



***Conserving our Natural
Resources...***



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Rutgers Environmental Stewards Program

Annual Report 2016

Established in 2005, the Rutgers Environmental Stewards (RES) Program educates the public about the science behind pressing environmental issues and helps participants create positive change in their communities.

Stewards start out by attending class once a week on topics including climate change, soil health, energy conservation, water resource protection, invasive species management, open space management, habitat conservation, and environmental law and policy. Optional fieldtrips to environmentally significant sites around the state are included as part of the program.

Anyone can become an Environmental Steward. The program introduces non-scientists to the science underlying key environmental issues in the Garden State. Leading authorities from academia are joined by colleagues from government and the non-profit sector to share knowledge and insights with the Stewards.



2016 Middlesex Class on an environmental field trip.
Photo Credit Michele Bakacs



Upon completing the classroom portion of the program, Rutgers Environmental Stewards complete a 60-hour volunteer internship of their choosing. Internships are unique and intended to align with the passion of the individual, the needs of the program, and the community.

Past internship projects have included helping farmers adapt to climate change, composting restaurant food waste, mapping and eradicating invasive species in local parks, restoring native dune vegetation in shore communities, and installing rain gardens, among others. The classes, field trips, and internship do not replace a science degree, but help citizens educate themselves when presented with a real world environmental problem.

RUTGERS

New Jersey Agricultural
Experiment Station

Dr. Robert Goodman

Executive Dean of Agriculture and Natural Resources, School of Environmental and Biological Sciences. Executive Director, New Jersey Agricultural Experiment Station

Dr. Larry Katz

Director, Rutgers New Jersey Agricultural Experiment Station, Cooperative Extension

Daniel Kluchinski

Assistant Director of Cooperative Extension and Chair, Dept. of Agriculture and Natural Resources



Statewide Program Coordinator Pat Rector addresses the Rutgers Environmental Stewards graduation class of 2016 at Duke Farms.

Photo Credit: Dan Ross

Statewide Program Coordinator

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2016 Program Overview

Lecture Program participants: **43**

Certified Environmental Stewards: **15**

Competitive and small grants awarded: **\$3,500**

Total hours volunteered: **2,351**

Land transformed into native gardens
over **1,000** Sq. Ft.

Stormwater managed per year: over **127,407** Gallons

Counties where Stewards projects were completed: **9**

Total value of time volunteered: **\$55,390**

Cooperating Agencies: Rutgers, The State University of New Jersey, U.S. Department of Agriculture, and County Boards of Chosen Freeholders. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity program provider and employer.

2016 Program Impact

In 2016, **fifteen** internship projects were conducted in **nine** counties including; Somerset, Middlesex, Passaic, Monmouth, Union, Morris, Essex, Ocean, and Atlantic County.

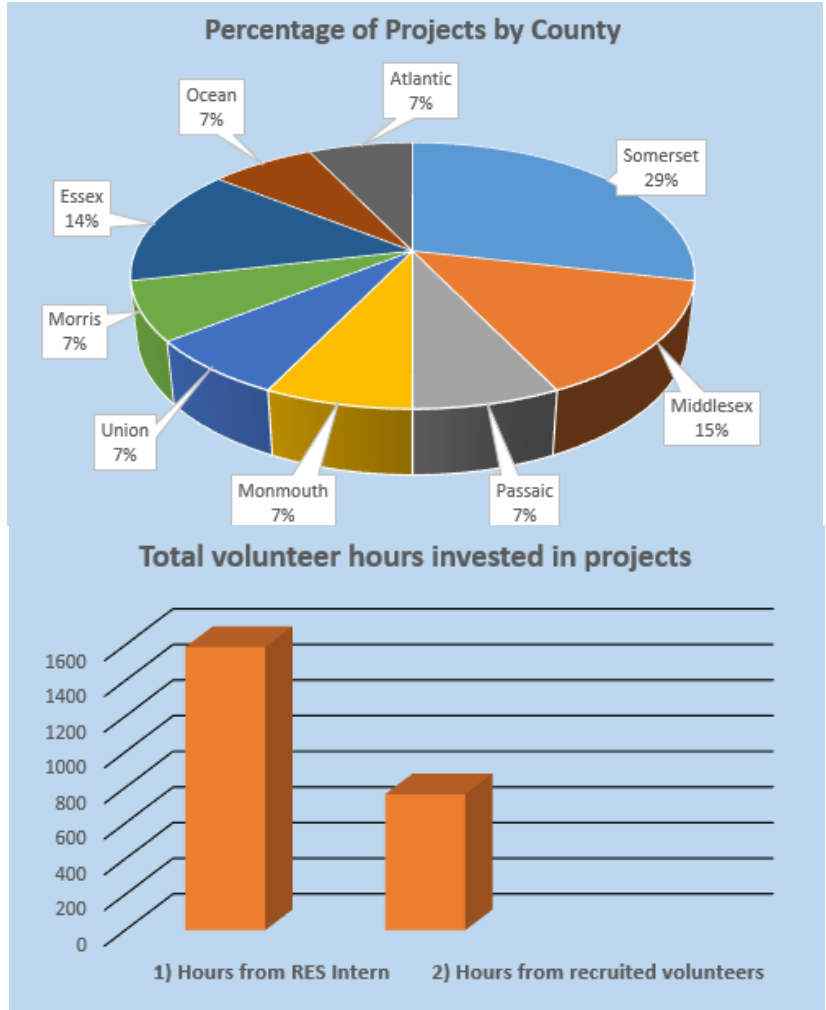
Stewards invested **1,588** hours of their time to these unique projects, and recruited an additional **763** hours of volunteer time. Based on [Independent Sector's](#) 2015 average worth of volunteer time of **\$23.56/ hour**, this volunteered time is valued at an **\$55,390**.

Environmental Stewards also applied for and received small grants worth a combined total of **\$3,500**.

Projects ranged from land restoration/ management, environmental education, solid waste/ recycling, wildlife conservation, air quality, water quality, local policy, green infrastructure and Sustainable Jersey initiatives.

