A new study by Rutgers Cooperative Extension of Ocean County and Georgian Court University will look to alleviate soil compaction using native plants. Landscaping and other land use practices have resulted in alterations to the flow of water across the lands of New Jersey. Increased compaction of soils, especially during construction or installing and maintaining residential landscapes, accounts for a portion of these alterations. Compacted soils act like impervious surfaces as they can reduce or prevent infiltration of precipitation into the ground. This creates fast

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moving surface runoff and increases flooding as greater amounts of water are prevented from entering the soil. Any time an increased amount of runoff occurs, a pathway is created for pollutants to enter waterways which have a negative impact on aquatic life, decrease environmental quality, and degrade groundwater supplies.

Soil compaction can be measured by using a handheld penetrometer, which has a pressure gauge mounted on the top of it (Figure 1). The penetrometer is pushed into the soil until the gauge reads 300 pounds per square inch (psi). The distance that the rod penetrates into the soil is measured and recorded. The deeper the depth, the less compacted is the soil. Severely compacted soils measure 300 psi at a depth of 3 inches or less.

Compaction can be minimized in a variety of ways. It can be lessened by not using heavy machinery on wet soils, mechanically breaking up known compacted soils, replacing topsoil with less compacted soils, or planting vegetation prior to the formation of soil compaction. One option that has not received much attention is the use of vegetation after soil compaction has occurred. As plant roots grow through soils, they can create additional pore spaces to facilitate water infiltration and decrease compaction. While the majority of studies on soil compaction have involved impacts on agriculture and how crops fare as soil compaction increases, the density of plantings needed to alleviate soil compaction as a horticultural management practice has not been assessed. This study hopes to find out the impact increased planting density of plants has on compacted soils.

Switchgrass (*Panicum virgatum*) will be planted in test beds on Georgian Court University’s campus this fall (2014) with different beds having increasing numbers of plants in each bed. Switchgrass was chosen because it is a native plant that has an extensive root system that can reach up to 6 feet long (Figure 2). By increasing the density of plants in a particular area, it is hoped that the additional roots provided by the crowded plantings will be able to break through the compaction measured at the site. Soil compaction measurements will be taken throughout the year to determine if compaction is being lessened by the plant roots. While this initial study will be conducted through September 2015, this project is intended to be carried out for several more years as part of a longer soil compaction management program for New Jersey.

The information obtained from this study will aid Rutgers Cooperative Extension in providing lawn maintenance information to homeowners, helping alleviate soil compaction, and increasing water infiltration. For further information on this project, contact Steve Yergeau, Environmental and Resource Management Agent, Ocean & Atlantic Counties at yergeau@njaes.rutgers.edu or (732) 505-3671. Funding for this project was provided by the Phillip Alampi Fund.
Introducing Steve Yergeau!
Environmental and Resource Management Agent for Ocean and Atlantic Counties

Steve Yergeau is the new Environmental and Resource Management Agent in Ocean and Atlantic Counties for Rutgers Cooperative Extension (RCE). Steve comes to Ocean and Atlantic Counties from the RCE Water Resources Program where he focused on watershed planning and restoration. He has been involved in environmental management throughout the Northeast and Mid-Atlantic Regions over the past 20 years. His recent projects focus on implementing green infrastructure practices to help with nutrient management and working to improve soil health (see ‘New Study to Combat Soil Compaction with Plant Roots,’ in this issue). Steve looks forward to working with local schools, residents, and citizen groups to help improve the Jersey Shore.
The 15th year of the AmeriCorps Watershed Ambassadors Program has begun with its new class jumping into raising awareness about water issues in New Jersey. This AmeriCorps program is hosted by New Jersey Department of Environmental Protection (NJDEP), which selects Ambassadors to serve in the twenty watershed management areas of New Jersey. The goals of the Watershed Ambassadors are to work with all sectors of society to improve the quality of New Jersey’s waterways by nurturing community based environmental activities and empowering residents to make responsible and informed decisions regarding their waterways.

The Watershed Ambassadors are a free resource available to schools and community organizations. They can provide educational presentations on watershed issues and train members of the public to be volunteer water monitors for their local waterways. Ambassadors also partner with local groups for service projects such as stream clean ups, rain barrel workshops, invasive plant hand pulls, rain garden plantings and tree plantings; really anything that improves the watershed.

