2018 Annual Report

New Jersey Pinelands Commission

Protecting the New Jersey Pinelands

The New Jersey Pinelands Commission is an independent state entity whose mission is to preserve, protect, and enhance the natural and cultural resources of the Pinelands National Reserve, and to encourage compatible economic and other human activities consistent with that purpose.

The Commission was created by the passage of the Pinelands Protection Act in 1979.

The Pinelands is home to vast forests, farms and towns covering portions of seven counties in southern New Jersey. Photo/Paul Leakan

To accomplish its mission, the Commission implements a comprehensive plan that guides land use, development and natural resource protection programs in the 938,000-acre Pinelands Area of southern New Jersey. The Commission's 15-member board consists of state, county and federal appointees who volunteer their time and expertise. The panel meets monthly and receives guidance from its Executive Director and staff.

Commissioners:

Sean W. Earlen, Chairman
Alan W. Avery, Jr., Vice Chairman
Candace McKee Ashmun
Bob Barr
Guiseppe (Joe) Chila
Paul E. Galletta
D'Arcy Rohan Green
Jordan P. Howell
Jane Jannarone
Edward Lloyd
Mark S. Lohbauer
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Gary Quinn

Nancy Wittenberg, Executive Director

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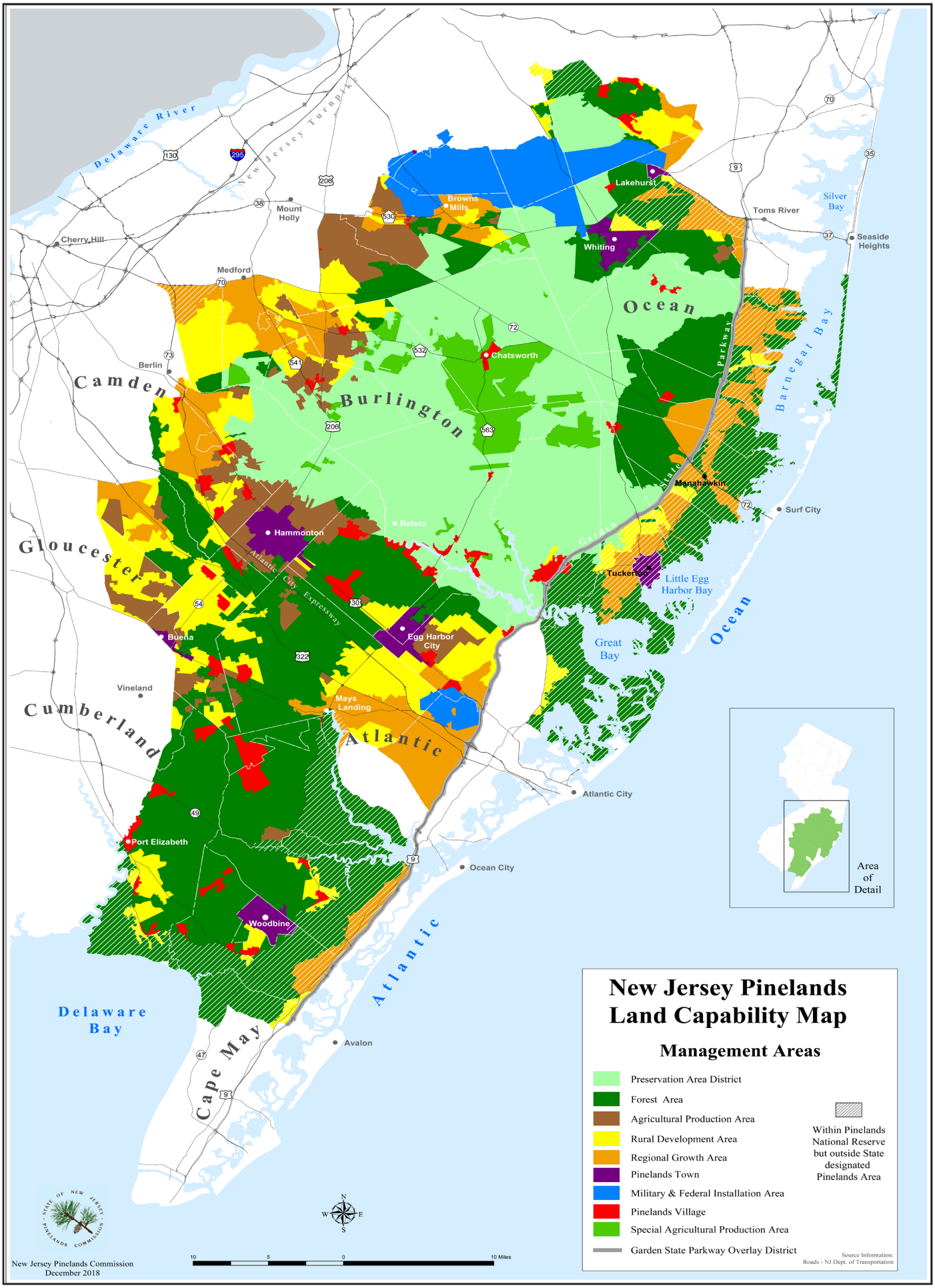

New Jersey Pinelands
Land Capability Map
Management Areas
Preservation Area District
Forest Area
Agricultural Production Area
Rural Development Area
Regional Growth Area
Pinelands Town
Military & Federal Installation Area
Pinelands Village
Special Agricultural Production Area
Garden State Parkway Overlay District
Within Pinelands National Reserve but outside State designated Pinelands Area
Source Information:
Roads - NJ Dept. of Transportation
Area of Detail
New Jersey Pinelands Commission
December 2018
10 Miles
Delaware River
Delaware Bay
Atlantic Ocean
Barnegat Bay
Little Egg Harbor Bay
Great Bay
Camden
Burlington
Gloucester
Cumberland
Atlantic
Cape May
Ocean
Lakehurst
Browns Mills
Whiting
Toms River
Silver Bay
Seaside Heights
Mount Holly
Cherry Hill
Medford
Berlin
Chatsworth
Hammonton
Batsto
Manahawkin
Surf City
Tuckerton
Egg Harbor City
Buena
Vineland
Mays Landing
Atlantic City
Port Elizabeth
Ocean City
Woodbine
Avalon
New Jersey Turnpike
Garden State Parkway
Atlantic City Expressway

Executive Director's Message

2018 was another busy year for the Pinelands Commission. While we continued to conduct our ongoing programs, we took steps to improve and enhance these activities and added some important new initiatives.

Partnerships have become key to the Commission's work, and in 2018 we engaged in two new collaborations.

The Commission Science Office has partnered with Herpetological Associates, the College of New Jersey and the New Jersey Department of Environmental Protection (NJDEP) to conduct research on the corn snake. This work will inform the Commission's approach on how to best protect this species.