Over **1,000** square feet of land was improved through the installation of herb, pollinator and native gardens.

6,500 square feet of drainage area was disconnected through green infrastructure projects, which will collect, store and infiltrate **127,407** gallons of stormwater annually.



The Rutgers Environmental Stewards Program would like to thank Bruce Barbour, the program founder, for his many years of dedication. We wish him all the best as he prepares for his next big adventure!

Bruce has been a Rutgers County Agent for 42 years, and he has dedicated the past 11 years of his career to this program. Since it began, over 400 Stewards have come through the program.

Bruce has personally certified 142 internship projects that provide community and environmental “give back”. Through the years the program has engaged citizens through these service projects, and our Stewards have provided essential outreach to their communities.

In his final commitment to the program, Bruce is conducting a sabbatical in an effort to determine the long-term impacts of the program on RES alumni and on their communities. After his sabbatical and report Bruce will begin a well-earned retirement.

We owe a debt of gratitude to Bruce; he leaves a legacy we are proud to continue. We look forward to bringing the program into the future! County Agent II Pat Rector will be taking on the role of Statewide Program Coordinator in Bruce’s leave.



RES Program founder Bruce Barbour takes pause for cake after the 2016 graduation ceremony. RES wishes him well in his retirement! Photo Credit: Michele Bakacs



Program founder Bruce Barbour shares a laugh with RES Alum Ed English at a RESAA meeting. Photo Credit Irene Sabin



Bruce Barbour announces his retirement and reflects back on establishing the Rutgers Environmental Stewards Program. Photo Credit: Dan Ross

Thank you to all of our partners!

The Rutgers Environmental Stewards Program would like to extend our gratitude to our long standing partners, without whom the program could not be such a success. Many thanks to Duke Farms, Organic Diversion and Atlantic County Utilities Authority for your dedication to the program.

Duke Farms has been the regional host and Somerset county location for the Stewards program since its beginning and their staff have assisted with many internship projects from planning opportunities to assisting with implementation.

The Atlantic County Utilities Authority has been a steady and reliable partner to the RES program since it's inception and has served as the regional host in the southern half of the state.

Organic Diversion, a food waste recycling partner out of Marlton, NJ been a steady partner to the RES program and has also assisted many past stewards with their intern projects, providing guidance and expertise.

The Program's newest partner The [Lower Raritan Watershed Partnership](#) (LRWP) is a small, non-profit organization that was formed in 2014 whose goal is to restore, enhance, and conserve the natural resources of the lower Raritan through science-based stewardship, education and innovation.

In 2016 LRWP hosted six RES projects focused on environmental education, water quality monitoring, habitat assessments, and soil health.

LRWP has been a great host agency for our interns. The Rutgers Environmental Stewards Program will continue to partner with them on future internships and project collaborations.



Atlantic County Utilities Authority (ACUA) Communications Manager and Atlantic County RES program coordinator Amy Cook-Menzel accepts a plaque in recognition of the partnership between ACUA and the Environmental Stewards Program.

Photo Credit: Michele Bakacs



Dr. Heather Fenyk, Executive Director of the Lower Raritan Watershed Partnership discusses some of this year's internship projects at the 2016 RES commencement ceremony at Duke Farms. Photo Credit: Dan Ross

Congratulations to the graduates of the 2016 Rutgers Environmental Stewards class!

The Annual Rutgers Environmental Stewards Commencement was held at Duke Farms on November 9, 2016. This year, 43 stewards completed the lecture portion of the program.

Dr. Larry Katz, Director of Rutgers Cooperative Extension, welcomed the graduating class and guests.

Michael Catania Esq., Executive Director of Duke Farms provided the keynote speech providing the correlation between Duke Farms and the RES program. He remarked on the even greater need for private, and often volunteer, environmental efforts given current State, and now Federal, political climates. Michael also encouraged everyone to remain optimistic and to continue their individual efforts to make a difference in the environmental community.

Certification as a Rutgers Environmental Steward is achieved upon completion of the course and a 60-hour project based internship. Fifteen Stewards became certified this year.

Of the 15 projects, two were chosen to give an overview of their project, to be representative of the caliber of the internships conducted by Rutgers Environmental Stewards Program. Don Jones Middlesex '16) "Cranford Municipal Rain Garden" and Mike Gerrity (ACUA'15) "Native Plant Garden Template for Coastal Communities" presented on their projects.

New partner Heather Fenyk, Director, Lower Raritan Watershed Partnership (LRWP) spoke about the importance of volunteerism and citizen science and praised the budding partnership between LRWP and the RES program.



RES Graduate Donald Jones discusses his Cranford Municipal Rain Garden Project at graduation.
Photo Credit: Dan Ross

Heather Fenyk, Executive Director of the Lower Raritan Watershed Partnership speaks at the 2016 RES graduation and commencement ceremony at Duke Farms.
Photo Credit: Irene Sabin



The Rutgers Environmental Stewards Alumni Association 6th Annual Alumni Forum



RESSA June 10th 2016 annual meeting. Photo Credit: Ed English

Each year the RES Alumni Association hosts a meeting and educational event. The event reunites former stewards, provides time to discuss ongoing initiatives, introduces newly certified graduates to the alumni association and allows for feedback from alum to provide focus for future actions of RESAA.

In 2016 the Annual meeting was held to collaborate with the Rutgers Sustainable Raritan Initiative “**RU on the Raritan Conference**” held in New Brunswick at the Douglass Student Center on June 10, 2016. The intention of the conference was to provide a forum for identifying a University-wide agenda for stewardship of the Raritan, and to establish a network for collaboration among University-based research, extension and outreach-efforts related to the Raritan River Basin.



Alumni met during the lunch break to discuss promoting the program to larger audiences and to welcome new members to the Alumni Association. Photo Credit: Michele Bakacs

Video library and additional online resources are now available!