Since beginning in September 2014, the current Ambassadors have been involved with a number of educational and environmental activities across the state. They have presented at numerous fairs including; NJ Wild Expo, Raritan Headwaters Country Fair, Monroe Green Fair, Family Float Festival in East Hampton, Camden Canoemobile, just to name a few. In addition, Ambassadors have partici-

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pated in service projects with NJDEPs “Don’t Waste Our Open Spaces” campaign to stop illegal dumping and Make a Difference Day by planting trees in Newark and Camden.

The Ambassadors will continue to get out into the community to raise awareness over the next 10 months and are looking to partner with community groups and schools. If you are interested in partnering with the Watershed Ambassadors, please contact your local Ambassador. Be on the lookout for volunteer opportunities or other events posted in this newsletter or elsewhere in the coming months.

NJDEP Watershed Ambassadors Page, with Contact Information for local Ambassadors: http://www.nj.gov/dep/wms/bear/americorps.htm

Ambassadors Rachel and Jon at a Green Fair in Monroe, NJ
(Photo Credit: Brittany Musolino)

From Left Ambassadors Rachel, Kristine, and Ruby learning stream assessments.
(Photo Credit Alexandra Walczak)
It was a great turnout. At Estling Lake, a small summer community of 64 houses, more than 20 people showed up for instruction when Rutgers Cooperative Extension (RCE) came on July 24, 2014 to conduct the first stream evaluation training session for residents. Later, when it was time for RCE to supervise field evaluations, a dozen Estling Lakers, clipboards and measuring sticks in hand, tromped through the woods. Once again, when it was time to evaluate Den Brook, the main tributary to Estling Lake, another dozen Lakers appeared. This time they came with high boots, fully prepared to brave the water, and clippers and a machete in case the going got tough along the banks. Some even came in kayaks to navigate the deeper water at the lower end of the brook.

The enthusiasm of the Estling Lakers should not have been a surprise; they have a history of stewardship of their lake and forest. In the beginning there was just Den Brook, meandering serenely through the valley, fed here and there by rivulets and bubbling springs, on its way to join the Rockaway River in Denville. But the 1890s saw great changes in the valley. Among them: digging out enormous quantities of topsoil and mud and carrying this material to the site where Fairleigh Dickinson University now stands in Madison, the raising of a railroad embankment, and the building of a dam that marked the birth of Estling Lake. Around this time, the Pocono Mountain Ice Company bought the lake property for the purpose of harvesting ice.

The business prospered. In 1910, a few employees of the ice company got permission to spend their vacations at the lake, camping in tents and fishing. Soon the campers built wooden platforms for the tents. It wasn’t long before there was a string of rustic cabins along the lakeshore. In 1917 the early campers formed the Estling Lake Campers Association. This was the organization, now called the Estling Lake Corporation, that in 1946 bought the land from the ice company and that still owns and

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Estling Lake stewards continued

manages the property today.

During the first half of the twentieth century, the lake and surrounding forest required little maintenance from the campers. But by mid-century, there was considerable development in the area, and the lake aged. By the 1960s and '70s, a time of burgeoning national interest in the environment and ecology, Estling Lakers began to focus on ways to protect their surroundings. The town put in a sewer line and the corporation urged all houses to hook up. After decades of using the lake as a bathtub—with too many teenagers with too much hair in an era when shampoos were full of phosphates—the corporation banned bathing in the lake. Certain fertilizers were also outlawed.

In addition, the corporation developed a program of weed control to rid the lake of unwanted vegetation, both native and invasive. Allied Biological treats the lake with herbicides every year during the growing season to keep the weeds at bay. And the Weed and Pest committee organizes “pulling parties” several times a year for Lakers in boats to remove water chestnut and lily pads, and others on land to pluck purple loosestrife from the shore line.

By the 1980s, the lake was slowly filling in. It was clear more had to be done. Lakers began the first efforts at removing sediment from the lake: land based equipment dug out the deltas that had formed where Den Brook and smaller feeder streams entered the lake. Flow from Den Brook was first captured in a pair of settling ponds in an effort to capture sediment and other material.

But still it was not enough. The lake continued to fill in. It was in the beginning of this century that the lake corporation upped its efforts. It contracted Princeton Hydro to do a study of the lake, its general health and its prospects for the future. Subsequent studies focused on the feasibility of dredging the lake and the efficacy of the settling ponds. And the corporation began a hydro raking program to remove organic fill.