The Pinelands Commission provided funds to preserve this 438-acre property in Southampton and Woodland townships in 2018.
Photo/Paul Leakan

Commission staff coordinated with the Archaeological Society of New Jersey, Temple University, three Lenape tribes and Shamong Township on an investigation at the site of an eighteenth century Reservation in the Township. This work will help the Commission in its efforts to protect cultural resources and expand and share information about the history of the Pinelands.

Our efforts to preserve land are another example of successful, ongoing collaborations. In 2018, the Commission partnered with Ocean County and the New Jersey Conservation Foundation to purchase 579 acres of land. The Commission has also worked closely with the NJDEP and volunteers to identify and protect state lands from off-road vehicle damage.

Behind the scenes, we have taken steps to improve our working relationship with stakeholders. Making use of existing information systems, we have expanded our abilities to be paperless and better track and monitor our work. We have increased the frequency of updating our online application status reports. This not only benefits Commission staff but provides for improved outreach to the public and better service to our towns, counties and private applicants.

Looking back on 2018, we have much to be proud of. Working with partners and providing better access to information will continue to be a priority.

With the dedication of our Commissioners and staff, I'm confident that 2019 will be another excellent year.

Nancy Wittenberg
Executive Director

Planning Activities

Permanent Land Protection

The permanent protection of land remains among the top priorities for the Pinelands Commission.

In 2018, the Commission contributed $408,178 from its Pinelands Conservation Fund (PCF) toward the permanent preservation of 579 acres in the Pinelands.

The three projects that were funded are located in Ocean Township, Ocean County (43 acres), Southampton and Woodland townships in Burlington County (438 acres) and Barnegat Township, Ocean County (96 acres).

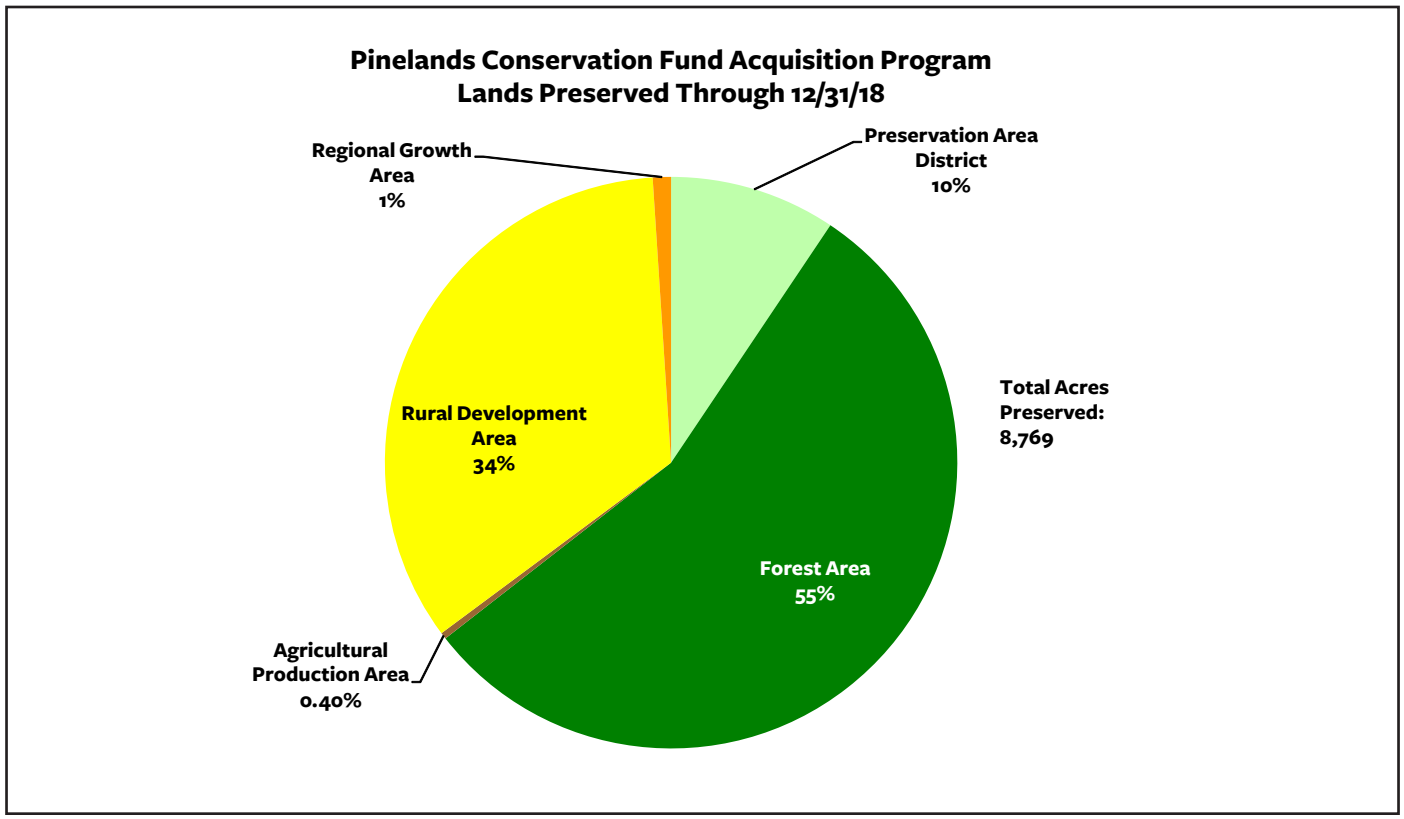
The acquisitions are part of the Commission's most recent round of funding, which placed a new emphasis on preserving lands that have been accessed and damaged by off-road vehicles. In order to receive funding, each applicant is required to include stewardship plans that call for restoring land and preventing future damage from off-road vehicles.

The three properties are located in two of the most ecologically-sensitive Pinelands management areas: the Preservation Area District and the Forest Area.

Historically, most of the land that has been acquired through the Pinelands Conservation Fund is located in the Pinelands Forest Area and Preservation Area District, as shown in the chart below.

By the Numbers:

- In 2018, the Commission awarded $408,178 in grants toward the preservation of 579 acres of land.
- From 2007 to 2018, the Commission contributed $9.4 million to 40 land acquisition projects in the Pinelands Area.
- Thirty-nine of these projects have been completed as of December 31, 2018, resulting in the permanent protection of 8,769 acres.
- Approximately half (467,000 acres) of the land in the Pinelands Area has been permanently preserved.



Pinelands Comprehensive Management Plan Amendments

Above: The Commission amended the Comprehensive Management Plan in 2018. Photo/Paul Leakan

In 2018, the Pinelands Commission adopted amendments to the Pinelands Comprehensive Management Plan that allow for the continued installation of certain state-of-the-art septic systems in the Pinelands.

The amendments eliminated the August 5, 2018 deadline for installing the alternate design septic system technologies. Although the deadline for installing the systems has been removed, the systems will continue to be tested as part of a Pilot Program.

Through the Pilot Program, the Commission has evaluated numerous septic system technologies and identified several that successfully meet Pinelands water quality standards for residential development on lots as small as one acre.