As a newly unveiled feature this year, current Rutgers Environmental Stewards and alumni are invited to browse our growing online video and resource library collection on the Sakai website. The collection includes past guest lecturers, information for homeowners and environmental commissions, as well as a vast array of useful handouts and other resources available for download.



Catch up on presentations from guest lectures, learn from professionals in their various fields and gather fresh insights from our cast of knowledgeable speakers both past and present now all conveniently located in the new video library!

Alumni can now browse videos, podcasts and more in by logging onto Sakai and accessing the all new [RES alumni resource library](#). Once logged in, simply go to the RES Alumni tab and open the resources folder!



Executive Director of Duke Farms Michael Catania Esq. provides a lecture about the evolution and de-evolution of environmental law and policy in the state of New Jersey.

Location: Environmental Stewards 2016 Resources

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<input type="checkbox"/>	Title
<input type="checkbox"/>	Environmental Stewards 2016 Resources
<input type="checkbox"/>	ANJEC Resources



Additional information is now available on conservation easements, land stewardship, open space funding and much more! Thanks to resources provided by ANJEC!

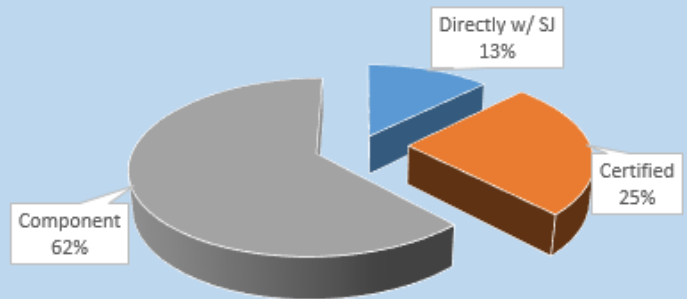
As the Rutgers Environmental Stewards decided on internships that would provide an environmental benefit to their community they often chose to fulfill Sustainable Jersey Actions. Sustainable Jersey is a nonprofit organization that provides tools, training and financial incentives to support communities as they pursue sustainability programs.

There is an easy symbiosis between the RES internship goal to provide a beneficial environmental impact to the community and the Sustainable Jersey and Sustainable Jersey for Schools goals.

Sustainable Jersey also offers a [small grants program](#) which is provided to towns for community-based projects to improve quality of life in New Jersey. As part of a new partnership with Sustainable Jersey, the \$2,000 Small Grant funding may be used for tuition for the Rutgers Environmental Stewards Program with the remainder being used for an internship project that can be used towards Sustainable Jersey certification.

Over the years, 17 internships have connected with Sustainable Jersey goals, either by garnering points for their municipality, starting Green Teams in their town, bringing their town all the way through certification, or working directly for Sustainable Jersey.

Internship Status Related to Sustainable Jersey (%)
2007-2016



THE 2016 NEW JERSEY **SUSTAINABLE** STATE OF THE STATE REPORT



Class Field Trips

The Rutgers Environmental Stewards Program provides a rich learning experience outside of the classroom as well, through optional participation in several class field trips.

The field trips provide real world experiences and have in some cases lead directly to influencing the types of projects that the stewards choose to pursue.

An annual excursion to New Jersey’s Pine Barrens, lead by New Jersey Conservation Foundation’s (NJCF’s) Emile DeVito is always a crowd favorite!



Dr. Emile De-Vito (NJCF) educates Environmental stewards about the fragile eco-system of the NJ pine barrens on an RES field trip

Rutgers Environmental Steward Program Internships

Rutgers Environmental Stewards engage in sixty-hour volunteer internships of their choosing to provide a hands-on learning component to their experience and to encourage a community “give-back” element to the program.

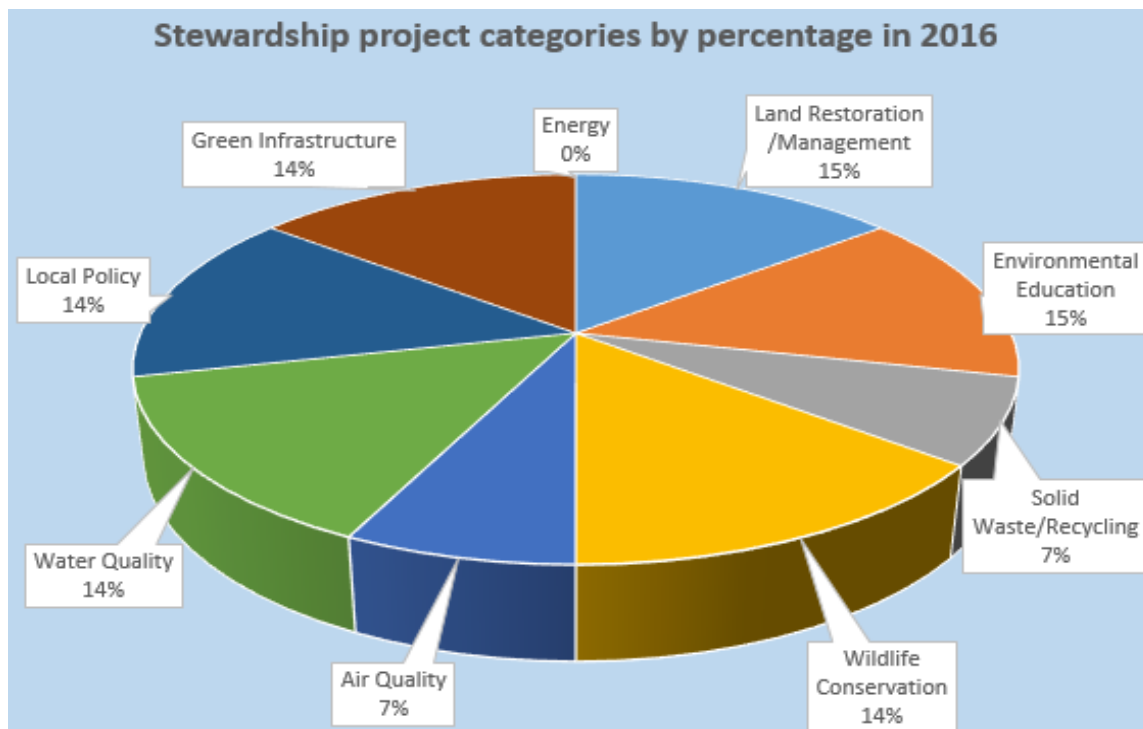


Stewards learn about the decreasing numbers of our native pollinators on an RES field trip. Photo Credit: Michele Bakacs



Congratulations to the class of 2016!

