys from New Jersey nests have wintered from Venezuela and Columbia

to Brazil’s Amazon River basin. This 5000 mile trip from New Jersey to Brazil is repeated twice each year.⁶ (see Atlantic Flyway route on map above right) Read the complete Nature Corner article, **Bird Migration And The Return Of The Osprey**, (page10).

Did you know? The Manasquan Reservoir is now the Monmouth County Park System’s most visited park with over 1 million visits in 2008.



To see osprey nests, and watch the birds fishing (feet first), visit the Manasquan Reservoir Environmental Center in Howell. Check out bird displays, speak to a naturalist, and even take a boat tour of the reservoir to learn more about the many species that call this park “home.”