Pinelands Development Credit Program

The Pinelands Development Credit Program is a regional transfer of development rights program that preserves important agricultural and ecological land. Pinelands Development Credits (PDCs) are allocated by the Commission to landowners in the Preservation, Agricultural Production and Special Agricultural Production Areas, which are the sending areas. PDCs can be purchased by property owners and developers who are interested in developing land in Regional Growth Areas, which serve as the receiving areas.

This farm in Tabernacle Township has been permanently preserved through the Pinelands Development Credit Program. Photo/Paul Leakan

Once PDCs are "severed" from a sending area property, the property is permanently protected by a conservation or agricultural deed restriction and the PDCs allocated to that property can be sold on the private market. A total of 52,346 acres in the Pinelands Area have been permanently preserved through the PDC Program since 1982.

In 2018, 10 PDCs were allocated by the Commission to eight sending area properties. A total of 31.25 PDCs were sold, with an average sales price of $36,212 per PDC. A total of 39.25 PDCs were redeemed for residential development in Egg Harbor, Hamilton, Shamong, Southampton, Tabernacle and Waterford townships during 2018, nearly double the number that were redeemed throughout the Pinelands Area in 2016 and 2017 combined.

Reviewing Municipal Ordinances

The master plans and land use ordinances of all Pinelands municipalities and counties must be consistent with the Pinelands Comprehensive Management Plan (CMP).

Consistency is ensured through the conformance process, by which municipalities and counties submit their plans, ordinances and amendments to the Commission for review and certification.

During 2018, the Commission received and reviewed 177 master plan and ordinance amendments from 43 different municipalities and one county.

The Commission staff works closely with Pinelands municipalities to help them achieve their objectives in a manner that is consistent with the CMP. In 2018, many municipalities were focused on adopting and implementing their Housing Elements and Fair Share Plans in order to satisfy their affordable housing obligations. Many redevelopment plans were also adopted as a way of facilitating specific development projects or encouraging the rehabilitation of existing buildings.

Protecting Roadside Plants

Efforts to protect native vegetation growing along roadsides in the Pinelands are taking root.

Road crews in five counties in the Pinelands have been implementing a program aimed at protecting native vegetation growing along the region's roadways.

The program was initiated by the Pinelands Commission in 2009, and it incorporates various practices for mowing and managing the roadsides in a manner that maintains motorists' safety while encouraging native plant species to survive and thrive.

The Pinelands Commission launched the program in response to the public's concerns about the destruction of native and rare plant populations on these roadsides. The Commission worked with the Pinelands Preservation Alliance, state and county transportation officials, and local botanists to develop best management practices for the mowing and maintenance of Pinelands roadsides.

The Commission added the best management practices to a memorandum of agreement (MOA) that was being developed simultaneously with Pinelands Area counties. The MOA simplifies the Commission's application process for certain minor road infrastructure improvements on county-owned roads. Under the MOA, the counties agreed to implement the best management practices on county-owned roadsides.

In 2018, Commission staff observed greater compliance with the measures due to meetings that were held with roadside maintenance crews in each of the five participating counties – Atlantic, Burlington, Camden, Gloucester and Ocean – in 2016 and 2017.

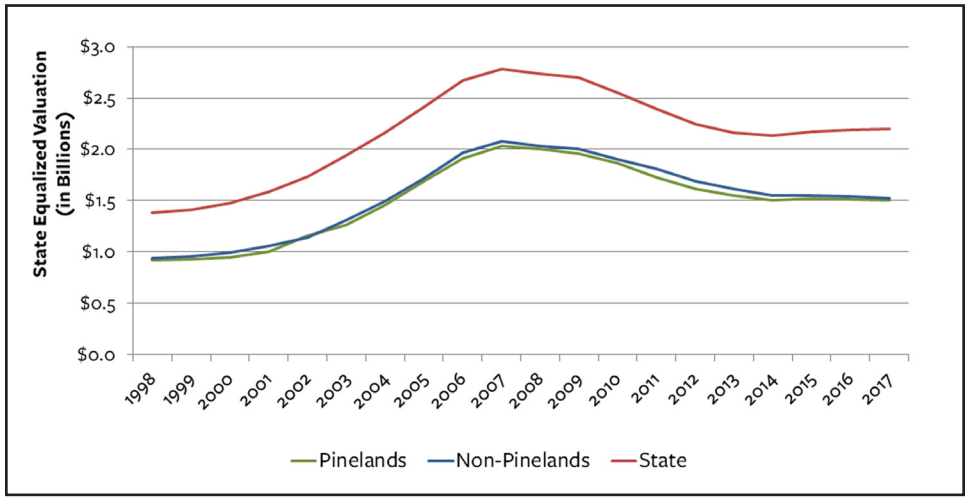
Robyn Jeney, a Resource Planner with the Pinelands Commission, surveys roadside vegetation growing along Route 563 in Burlington County. Photo/Paul Leakan

Long-Term Economic Monitoring Program

In 2018, the Commission issued a two-year report that included economic data from 2015 and 2016 as part of the Long-Term Economic Monitoring Program (LTEM).

The report shows that municipalities in the Pinelands Area are faring well economically when compared to towns located in other areas of southern New Jersey. For example, average equalized property values – defined as the total assessed value of all properties in a municipality – are very similar in the Pinelands and non-Pinelands municipalities in southern New Jersey, as shown in the chart below.

The goal of the LTEM program is to continually evaluate the health of the Pinelands economy in an objective and reliable way. Since its inception in the mid-1990s, this program, in conjunction with the Long-Term Environmental Monitoring program, has provided valuable information to the Pinelands Commission and its stakeholders. The National Park Service (NPS) funds both programs.



Staff launched a re-examination of the economic program in 2017 upon the recommendation of the NPS.

After holding two stakeholder meetings, the Commission contracted with Rutgers University faculty to review the content and format of the annual LTEM report. Rutgers issued its review of the program in 2018. As a result of Rutgers' evaluation and feedback from stakeholders, the Commission will add new variables to the LTEM program and it has started to release economic data briefs online as soon as they are completed rather waiting to issue the information as part of a full annual report. Commission staff began posting the data briefs on the Commission's website in early 2019 (https://www.nj.gov/pinelands/landuse/current/economic/).

Brotherton Archaeological Investigation

In 2018, the Commission initiated an archaeological investigation at the former site of the eighteenth century Brotherton Reservation in Shamong Township, Burlington County.

The reservation was the first of its kind in the American colonies, in addition to being the only formal reservation in New Jersey. Established in 1758, the community was headed by the Presbyterian missionary John Brainerd until his death in 1781. Without sustained support from either the state or their neighbors, the remaining members of the community moved north in 1802 at the invitation of a Mahican group already settled near Oneida, New York.

In 2018, the Commission, having received permission from the Township to conduct investigations on the parcel, initiated formal contact with the three federally recognized tribes of Lenape: the Delaware Nation, the Stockbridge-Munsee, and the Delaware Tribe.