The following projects were completed in fulfillment of the internship requirement of the Rutgers Environmental Stewards Program. Graduates of the 60 hour lecture portion of the program complete an approved intern project of 60 hours or more to become Certified Rutgers Environmental Stewards. Interns can connect with businesses, municipalities, or organizations looking for assistance with existing projects, or develop their own project that reflects their interests and passions.



2016 Certified Rutgers Environmental Stewards

Ambient Air Quality

Project- Essex County

Bill Allen-Class of 2016-Passaic County, Rutgers Cooperative Extension Office location

- Bill Allen conducted his internship in Newark, NJ, in collaboration with the New Jersey Environmental Justice Alliance. The project consisted of choosing locations for air pollution monitoring via a program called Streetwyze.
- [Streetwyze](#) is a neighborhood navigator, powered by local residents providing a variety of information to populate databases.
- Bill's project focused on assisting the Alliance with identifying buildings and areas in the city that contribute to air pollution and particulate matter.
- Those locations will then be monitored for particulate matter 2.5 (PM2.5), which is an overall indicator of air pollution.
- This project is especially important in Newark due to the high asthma rates. Bill hopes that his efforts will contribute to awareness of local area residents about the state of their air quality.
- In total, Bill devoted 80 hours of his time to the monitoring project and demonstrated the important impact of volunteer citizen scientists collecting monitoring data for the environmental justice movement.



Example of a Streetwyze map



Clean Water Action's banner displays a desire to significantly reduce emissions in the city of Newark, NJ

2016 Certified Rutgers Environmental Stewards

Local Policy

Project- Essex County

John Britch -Class of 2016-Passaic County, Rutgers Cooperative Extension Office location

- As a member of Verona's Green team, RES intern John Britch helped launch a Green Business Recognition (GBR) Program in Verona, NJ, in conjunction with Sustainable Jersey's Sustainable Business certification.
- The goals of the program were to encourage and support sustainable operating practices of Verona businesses via incentives and education. And to increase community awareness of and investment in local business, while improving business satisfaction within the municipality by providing opportunities for networking and camaraderie.
- John helped to create program entry criteria and benefits, conducted door-to-door canvassing of businesses to recruit a core business group, compiled a database of the town's nearly three-hundred businesses to track program progress and recognized the first Verona Green Business at the town's recent Green Fair.
- John partnered with Montclair State University on this endeavor, and 36 students signed up to assist with the Verona and Montclair Green Business Recognition programs.
- John spent close to 100 hours on this project, with additional volunteer hours coming from the project interns and the his partners on the Green Team.
- The program also received local media coverage in the Verona/Cedar Grove Times, and two articles in northjersey.com and tapinto.net
- Verona received 15 points for Sustainable Jersey for the successful implementation of the Green Business Recognition Program.



John Britch (second from the right) pauses for a picture at recent Verona Green fair event.



Verona Town Council welcomes two new business into the green business recognition program. Photo credit: Steve Neale

2016 Certified Rutgers Environmental Stewards

Environmental Education

Project- Passaic County

Anne Siebecker -Class of 2016-Passaic County, Rutgers Cooperative Extension Office location

- Soon after NJ Audubon made the difficult decision to close the Weis Ecology Center, Anne and several concerned locals formed the Highlands Nature Friends (HNF) to save the beloved center from being demolished. Anne and her team began to expand the former center into The New Weis Center for Education, Arts & Recreation, with the goal of providing kids with the opportunity to attend summer day camps, learn about nature, and experience the Great Outdoors.
- Anne worked to engage the community and formed partnerships with local businesses. As a result of her hard work the grand opening was a great success, with approximately 200-250 attendees, including area media. The occasion was covered by NorthJersey.com
- The public reaction was extremely positive, as many people had fond memories of attending summer camps, scouting programs, school field trips, and other programs at Weis, and supported the efforts to retain the property and continue its use as a nature and environmental education center.
- Approximately 25 individual volunteers assisted with various aspects of the planning process and during the actual event. Anne estimates that they contributed nearly 300 volunteer hours to the project in addition to the approximately 200 hours of her own time.
- Anne will continue this work by planning educational workshops and community events at the center. Anne also reports that since the opening day celebration, news of the center's re-opening and expanded mission has been widespread.
- Their active volunteer pool has grown, and they have also had groups and organizations reaching out to them with inquiries and requests for programs almost daily.
- They have forged new partnerships, and strengthened ties to the community and region. They offered merit badge opportunities to local boy scouts and a nature day camp program this past summer.



The former Weis Ecology Center was re-named the New Weis Center for Education, Arts, & Recreation



Rutgers Environmental Steward Anne Siebecker smiles for the camera during the launching of the New Weis Center for Education, Arts and Recreation in Ringwood, New Jersey

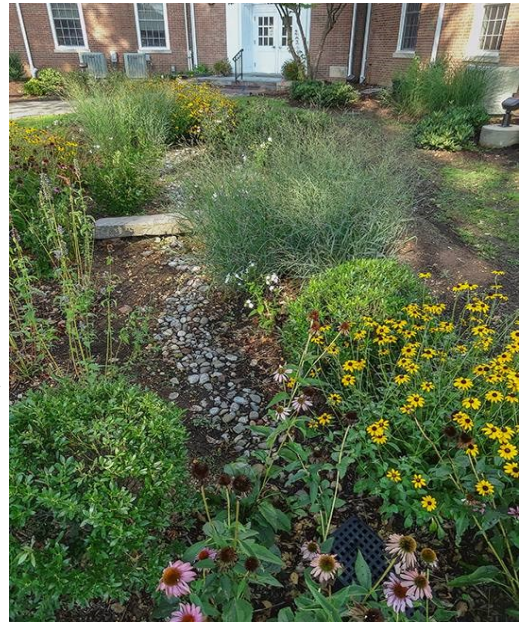
2016 Certified Rutgers Environmental Stewards