One thing became clear: any attempt to remove material from the lake had to be accompanied by a program to slow the entry of material in the first place. Such a program meant that the community needed to become even greater stewards of the lake and watershed. And that required education and training, which is what led the Corporation to contact Rutgers and that resulted in that first training session. On July 24, 2014, Dr. Christopher Obropta and Jeremiah Bergstom from RCE Water Resources Program and Pat Rector from RCE of Morris County came to the Estling Lake Community House to begin that process, equipped with presentations on stormwater, stream processes and lake ecology. They also informed the stewards of Estling Lake about the United States Department of Agriculture (USDA) Stream
Visual Assessment Protocol (SVAP).

This educational session was quickly followed up with hands on training with volunteers in the field. The Estling Lakers walked one of the streams that fed into Estling Lake with the RCE faculty to see how this protocol was applied in real world situations. The stream visual assessment allows for a group or individual to learn and apply a series of assessment elements, such as channelization or condition of the riparian zone to determine a score for a stretch of river or stream. The score enables comparison between streams and between stretches of streams. There are 15 assessment elements but it may not make sense to use all elements in an assessment for every stream. The score for a stream is obtained by adding each score for the elements assessed and dividing by the number of elements assessed for that stream, or stretch of stream.

The assessment elements are:

Channel condition; Hydrologic alteration; Riparian zone; Bank stability; Water appearance; Nutrient enrichment; Barriers to fish movement; Instream fish cover; Pools; Insect/invertebrate habitat; Canopy cover; Manure presence (if applicable); Salinity (if applicable); Riffle embeddness; Macroinvertebrates observed.

The total score is important, but as important is the comparison of scores and the identification of areas where sediment is potentially entering the lake. The residents being in the streams that feed their lake provide them with first hand knowledge of how the streams look and a good idea of how they behave under storm event conditions. With this understanding they are better able to begin to seek solutions to the sediment influx to their lake. The Estling Lake Association is also considering training in Biological Assessments this spring.

For further information on SVAP please see:

- [http://www.water.rutgers.edu/SVAP/SVAP.htm](http://www.water.rutgers.edu/SVAP/SVAP.htm)
Summary precipitation data is now available for the 2014 water year (Oct. 2013 – Sep. 2014) from each of hundreds of stations in New Jersey, and from around the nation.

Data include:

- Monthly rainfall
- 30-year normal rainfall
- Monthly snowfall
- Cumulative precipitation for the year
- Daily precipitation

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To view these plots, visit:

http://www.cocorahs.org/WaterYearSummary/

- Select your state
- Select “Charts” next to the station of your choice

Data can also be viewed in .html and .xls formats.

The menu button on upper left side of the chart allows you to save the graph as either a .pdf or an image file.
The U.S.G.S. has released reports on the occurrence of pesticides in agricultural, urban, and mixed-use watersheds, for the U.S. including sites in New Jersey.

In both agricultural and urban watersheds, a notable proportion of samples showed streams with one or more pesticides that exceeded a chronic aquatic-life benchmark.

Commonly-detected pesticides included: metolachlor, atrazine, diazinon, malathion, chlorpyrifos, carbaryl, and fipronil.


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The main report website includes:

- Reports
- Maps
- Link for the report in Environmental Science and Technology
- Press release
- FAQs

Link for main report website: 
water.usgs.gov/nawqa/pnsp/pubs/pest-streams/

For the report in Environmental Science and Technology: 
pubs.acs.org/doi/pdfplus/10.1021/es5025367


The Award-winning Environmental Stewards program is preparing to launch another year of education of the residents of New Jersey in January 2015. The course is 16-weeks, for one 3-hour class per week. There are two field trips and a volunteer internship, where participants learn by doing. Upon completion of the class and the internship participants become a Certified Rutgers Environmental Steward.

Evening classes will be offered again this year!!!

For more information:

Warren County  Bruce Barbour  barbour@aesop.rutgers.edu
Passaic County  Amy Rowe  rowe@njaes.rutgers.edu
Atlantic County  Amy Cook-Mentzel  amenzel@acua.com
Middlesex County  Michele Bakacs  bakacs@njaes.rutgers.edu
Somerset County  Pat Rector  rector@njaes.rutgers.edu
****** NEWS AND UPCOMING EVENTS ******

Riding My Way Back
A Documentary by: Robin Fryday and Peter Rosenbaum

Tuesday, November 11th
The State Theater
15 Livingston Ave,
New Brunswick, NJ 08901
7:30pm - 9:00pm

Join us for a special Veterans Day screening of "Riding My Way Back", the journey of one veteran's battle with Post Traumatic Stress Disorder (PTSD), and how his newfound equine-friend Fred helped to bring him out of the darkness, and save his life.