Because of the cultural significance of this site to the Lenape, the Commission in 2018 worked to ensure that the tribes could provide guidance on non-invasive testing strategies prior to commencing any formal work at the site.

At the request of the tribes, a ground-penetrating radar (GPR) survey was conducted on the parcel in December 2018 and January 2019 to assist in identifying any below-ground features remaining on-site. Ground-penetrating radar works by sending electromagnetic waves into soils and sediments, and graphically representing their "reflection" off of buried physical features or anomalies. The data provided by GPR surveys allows archaeologists to prioritize their excavations based on identified concentrations of potentially intact, subsurface features.

The data collected from the Brotherton GPR survey is currently being analyzed and collated prior to additional consultation with the tribes and an anticipated excavation in 2019.

Temple University Geology professor Ilya Buynevich (pictured left) and archaeologist Jack Cresson conducted a ground-penetrating radar survey at the Brotherton site in 2018.
Photo/Tony McNichol

Amended Memorandum of Understanding with Winslow Township

In early 2018, the Commission signed an amended Memorandum of Understanding (MOU) that will enhance the protection of the Great Egg Harbor River watershed and the Kirkwood-Cohansey aquifer.

Under the agreement, Winslow Township will limit withdrawals from the Kirkwood-Cohansey aquifer inside and outside of the Pinelands Area, while the Commission will allow the Township to continue to discharge wastewater to the Camden County Municipal Utilities Authority's (CCMUA) water pollution control facility.

The Commission authorized the original MOU with Winslow Township and the CCMUA in 2010. Through the agreement, the Commission endorsed the closure of Winslow Township's wastewater treatment plant and its infiltration and percolation facility, which had recharged treated wastewater to the Kirkwood-Cohansey aquifer. The closure was offset by the Township's purchase of non-Kirkwood-Cohansey water and by limiting the Township's future withdrawals from the aquifer.

The Township successfully met the terms of the original MOU. Along with entering into the agreement, Winslow Township enacted conservation ordinances and water use rates that resulted in substantial water use reductions. Use of public water supplies throughout the Township has dropped by more than 200 million gallons per year. The amended MOU provided an opportunity to recognize the water conservation, while allowing better protection of the resources. This is accomplished by setting specific caps on maximum withdrawals from the Township's Kirkwood-Cohansey wells and through establishing a watershed work group.

The State's Water Supply Plan advises that use of the Kirkwood-Cohansey aquifer in the headwaters of the Great Egg Harbor River was at its highest in 2007. The amended MOU sets caps that are significantly lower than the highest water use.

Regulatory Activities

Applications

The Pinelands Commission reviews applications for development by evaluating proposals to ensure that they meet the regulations contained in the Pinelands Comprehensive Management Plan.

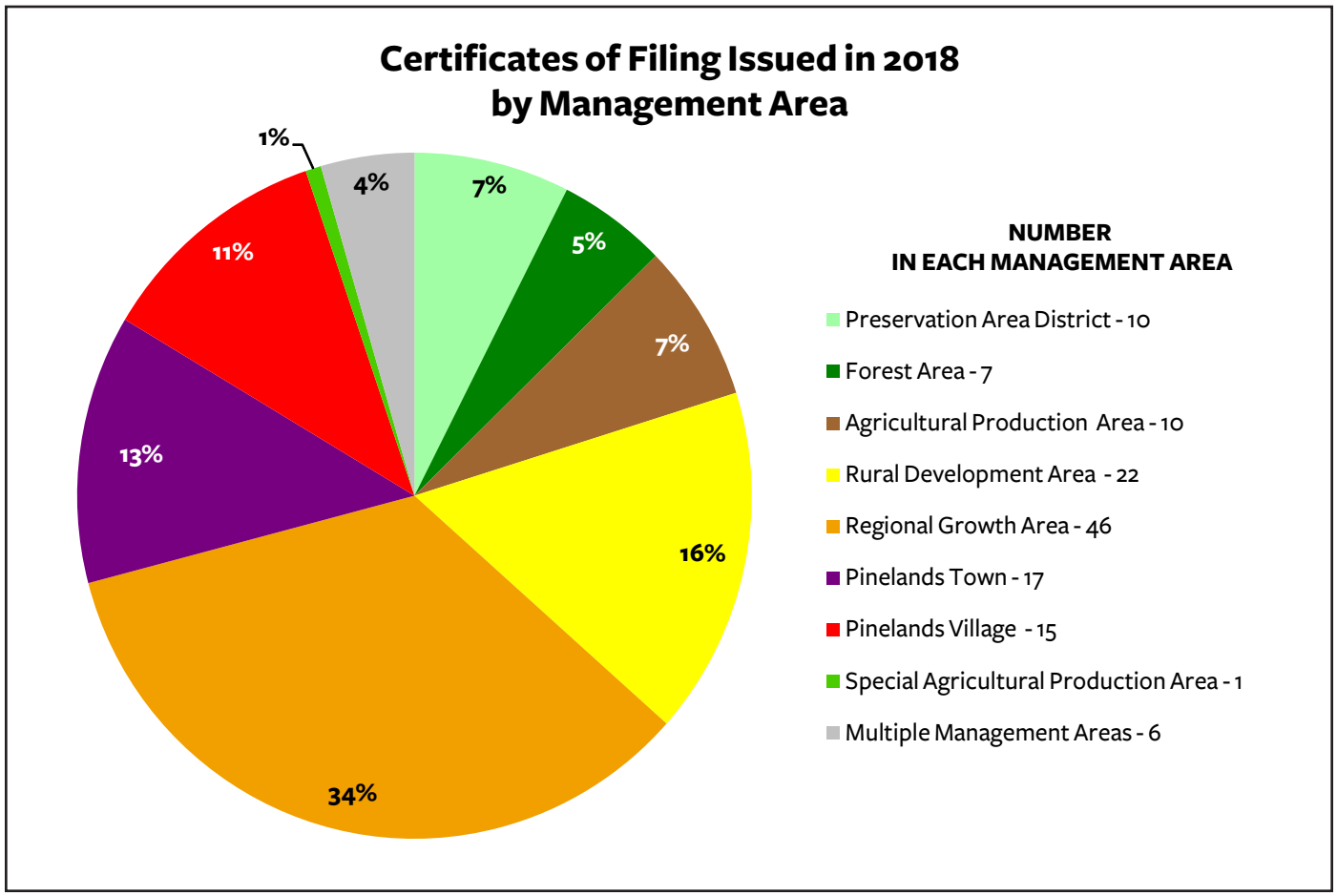
Development proposals must meet a series of environmental standards, including those that protect water quality, wetlands and threatened and endangered species.

The Commission's development approval process varies, depending on whether the application is submitted by a public agency or a private landowner.

The Commission's staff reviews private development proposals, such as single-family dwellings, subdivisions and commercial projects. After applicants provide all of the necessary information, the Commission issues a Certificate of Filing (or CF) that allows applicants to seek all municipal and county approvals for the proposed development.