Green Infrastructure

Project -Union County

Donald Jones– Class of 2016– Middlesex Earth Center Location

- Following significant flood damage from Hurricane Irene in August 2011, Donald Jones and the Cranford Environmental Commission applied for a grant to address this issue. In 2013, they received a \$2,000 grant from Sustainable Jersey to install a rain garden in town.
- The purpose of the project was to set an example of an aesthetically pleasing landscape architecture that also performs the important function of minimizing stormwater runoff into the river by temporarily capturing stormwater and allowing the water to percolate into the soil.
- As the Project Coordinator, Donald felt that a successful rain garden model would educate the public and encourage homeowners to consider a rain garden installation on their property.
- During the summer of 2014, Don Jones and his team chose the site in front of the Cranford Municipal Building as a prime location.
- The town DPW provided assistance with excavation and transporting the plants, topsoil, mulch and rocks around the site.
- The rain garden captures stormwater from two downspouts that drain approximately 1,500 sq. ft. of roof top, treating and infiltrating 38,171 gallons of stormwater per year.
- On September 27, 2014 over 25 volunteers from the Environmental Commission, Township Council, Boy Scouts, Viridian (a sustainable energy company), and town residents came to help install the rain garden.
- Don invested 60 plus hours, and volunteers donated a total of 90 hours of their time to establishing the Cranford Municipal rain garden. Additionally, volunteers created a sign that explains the purpose of this Rain Garden.
- Cranford radio host Bernie Wagonblast interviewed CEC chair Nelson Dittmar and Don Jones.
- The entire installation process was chronicled on the "[My Green Cranford](#)" Facebook page.



Cranford Municipal Building Rain Garden in full bloom. Photo Credit: Green Cranford Facebook Page



Volunteers work to install a demonstration rain garden outside of the Cranford Municipal building in the summer of 2014.

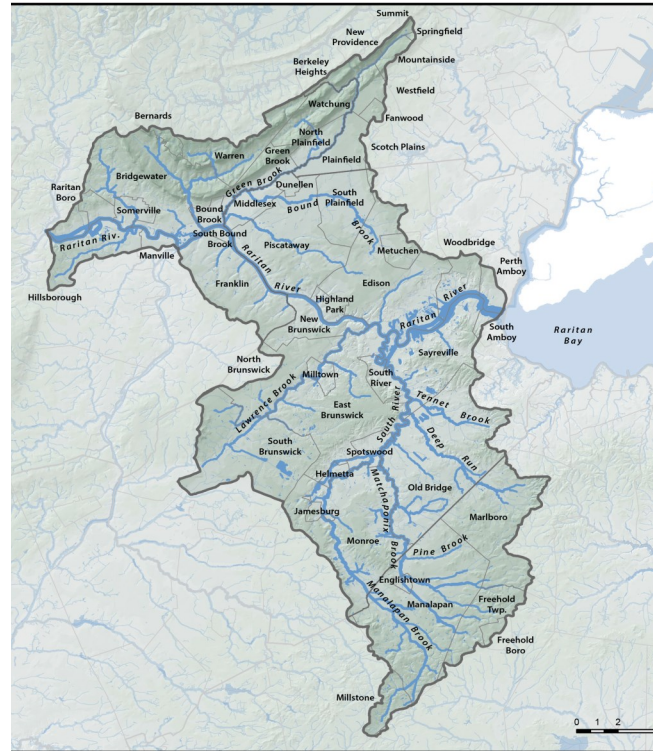
2016 Certified Rutgers Environmental Stewards

Wildlife Conservation

Project- Monmouth County

Akansha Khurana-Class of 2016-Middlesex County Earth Center

- Akansha, a high school senior in Manalapan Township, worked with the Lower Raritan Watershed Partnership to develop “The Watershed Illustration Curriculum” for elementary and middle school youth. This curriculum was developed to raise awareness about the endangered species of New Jersey, especially the flora and fauna of the Lower Raritan Watershed.
- Every species in the curriculum, from the Bald Eagle to the Closed Bottled Gentian, is in immediate danger due to human activities.
- Akansha researched and developed nine lesson plans, one for each species, that can be implemented with elementary and middle school students.
- This project combines art and science to help students develop their creativity and artistic skills, while advancing their knowledge of the endangered species and plants that are in close proximity to them.
- By focusing on art, Akansha wanted to try to make the connection to the environment a personal experience.
- Akansha will be working with the LRWP to help pilot the lessons with local schools in the next year.
- This project qualified as Akansha’s National Honor Society’s project for her high school.



The Lower Raritan Watershed includes parts of Middlesex, Somerset, and Monmouth counties.