Presented By:
Special Strides
Rutgers Equine Science Center
Therapeutic Riding Center
Better Horse Care through Research & Education
esc.rutgers.edu

In Partnership with the State Theater

To Register for this Exclusive Event Please Click Here!

to register, click here:  docs.google.com/forms/d/1iZRicCwmBrOp4vBg4csik6nL13sRac8crjprsnCHBDM/viewform
THE EQUINE SCIENCE CENTER INVITES YOU TO AN EVENING OF...

Science & Celebration

MONDAY, NOV. 10, 2014
Cook Campus Center, 59 Biel Rd.,
New Brunswick, NJ 08901 • (848) 932-7617

OPEN TO ALL HORSE ENTHUSIASTS!
Event highlights the Equine Science Center’s work in advancing equine health, horse management practices, and solutions to equine industry issues.

Schedule:
5 to 6 p.m. - Optional Tour:
• Treadmill demonstration
• Meet the “Horse Heroes!” @ the Red Barn on College Farm Road

6 to 7 p.m. - Light supper

7 to 9 p.m. - Program Highlights
• “Preparing for Disaster” - Angela Howard, Eastern National 4-H Roundup
• “The Inflammatory Response to Exercise…” - Dr. David Horohov
• Equine Center Presentations
• Spirit of the Horse Award - Margaret Romano
• Gold Medal Farm Award - Wood Hollow Farm

EVENT REGISTRATION CLOSES!
FRIDAY, NOVEMBER 7TH, 2014

To register, please go online to http://goo.gl/Mjw8Nt
Event fee: $30 for adults & $15 for full-time students
Please remit payment & mail to Rutgers Equine Science Center
57 US Highway 1, New Brunswick, NJ 08901-8554
Phone: (848) 932-9419 • Fax: (732) 932-2658

To register, click here: goo.gl/Mjw8Nt
Its time for Mistletoe and Holly, Nov. 16, 2014, Franklinville, NJ

The Herb Society of America South Jersey Unit will host a mistletoe and holly presentation and meeting.

November 16, 2014
1:00 pm
Franklin Twp Community Center
1584 Coles Mill Rd.
Franklinville, NJ

Local environmental specialist Joe Arsenault will discuss mistletoe, and holly expert Jane Christy will present on native holly.

This program is free and open to the public.

Joe Arsenault is part of a group of specialists, known as the Flora of New Jersey Project, which is hosted by Rutgers University's Chrysler Herbarium. The group is preparing comprehensive plant list, atlas, and manual, being published on their native plant website, www.njflora.org.

Jane Christy is a certified Master Gardener and a member of the International Holly Society of America, www.hollysocam.org.

Herb Society of America, South Jersey website: www.hsasouthjersey.org.

(Photo: Schnobby, Creative Commons Attribution, commons.wikimedia.org/wiki/File:Mistletoe_with_bERRies.jpg)
Garlic Growing Workshop at the EARTH Center, November 2, 2014, South Brunswick, NJ

The Rutgers Master Gardeners want to help you sharpen your food growing skills by offering a new gardening workshop called Growing Garlic in Your Garden.

This free workshop is scheduled for 10 a.m. on Sunday, November 2, 2014 at the EARTH Center located in Davidson’s Mill-Pond Park, 42 Riva Ave., South Brunswick. The workshop will begin with an indoor presentation followed by an outdoor, hands-on planting session.

“The 2014 gardening workshops series at the EARTH Center are a great opportunity for those who cannot commit to the weekday sessions of the Master Gardeners classes,” said Freeholder Director Ronald G. Rios. “I hope many people will register for this class; not just gardening enthusiasts, but anyone who wants to learn more about cooking or gardening.”

“The Master Gardeners have created another informative and useful program,” said Freeholder Kenneth Armwood, Chair of the Business Development and Education Committee. “Garlic takes up little space, can be planted in the fall and has many uses in cooking.”

Though this is a free workshop pre-registration is required at 732-398-5262 by October 29. No “walk-ins” are permitted. The size of these classes is limited, so register early to ensure a space. For more information, contact the EARTH Center at 732-398-5262.

Rutgers Cooperative Extension educational programs are offered to all without regard to race, religion, color, age, national origin, gender, sexual orientation, or disability.
Open Archaeology Day, November 8, 2014, Pilesgrove, NJ

On Saturday, November 8th, the public will have a chance to do a little digging themselves. "Open Archaeology Day," an event co-sponsored by Rutgers University-Camden and the Fredric Rieders Family Renaissance Foundation, will give members of the public a chance to learn about prehistoric South Jersey and to dig like an archaeologist. This free event begins at 10 a.m. at the Pilesgrove site, and is a perfect outing for families. Registration for the event is required.