The Commission issued 134 Certificates of Filing (CFs) in 2018, the majority of which were for proposed development in Regional Growth Areas (as shown in the chart below). There are 24 municipalities with Regional Growth Areas in the Pinelands Area.

Most development in the Pinelands is channeled to Regional Growth Areas, which are areas of existing growth and adjacent lands capable of accommodating additional residential and nonresidential development.

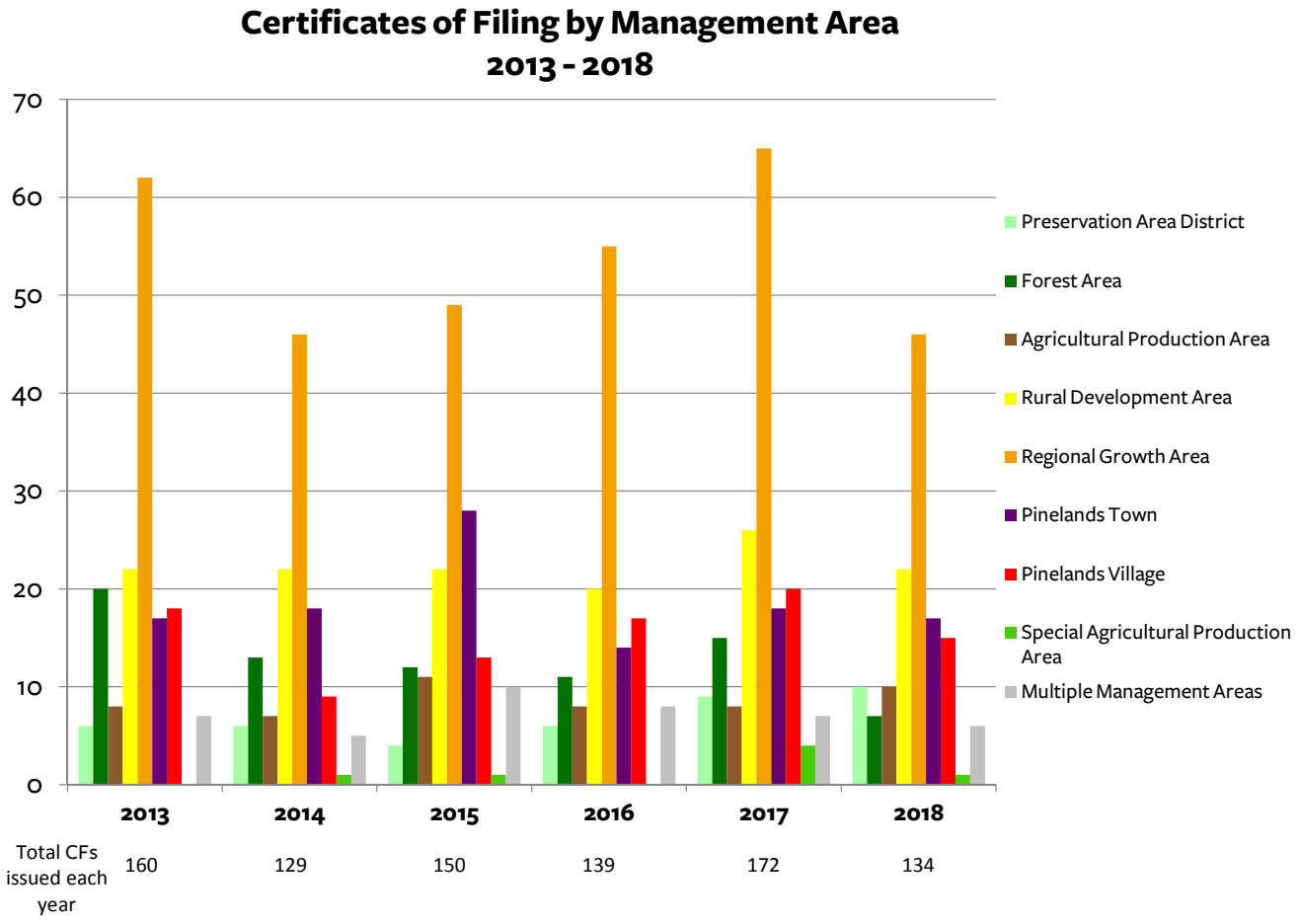


Of the 134 CFs that were issued in 2018, most involved proposals for residential development, followed by commercial development (as shown in the table below).

Certificates of Filing Issued in 2018 by Management Area and Type of Development

	Residential	Commercial	Infrastructure	Institutional	Resource extraction	Totals by management area
Preservation Area District	3	4	1		2	10
Forest Area	5	1			1	7
Agricultural Production Area	8	2				10
Rural Development Area	17	2	1		2	22
Regional Growth Area	26	17	1	2		46
Pinelands Town	9	8				17
Pinelands Village	8	6		1		15
Special Agricultural Production Area	1					1
Multiple management areas	1	1	1	1	2	6
Totals by type of development	78	41	4	4	7	134

The Commission issued similar numbers of CFs from 2013 to 2018, with the majority of the proposals for development located in Regional Growth Areas (as shown on the bar graph below).



The Pinelands Commission is also responsible for reviewing and approving development applications that are submitted by public entities, such as a municipality, county or a State agency. The full, 15-member Commission votes on whether to approve these applications during its monthly meetings.

The Commission approved a total of 27 applications for public development in 2018. Examples included the construction of recreation fields, the expansion of roads and the installation of solar panels.

Recreation Permits

In 2018, the Commission issued 21 Recreation Permits for enduros, which are timed, long-distance motorcycle races on approved trail routes in the Pinelands.

In order to receive a Recreation Permit, groups must submit a completed "Off-Road Vehicle (ORV) Event Application" for each proposed event. In addition to the application form, the group must submit the course route in electronic format, an application review fee, proof of insurance, property owner permission and proof that the township and New Jersey State Police have been notified.

Commission staff reviews the course route to determine if there are any issues with wetlands, threatened and endangered species, deed-restricted land and private and public ownership. Any portions of the route that have potential issues are site inspected by a member of the Commission's staff. If any route changes are necessary, a revised route is required and must again be submitted for review.

Resolving Violations

The Pinelands Commission resolved a total of 99 violations of Pinelands regulations in 2018, including 29 that staff members investigated and determined were not issues.

One of the violations involved an unauthorized expansion of an auto salvage yard in the Pinelands Preservation Area District in Camden County.

The salvage yard was expanded by 17 acres without an application to the Township or to the Commission. More than six acres of the expansion occurred in wetlands and wetlands buffers. As a result of the Township's and the Commission's efforts to resolve the violation, 11 acres of the auto salvage yard operation were cleared of salvaged vehicles. The 11 acres were then restored to its prior use as an agricultural field. An application was then completed with the Commission to legitimize the remaining six acres of the vehicle salvage yard expansion.