Closed Tip Bottle Gentians. Photo Credit: John T. Fowler

2016 Certified Rutgers Environmental Stewards

Water Quality

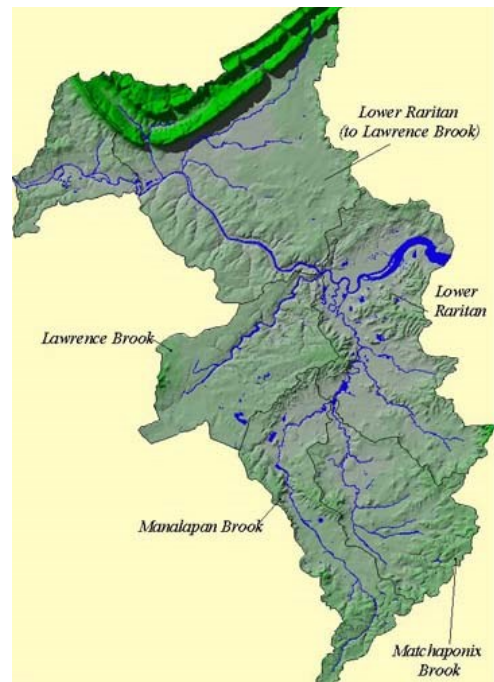
Project- Middlesex County

Joe Slomian– Class of 2016– Middlesex Earth Center Location

- Joe Slomian worked with the Lower Raritan Watershed Partnership to conduct habitat assessments on the Matchaponix Brook, a tributary of the Raritan River, and part of the Raritan Basin
- The Matchaponix Brook flows through Monmouth and Middlesex Counties and empties into the South River.
- Joe grew up recreating on the Matchaponix. His goal is to bring his intimate knowledge of this neglected brook to the surrounding community in the hopes that they will see it as the hidden treasure that it has always been to him.
- Joe spent 4 days kayaking the brook, providing information ranging from habitat assessments, photographs, mapping stormwater outflows. He then provided a general summary of stream conditions.
- From his findings he generated a report for the Lower Raritan Watershed Partnership (LRWP) which will be used to prioritize areas for cleanups, restoration, and to garner support in the community for stream restoration.
- Motivated by what he learned while enrolled in the RES course, Joe has decided to become an environmental commissioner in Monroe Township. He has additional plans to conduct similar work on the Manalapan Brook.
- The project also assisted the township with acquiring Sustainable Jersey points by adding to their existing environmental resource inventory.



Joe Slomian takes a break from stream monitoring along the Matchaponix Brook in Middlesex County N.J.



Matchaponix Brook is part of the State's Water Management Area 09

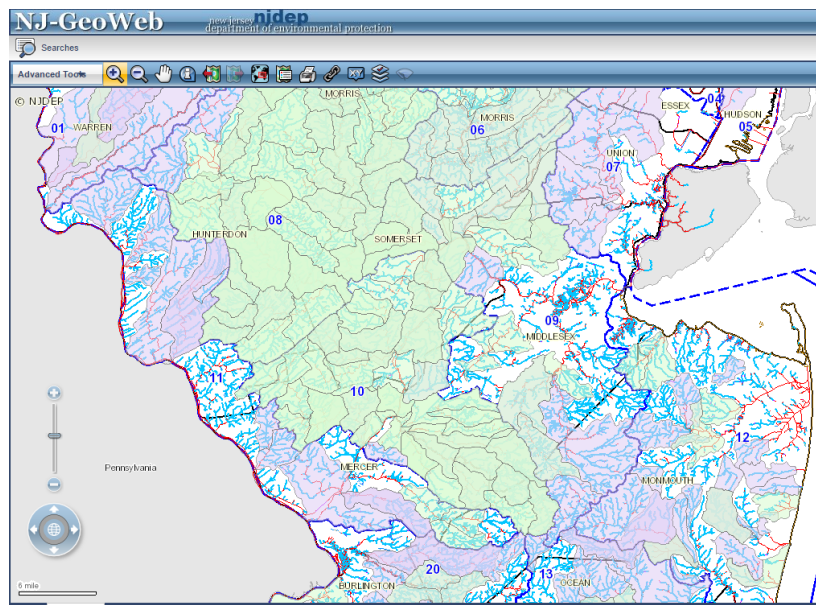
2016 Certified Rutgers Environmental Stewards

Water Quality

Project- Middlesex County

Bruce Wallington– Class of 2016– Middlesex County Earth Center Location

- Understanding which waterbodies are impaired within a watershed region, and to what degree, is a critical first step in identifying restoration and partnership opportunities. Existing monitoring data can be fragmented, unclear, or difficult for the public to understand.
- Compiling all the existing available data and providing mapping is an important undertaking which yields a tangible report to present the findings.
- Bruce worked with the Lower Raritan Watershed Partnership to analyze water quality data that had been collected as a requirement of Section 303(d) of the Clean Water Act. Under the Act New Jersey is required to monitor and report back on water quality and is charged with restoring waterbodies to state standards, based upon a Total Maximum Daily Load (TMDL)
- The goal of the project was to provide information to the Lower Raritan Watershed Partnership to be used as a concise report, to gain a better understanding of the current state of impaired waters in the watershed, in order to approach the New Jersey Department of Environmental Protection for potential partnership opportunities.
- Using the 303(d) report, Bruce focused on summarizing all of the impairments and created maps with 303(d) data for each sub-watershed using the interactive web mapping tool, [NJ-GeoWeb®](#).
- He found that 132 impairments, representing 27 water quality parameters, are distributed in 41 of the 47 sub-watersheds within the LRW, and that the greatest number of impairments occurred for arsenic.
- The top impairments were arsenic, impaired biota (cause unknown), PCB in fish tissue, and pH.
- Aquatic life, fish consumption, and water supply were the top three designated water uses with the most impairments, respectively.
- Bruce thoroughly enjoyed working on the project and has plans to continue working with LRWP.



NJDEP's free web based GIS program NJ Geo-Web, showing various data layers.