For complete story: 
fas.camden.rutgers.edu/2014/10/15/rutgers-university-camden-students-conduct-archaeological-dig-in-pilesgrove-nj/

To register: 
www.eventbrite.com/e/open-archaeology-day-tickets-13327814853

( Photo: fas.camden.rutgers.edu/2014/10/15/rutgers-university-camden-students-conduct-archaeological-dig-in-pilesgrove-nj/ )
Native Plant Society Delaware Bay Chapter Upcoming Events (Millville, NJ)

**October 2** - Scary Alien (Plants) on the Move
It’s almost Halloween - the perfect time to discuss aliens, zombies, and rock snot. Join us for a lighter look on a darker topic: invasive plants. 6 PM at the Littoral Society. 135 N. High Street, Millville, NJ.

**October 4** - walk- CANCELLED.

**October 10**, 10 a.m. - Introduction to Invasive Plants Walk, Maurice River Trail. Meeting at Waltman Park.

**November 6**, 6 p.m. Chapter Meeting. Featuring Mark Demitroff: Soggy Ground: Valuing Pine Barrens Wetlands

Wetlands have long intrigued us. For centuries bogs, mires, and meadows were regarded forlorn topography; places replete with legend and lore. Demitroff, a Pinelands native, will present a natural science-based overview of how to read both the wet environment of this tract long lauded by the scientific community. Climate-driven movement of frozen and thawing ground, along with strong winds from the nearby Laurentide Ice Sheet, have helped to fashion lowland Pinelands terrain into unique landscapes that nature lovers enjoy today. Ice Age landforms provide critical habitat for rare, threatened, and endangered plants and animals. People have exploited wetland resources for over 14,000 years, and developed a distinctive agriculture to make barren ground productive. Their story will be woven together in a geographic tapestry of interactions between nature and society.

**December 4**, 6 p.m. – Elaine Sooy, Creating a Wildflower Meadow: My Journey

**Jan 15, 2015** 6 p.m. - Erik Mollerhauer - Director at Monarch Teacher Network, EIRC: Monarchs and their host plants

**Feb 5, 2015** 6 p.m. - Dr. George Zimmerman, Stockton University: Atlantic White Cedar

**March 5, 2015**, 6 p.m. - Dr. Salvatore Mangiafico, Rutgers: The Nuts and Bolts of Rain Gardens

**April 2, 2015**, 6 p.m. - Mike Hogan, SJ Land and Water Trust: Pine Barrens plants

**May 7, 2015**, 6 p.m. - TBD
Make and Take classes, Oct. and Dec., Millville, NJ (Rutgers Master Gardeners of Cumberland County)

- Indian Corn Swag
- Live Holiday Christmas Wreath
- Holiday Tablescape

Materials will be provided.

Payments must be received by RSVP date. See Registration Form below.
********* NEWS AND UPCOMING EVENTS *********

2014 Home Gardening Workshops: Make & Take

Materials & supplies will be provided. You are welcome to bring any special decorations that you want as part of your “Make and Take”.

No prior experience necessary; it does help to be able to laugh and have a great time!

Payment MUST be received by the RSVP date(s) for confirmed reservation.

No refunds will be offered. You will be notified and fully refunded in the unlikely event of cancellation.

Class size is limited, so don’t wait until later! First come, first served.

Class Sponsored and Taught by:

Rutgers Master Gardeners
Of Cumberland County
291 Morton Avenue
Millville, NJ 08332

(856) 451-2604
Fax: (856) 451-4095
Email: gmginfo@co.cumberland.nj.us

2014 Home Gardening “Make and Take” Workshops

Rutgers Cooperative Extension Education Center
291 Morton Avenue
Millville, NJ 08332
Phone: 856-451-2600 ext.
Fax 856-451-4206

REGISTRATION FORM:
Please return with payment:

Name: __________________________
Address: ________________________
Email: __________________________
Phone: __________________________

I am registering for:

___ Indian Corn Swag @ $25.00
   (due by 9/24/14)

___ Live Holiday Wreath @ $20.00
   (due by 11/25/14)

___ Holiday Tablescape @ $35.00
   (due by 12/3/14)

TOTAL ENCLOSED: ____________

Please make check payable to:

Extension Service Programs Account

Mail to: Extension Education Center
291 Morton Ave.
Millville, NJ 08332
Attention: Tammy