Increasing Access to Application Information

In recent years, the Commission has taken numerous steps to increase public access to information about all pending applications. For example, the Commission's website includes reports about the status of public development and waivers of strict compliance applications. These reports are updated daily.

The website also includes a status report of all development applications that have been active in the past two weeks. This report includes all new applications that have been submitted to the Commission in the prior two weeks. In 2018, staff began updating the report every Monday.

The application status reports can be accessed at https://www.nj.gov/pinelands/appli/status/ or through our website under the Applications tab.

Science & Research Activities

Long-term Environmental Monitoring Program

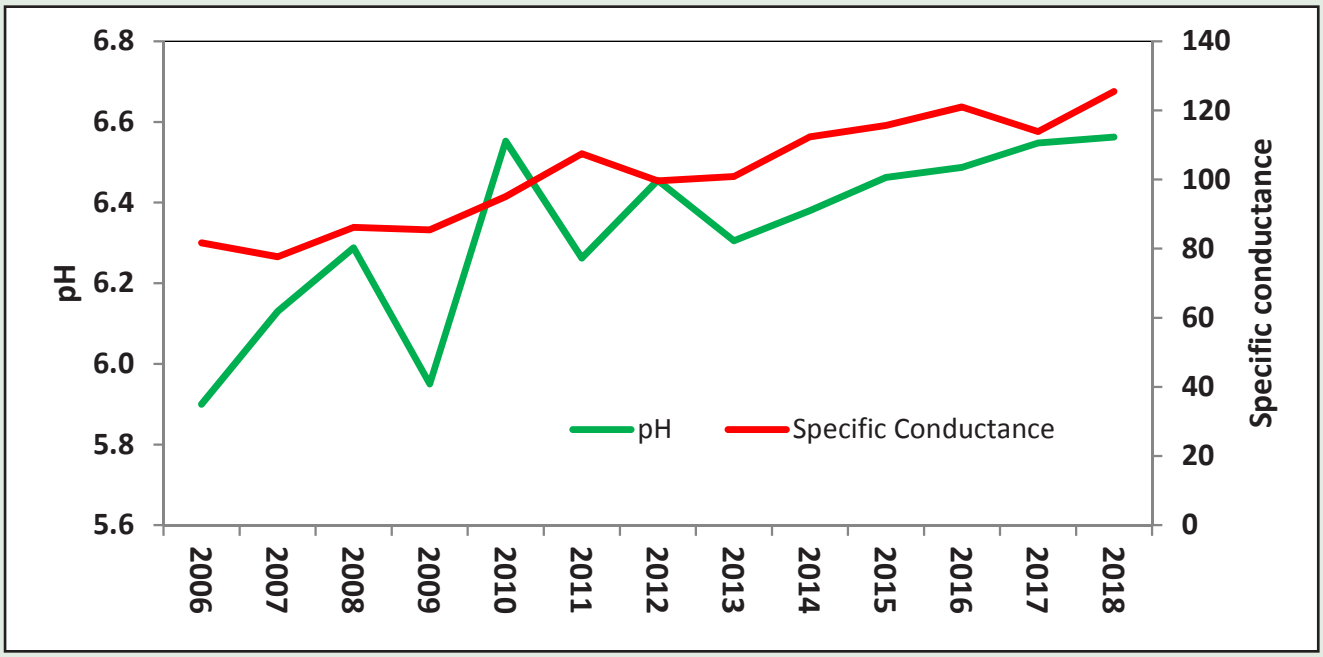
In 2018, Commission scientists continued to conduct Long-term Environmental Monitoring Program research.

As part of the Commission water-quality monitoring in the Pinelands, scientists have measured growing-season pH and specific conductance in 47 streams on a bimonthly basis since 2006. Values for pH, which is a measure of water acidity or alkalinity, and specific conductance, which reflects the concentration of dissolved substances in the water, are relatively low in Pinelands streams that drain forested watersheds.

In 2018, scientists examined pH and specific conductance data that were collected over a 13-year period to determine if either parameter was increasing, decreasing, or remaining relatively constant at the 47 streams.

Commission scientists monitor 47 streams in the Pinelands , including the Batsto River at Hampton Furnace (shown above). Photo/ John Bunnell

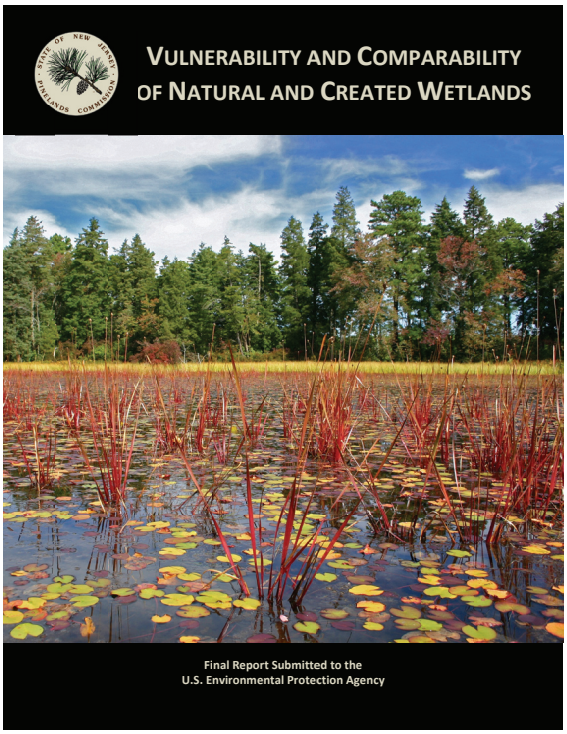
Although the majority of sites showed no change, 14 streams increased in pH and 20 streams increased in specific conductance over the period. Most of the streams with increasing trends in these parameters are within watersheds that contain relatively high amounts of development and agriculture. This trend analysis is expected to be completed in the upcoming year.



Above: Median annual pH (14 sites) and specific conductance (20 sites) for streams with increasing trends over a 13-year period based on data collected as part of the Long-term Environmental Monitoring Program.

Pond-vulnerability and Created-wetland Studies

Commission scientists completed two related studies and prepared a single report, titled "Vulnerability and Comparability of Natural and Created Wetlands."



As part of this research, scientists identified and mapped 5,850 natural ponds, excavated ponds, and stormwater basins throughout the Pinelands; assessed the vulnerability of natural and excavated ponds to developed land under future buildout conditions; used a combination of on-site and aerial-photograph surveys to evaluate off-road vehicle damage at ponds; and explored whether dragonfly and damselfly species found in a subset of natural ponds varied with surrounding land-use conditions.

Scientists also compared environmental and biological variables between a subset of 197 natural ponds, excavated ponds, and stormwater basins. The results indicated that both natural and excavated ponds can exhibit high ecological integrity, display characteristic Pinelands water-quality conditions, and support native Pinelands plants and animals; whereas water-quality conditions in stormwater basins are degraded and basins are a major source of non-native and introduced species.