2016 Certified Rutgers Environmental Stewards

Land Preservation and Management

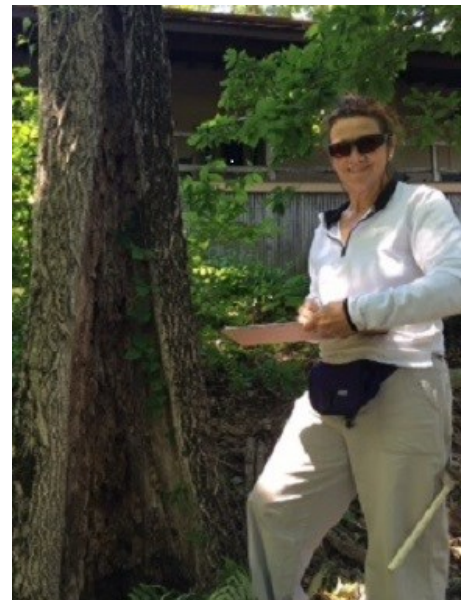
Project- Morris County

Tracy Cicatelli, Anne Gale– Class of 2016– Duke Farms, Somerset County location

- Emerald Ash Borer (EAB) is an important forest health issue because the insects specifically target and kill stands of otherwise healthy ash trees. Damage from the (EAB) has already been detected in NJ and will likely spread to Morris County in the near future.
- Rutgers Environmental Stewards Tracy and Anne worked together to inventory all of the Ash trees within a 50 foot perimeter of high-use areas to assist the Morris County Park Commission (MCPC) with an EAB risk assessment at Schooley's Mountain County Park in Washington Township, NJ.
- As the Morris County Park Commission lacks the staff and resources, the field work and data that Anne and Tracy were able to collect is a valuable asset to the MCPC and the community.
- Over the course of their 60 hours internships, the two hiked throughout designated areas of the 1.57 km² park and identified 350 ash trees that were within the 50 foot proximity of all high-use areas.
- Each tree was tagged and numbered and mapped using a GPS unit. Additionally each tree's diameter was measured, the condition of the trees were noted along with any evidence of EAB disease, or areas of potential hazard to visitors.
- All the data was added to MCPC's database to be used in an Emerald Ash Borer (EAB) preparedness plan. In the short term, as a direct result of this project, the MCPC was notified of several trees in need of immediate removal.
- During their fieldwork Tracy and Anne were also able to educate the public about EAB and answer park visitor's questions about how their project would make the park a safer place. Reflecting back on the project Anne recalled; "I think one of the best parts of this project has been working in the park during day camp season, we've had some great interactions with the counselors, campers and park staff."
- Tracy and Anne continued their work along the Columbia Trail at MCPC's request.



Rutgers Environmental Steward Anne Gale inspects potentially at risk Ash trees at Schooley's Mountain Park in Washington Township, NJ. Photo Credit: Tracy Cicatelli



Rutgers Environmental Steward Tracy Cicatelli recording diameters and inspecting Ash trees for signs of EAB. Photo Credit: Anne Gale

2016 Certified Rutgers Environmental Stewards

Local Policy

Project- Somerset County

Anne Goodman– Class of 2016– Duke Farms, Somerset County location



Rutgers Environmental Steward Anne Goodman working on data entry and GIS mapping of stormwater detention basins throughout the town of Hillsborough.



David Kois from the Hillsborough Engineering Department oversees Anne's progress on the project.

- Working with the Hillsborough Township Engineering Department, Anne compiled an inventory and subsequent GIS mapping of all the storm water detention basins in town.
- Anne was seeking an opportunity to utilize GIS mapping.
- Anne streamlined all available data and partnered with the Somerset County GIS office to gather the most up to date available county parcel data.
- Anne developed a Data Management Continuity Plan in consultation with the Hillsborough Engineering Department.
- Future plans include updating the town's ordinances to require developers to submit Major Development Stormwater Summaries by the end of their project before the town will consider their projects completed.
- The New Jersey Department of Environmental Protection is in the process of finalizing an online application, through which new data can be entered directly into a centralized State Stormwater Facility Database.
- Once the application is made available to the public, the town has plans to input the data from Anne's project and continue to update their maps and database as needed.



STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NJ STORMWATER.ORG
Stormwater in New Jersey

2016 Certified Rutgers Environmental Stewards

Environmental Education

Project- Somerset County

Joanne Diglio- 2015 Class, Duke Farms , Somerset County location

- Joanne designed, wrote and illustrated a children’s book educating students about what aquatic invasive plants were, how they were detrimental to a well-balanced ecosystem and how they could be managed..
- With the knowledge she obtained from her Rutgers Environmental Steward classes on aquatic invasive species, and with the assistance of her instructor in lake ecology, Joanne wrote a short story entitled “Alex Takes Care of a Lake.”
- Her short story is complimented by her vivid watercolor illustrations that depict how to identify species such as the invasive water chestnut, and water lettuce.
- Joanne read her novel to a group of young students and then asked them a series of questions which would serve as a measure of their knowledge gain about the impact that aquatic invasive plants can have on the ecosystem, as well as what actions they can take if they encounter invasive species in a waterbody.
- The children were able to answer all of Joanne’s questions including which characteristics make invasive species so adept at reproducing and outcompeting native plant species.
- They understood how invasive species can be spread by human activities as well as by animals in the wild and how they can become newly established in surrounding water bodies. The students were able to correctly identify the various zones of a lake and what organisms lived or occurred in each zone.
- Once the book is finalized and available to a larger audience, it will serve as a means of outreach and environmental education for future generations to come.



Water color painting of aquatic invasive water lettuce
From “Alex Takes Care of a Lake “ by Joanne Diglio



Water color painting of aquatic invasive water chestnut
plant by Joanne Diglio

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Solid Waste/ Recycling

Project- Somerset County

Negar Ghadimi– Class of 2015, Duke Farms, Somerset County class

- Negar worked with Sustainable Jersey to develop an aggressive but attainable state standard for municipalities to reduce the amount of solid waste being generated and sent to landfills.
- She assessed existing known strategies of reducing municipal waste levels through an analysis of various case studies, academic papers and guidelines set forth by other progressive municipal sustainability programs. Through careful analysis and literature review she was able to quantify the relative effectiveness and impacts of existing initiatives.
- She then determined how applicable these programs might be in the political and legal context of the state of New Jersey.
- Negar assessed the existing New Jersey Municipal Solid Waste production data looking for patterns and trends which could lead to reasonable reduction rates.
- Negar found that according to her research, Pay-As-You-Throw programs with an estimated impact of 14 to 27% waste reduction and recycling food waste with an estimate impact of 8 to 25% are among the most effective strategies to send less waste to landfills.



Negar Ghadimi’s analysis factored into the discussion of how Sustainable New Jersey would ultimately calculate and qualify the rules for achieving a Gold Star in Solid Waste reduction.