The Commission can use the results of this study to identify and prioritize ponds that need enhanced protection and evaluate potential planning and regulatory measures to better protect these ponds.

As a component of these two studies, Commission, U.S. Geological Survey (USGS) New Jersey Water Science Center, and Montclair University scientists collaborated to investigate differences in current-use pesticides and emerging-amphibian pathogens between a subset of 24 natural ponds, excavated ponds, and stormwater basins. A report, titled "An Initial Comparison of Pesticides and Amphibian Pathogens Between Natural and Created Wetlands in the New Jersey Pinelands, 2014–16," describes the results of the study.

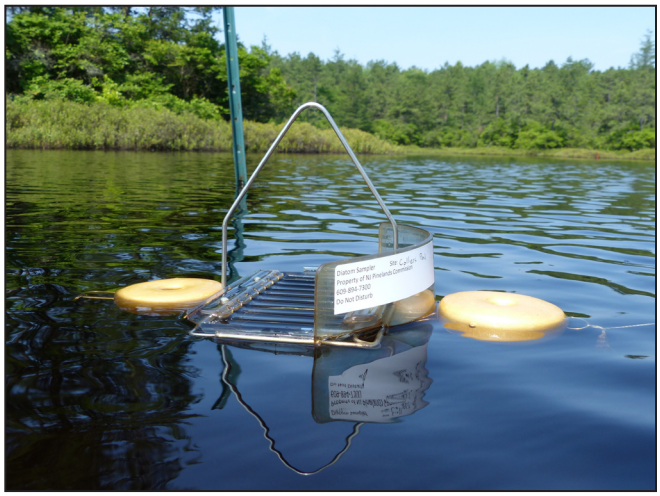
The studies were funded, in part, by grants from the U.S. Environmental Protection Agency (EPA). The Commission supplemented this funding with contributions from the Pinelands Conservation Fund, and the USGS contributed funding for the pesticide and pathogen study.

Microorganism Study

In 2017, the Commission was awarded funding to study the effects of land use on water quality and microorganisms in natural and created wetlands. The proposed research will utilize a subset of 60 natural

ponds, excavated ponds, and stormwater basin study sites from the pond-vulnerability and created-wetland studies for further monitoring and assessment.

In 2018, field work was initiated at 20 of the 60 wetlands. Commission scientists and collaborators with the New Jersey Department of Environmental Protection (NJDEP) and USGS sampled surface water for nutrients, metals, pesticides, and chlorophyll-a (an indirect measure of algal plant growth) and collected samples of diatoms (single-celled algae), phytoplankton (free-floating algae in the water), zooplankton (tiny animals that swim or drift in the water), and benthic macroinvertebrates (primarily aquatic larval insects).



This floating sampler allows diatoms (single-celled algae) in pond water to colonize glass slides during a two-week sample-collection period. Photo/Kim Laidig

The goals of this study are to assess the relationship between surrounding land use and the various water-quality and biological attributes and to more fully compare the plants and animals from natural and created wetlands. Scientists will continue to collect water quality data and microorganism samples at 20 different sites in each of the remaining two years of the study.

This research is being funded by a grant from the U.S. EPA and a match by the Commission through the Pinelands Conservation Fund.

Right-of-way Vegetation Monitoring

In cooperation with the New Jersey Board of Public Utilities, Atlantic City Electric, Jersey Central Power and Light, and Public Service Electric and Gas, the Commission initiated a pilot program in 2009 to implement a vegetation-management plan for the land beneath high-voltage electric-transmission lines in the Pinelands.

Beginning in 2011, Commission scientists monitored vegetation in electric-transmission rights-of-way such as this one that bisects an Atlantic white cedar swamp in Ocean County. Photo/Kim Laidig

As part of that pilot program, each year, Commission scientists monitored vegetation in the managed rights-of-way in plots that represent different vegetation type/vegetation-management prescription combinations. Data collected in the monitoring plots will help determine if the vegetation-management prescriptions have resulted in relatively stable and sustainable early successional habitats that are characteristic of the Pinelands and which provide habitat for native Pinelands plants and animals, including threatened and endangered species. In 2012, scientists also measured vegetation in reference plots in the forest adjacent to each managed right-of-way to determine if the right-of-way vegetation was similar to and characteristic of the nearby Pinelands forest.

Scientists completed the routine annual vegetation surveys at the established monitoring plots in 2017. Additional plant surveys were conducted near transmission towers and access roads to compare the plant species associated with these high-disturbance areas and the

established monitoring plots. Commission scientists also completed an analysis that compared the woody vegetation found in the managed right-of-way plots and the adjacent forest plots measured in 2012. Other than the manual removal of trees or mowing of vegetation in the right-of-way plots, no major differences in woody plant communities, dominant shrub cover, or the number of woody species were found between right-of-way and adjacent-forest plots. In 2018, scientists continued to analyze the monitoring data. The final report is expected to be completed in 2019.

The pilot program is funded by Atlantic City Electric, Jersey Central Power and Light, and Public Service Electric and Gas.

Endocrine Disruption Study

The William Penn Foundation recently dedicated significant funding towards scientific research in the Delaware River Watershed through the Delaware Watershed Research Fund. The Academy of Natural Sciences is administering the funding. The Kirkwood-Cohansey aquifer, which underlies the Pinelands, was identified as one of the research areas eligible for funding. Commission and USGS scientists proposed a study to investigate point and non-point sources of endocrine disrupting chemicals and the potential impacts on fish and frogs in the Pinelands. The proposed study was awarded funding in 2016.

Water, frogs, and fish, such as the native blackbanded sunfish, will be sampled for evidence of endocrine disrupting chemicals.
Photo/John Bunnell

The endocrine system is a collection of tissues in animals that produce hormones to regulate essential life processes, such as metabolism, tissue function, reproduction, and development. A large group of natural and synthetic chemicals are known to disrupt endocrine function. Examples include plant hormones, plastic components, flame retardants, surfactants, fragrances, and pesticides. Endocrine disrupting chemicals, or EDCs, are a global environmental problem and have been linked to reproductive and developmental abnormalities in a variety of animal species, especially fish and amphibians.

As proposed, Commission and USGS scientists will sample water chemistry and fish above and below municipal wastewater treatment plants, which represent direct point sources of EDCs, and water chemistry and frogs at ponds and stormwater basins, which may receive indirect non-point sources of EDCs from runoff and the aquifer. Results from these sites will be compared to those from appropriate minimally impacted reference sites.

In 2018, field work was nearly completed on the off-stream component of the project relating to water chemistry and frogs at ponds and stormwater basins. Water samples and green frogs were collected from the study sites for chemical and histological analyses, respectively. Commission and USGS scientists will finish the remaining water chemistry and green frog sampling at the off-stream sites and complete the water chemistry and fish sampling at on-stream sites in 2019.

The study is being funded by a grant from the Delaware Watershed Research Fund, a match by the Pinelands Commission, and a match by the USGS.

Joint Corn Snake Study

In 2017, the Pinelands Commission began to collaborate with Herpetological Associates, The College of New Jersey, and the NJDEP to conduct an intensive research project on the corn snake in the Pinelands.

This female corn snake is being radio tracked as part of the joint corn snake study. Photo/John Bunnell

The corn snake is a colorful, secretive species of rat snake that reaches the northern limit of its range in the New Jersey Pine Barrens. Also called the red rat snake, the corn snake is listed as an endangered species by the NJDEP.

The research includes two components: radio-telemetry and headstarting, which is a conservation technique where vulnerable young animals are raised in captivity until they attain a larger size and are then released into the wild.

For the telemetry aspect, researchers surgically implant small radio-transmitters in adult corn snakes and locate the snakes on a regular basis to collect data on their activity range; types of habitats used; and the locations for nesting, shedding, and hibernation.

Ryan Fitzgerald of Herpetological Associates holds two clutches of recently excavated corn snake eggs that were collected as part of the corn snake study. Photo/John Bunnell

For the headstarting component of the study, researchers collect corn snake eggs from nest areas and transport them to a laboratory for incubation and hatching. All of the hatchlings are microchipped and half of them are released back to the nest area. The other group of hatchlings are kept in the laboratory over the winter and released the following spring. The goal is to recapture these snakes to assess growth and survivorship of the two groups of hatchlings over time. While in the laboratory, hatchlings are fed, weighed, and measured to determine the efficiency of assimilating food and their growth rates.

Researchers are also conducting experiments on the laboratory hatchlings to understand their preferences for temperature, the amount of vegetation canopy cover, and whether they prefer to lay on sand, soil, leaf litter, or pine needles.

The goal of this research is to better understand the habitat requirements and life history of this secretive serpent to develop meaningful conservation management programs for the species and ensure its continued survival in the Pinelands.

Public Information, Education & Outreach

Raising Awareness, Fostering Stewardship

In 2018, the Commission's staff organized and executed more than a dozen educational programs that raised awareness and appreciation of the Pinelands.

The Commission partnered with Stockton University to carry out the 29th annual Pinelands Short Course on March 10th and the second-annual Pinelands Summer Short Course on July 19th. The two events featured a total of 56 presentations that showcase the natural, cultural and historic resources of the Pinelands. More than 700 people attended the events.

On July 24th, staff organized the annual Pinelands Orientation for Newly Elected Officials. The event is co-sponsored by the Pinelands Municipal Council, and it provides municipal officials with an opportunity to learn about the inner-workings of the Pinelands protection program. Forty municipal officials attended.

On October 26th, staff organized and carried out its 12th annual, Pinelands-themed World Water Monitoring Challenge event. Held at the historic Batsto Village, the event attracted 170 students and teachers who gauged Pinelands water quality and learned about how the Commission and other agencies work to safeguard the Pinelands' natural and cultural resources.

By the Numbers:

In 2018, the Commission's staff:

- Organized and carried out 14 educational programs;
- Educated 2,300 people about the Pinelands;
- Handled 85 calls from the news media;
- Responded to more than 600 public inquiries about recreation and other non-development application questions; and
- Maintained the Commission's website, which was viewed 152,150 times.

Above: Marilyn Sobel, a Research Scientist with the Pinelands Commission, delivers a presentation about Pinelands plants during the 29th annual Pinelands Short Course in Galloway Township.

To the right: Joel Mott, a Principal Public Programs Specialist with the Commission, provided an overview of the Pinelands during the second annual Pinelands Summer Short Course in Hammonton.

Photos/Paul Leakan

Construction of the Candace McKee Ashmun Pinelands Education Exhibit

Contractors installed a new Pinelands-themed exhibit in the Commission's headquarters in 2018.

The new Candace McKee Ashmun Pinelands Education Exhibit features more than 400-square-feet of interactive displays, a 90-gallon aquarium with native fish, a terrarium with carnivorous Pinelands plants and dozens of Pinelands artifacts.

The exhibit was installed in the lobby area of the Richard J. Sullivan (RJS) Center for Environmental Policy and Education on Springfield Road in Pemberton Township.

Candace McKee Ashmun, the longest serving member in the Commission's history, tours the new Pinelands exhibit that was dedicated in her honor.
Photo/Paul Leakan

During its meeting on December 14, 2018, the Commission adopted a resolution to dedicate the exhibit in honor of Candace McKee Ashmun. Ms. Ashmun has served as a gubernatorial appointee on the Commission since its inception in 1979, making her the longest serving board member in the agency's history. Before dedicating the exhibit, several Commission members praised Ms. Ashmun for her contributions to the protection of the Pinelands, adding that the new educational displays are a fitting way to build on her legacy. Ms. Ashmun toured the exhibit during the meeting, as shown in the photo above.

The exhibit project has been in the works since 2007, when the Commission secured a $50,000 grant from the National Park Service. The grant was used to study the feasibility of converting space in the RJS Center into a Pinelands Visitor Center, and it funded the full design plan for the exhibit.

Current and former members of the Pinelands Commission joined Commission staff to tour the new Candace McKee Ashmun Pinelands Education Exhibit at the Commission's headquarters on December 14, 2018.
Photo/Paul Leakan

The Commission paid for the fabrication and installation of the exhibit through the Education and Outreach component of the Pinelands Conservation Fund.

The public will be able to tour the exhibit in late January 2019.

The exhibit is designed to be a self-guided experience, and it will serve as a "jumping off" point for visitors to learn about the Pinelands before exploring the region firsthand.

Finances

Fiscal & Budget

The Commission's Operating Budget for Fiscal Year 2018 totaled $5,025,838. Of this, $4,286,323, or 85% percent, was budgeted for personnel expenses.

Budgeted revenue sources included $658,500 in federal grants, a $2,649,000.00 State appropriation, $781,800 in State grants and other State funding, $340,000 in application fees and $596,538 from the Commission's fund balance and reserves.

The 2018 budget for the Kirkwood-Cohansey Study, funded through legislation passed in 2001, was $163,792. The budget for the Pinelands Conservation Fund was $1,299,075.

The Commission's Audit Report for Fiscal Year 2017, which ended June 30, 2017, is posted on the State Auditors web site. The website address is:
https://www.njleg.state.nj.us/legislativepub/auditreports_department.asp#PINE.

Pinelands Application Fees

Since April 2004, the Pinelands Commission has received application fees to partially underwrite the direct costs associated with reviewing development applications in the Pinelands Area. During Fiscal Year 2018, unaudited application fee revenues actually collected totaled $412,882 ($69,684 more than Fiscal Year 2017).

Certification

As required by State Executive Order #37, all State authorities are required to certify that during the preceding year the authority has, to the best of its knowledge, followed all of the authority's standards, procedures, and internal controls. I hereby certify to the best of my knowledge that, during the 2018 calendar year, all of the Commission's standards, procedures, and internal controls were followed.

Nancy Wittenberg
Executive Director