- The results of this research have since been published in “The Sustainable State 2016 Update and The New Gold Standard” document which was put forward by Sustainable Jersey and was distributed to participants of the New Jersey Sustainability Summit on June 15, 2016.
- In total Negar engaged in about 90 hours of voluntary service in order to complete this internship and has put together a comprehensive outline for additional municipalities to follow, to attain Gold Star status.



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Wildlife Conservation

Project- Somerset County

Hilary Persky– Class of 2016– Duke Farms, Somerset County class

- Under the guidance of Duke Farms staff, Hilary worked with partners to build turtle nesting boxes at Duke Farms. The goal of constructing these boxes was to provide protected nesting areas for the endangered turtles, and to educate the public about the alarming decline in turtle populations in the wild, due to threats from predation.
- In the wild, turtle eggs are often preyed upon by a variety of predators including; foxes, raccoons, and crows. Turtle eggs can also be negatively impacted by human activities.
- With habitat destruction and low rates of annual reproduction even turtles that are considered common in New Jersey are at risk due to the pressures they face.
- One method of protecting nesting turtle populations from these threats is providing nesting boxes.
- Hilary worked with several partners on the project including Duke Farms staff and a team of five volunteers from Bristol Meyers Squibb to assemble the nesting boxes. Hilary enlisted volunteers for an additional 15 hours of work.
- Hilary designed signage to be placed near the boxes educating the public about the purpose of the boxes and the need for the public to keep their distance.
- The nesting boxes will provide crucial habitat for Eastern Painted, Box, Redbelly, Common Snapping and Common Map turtles and help them attain healthy population levels.
- Hilary also noted that “because it wasn’t possible to really gauge the effectiveness of the nest boxes when they were installed, I’d welcome an opportunity to observe how much they are being used this coming season.” She added that “there may also be an opportunity to build an additional box in a wooded location, best for Wood Turtles.”



Turtle nesting boxes, like this one, provide crucial habitat for the state’s turtle population.
Photo Credit: Hilary Persky



Hilary Persky poses with her project partner Victorino at the 2016 RES commencement ceremony. Photo Credit: Dan Ross

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Green Infrastructure

Project- Ocean County

Michael Gerrity- Class of 2015- Atlantic County Utilities Authority location

- Mike partnered with a number of public entities that had been selected by the Ocean County Soil Conservation District to design and install demonstration rain gardens in an area which had been severely impacted by storm surge and flooding from Hurricane Sandy.
- Mike researched and determined that there were two different plant communities within the barrier islands. These two plant communities were: Oceanside coastal, which consisted of primary dune, secondary dune and thicket; and Bayside Coastal, composed of thicket, edge, maritime forest, freshwater wetlands, tidal marsh and bay shore plants.
- He created two design templates based on his research, that can be referenced in the future. The templates were designed based upon the suitability of the plants selected and aesthetics of the final product.
- Mike designed and helped install two rain gardens along the shoreline of the Metedeconk River, Ocean County. One was a two-hundred square foot garden in Seawood Harbor Wildlife Refuge Area and another was an eight-hundred square foot garden in Bay Head Shores.
- Between November 2015 and September 2016 Mike also recorded the total amount of rainfall in his area. Based upon the amount of precipitation of (31.56") Mike was able to determine that the two rain gardens collectively captured, treated, and infiltrated 89,236 gallons of stormwater volume in the past year.
- In total, Mike devoted an estimated 243 hours working on this project, exceeding the required 60 hours and demonstrating his passion and commitment. He also worked with 60 volunteers contributing 180 hours towards the project.



Mike's volunteers install a coastal rain garden at Bay Head shores Photo Credit: Mike Gerrity



Completed rain garden at Seawood Harbour Photo Credit: Mike Gerrity

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Land Restoration/ Management

Project—Atlantic County

Paul Ludgate— Class of 2016— Atlantic County Utilities Authority Class location

- The goal of Paul’s project was to create a school garden at Saint Joseph’s Regional School in Somers Point, NJ, that included a variety of native coastal upland shrubs and flowering perennials.
- By selecting only native coastal plants, he was able to ensure that they would require less care and irrigation. They would also serve the dual purpose of attracting native pollinators for students to study and serve as a demonstration template for parents and homeowners.
- These native shrubs, once established, do not require irrigation except in extreme drought, reducing the need to pump fresh water from the aquifers along the outer coastal plain. Saltwater intrusion from lowered aquifers in coastal areas is a regional problem and protecting natural resources by reducing pumping of the aquifer is a best management practice.
- As a retired educator, Paul has extensive experience helping kids connect the dots between the natural world, the importance of protecting resources and the impact and consequences of our behavior.
- For the project, Paul obtained \$1,500 from Atlanticare’s Growing Green regional health care initiative in funding. Paul then designed and installed herb, vegetable and native plant gardens on the school grounds. In total the project spanned 1,000 sq. ft.
- Paul engaged 100 volunteers including an Eagle Scout, the Great Egg Harbor Watershed Association, students, Watershed Ambassadors, teachers and staff at the school.
- Paul provided programming at a September in-service for faculty.
- All the participants that attended rated the overall in-service as excellent, and a majority, 80% or more, said the program was of value to them, including a tool box on wheels containing lesson plans and instruments that facilitate the lessons for students that Paul had developed.
- Respondents also described ways they would use the information they learned to improve their teaching methods for better student performance outcomes.



One of the gardens Paul helped to design and implement at Saint Joseph’s Regional School in Somers Point, NJ.

Photo Credit: Paul Ludgate

The 2016 Rutgers Environmental Stewards Program Annual Report

RUTGERS
New Jersey Agricultural
Experiment Station



This annual publication showcases and highlights both the overall statewide effort as well as the local training and outreach accomplishments of the Rutgers Environmental Stewards Program.

Cooperating Agencies: Rutgers, The State University of New Jersey, U.S. Department of Agriculture, and County Boards of Chosen Freeholders. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity program provider and employer.