

The

# PINELANDER

The Newsletter of the New Jersey Pinelands Commission/ Summer 2004

## Pinelands Commission Advances Toms River Conservation Plan

A special task force created last year to develop a plan for protecting critical natural resources in the Toms River watershed of Jackson and Manchester Townships has submitted its findings and recommendations to the Pinelands Commission, Ocean County and both townships to consider for implementation. The Pinelands Commission endorsed the document at its March 12 meeting.

The Toms River Corridor Task Force is comprised of 19 representatives from government planning and environmental agencies, non-profit conservation groups, and others. In addition, a group of technical advisors on botany, herpetology, geology, hydrology and other key fields provided ongoing expert guidance to the Task Force. *(Continued on Page 6)*



*The Northern Pine Snake (*Pituophis m. melanoleucus*) is one of the many threatened and endangered species found in the Toms River project area. (Photo by Jim Rutherford)*

## Aquifer Study in Full Swing

*By Allison M. Brown, Ph.D.*

*Pinelands Commission Research Scientist*

The New Jersey Pinelands Commission has embarked on a scientific study of the Kirkwood-Cohansey Aquifer, the massive underground body of water that sustains the New Jersey Pinelands.

To what extent can the Kirkwood-Cohansey Aquifer continue to support the needs of a growing population without negative impacts to the aquatic and wetland communities that depend on it? To answer this important question, a diverse team of scientists have planned a study that will identify the impact of groundwater withdrawals on stream flows and water levels and determine the effects that such withdrawals would have on aquatic and wetland communities. Results from the study will be used to predict ecological

responses to various water demand and development scenarios, and ultimately allow the Commission to make more informed land-use planning decisions.

Conceived fifteen years ago, and authorized by legislation passed in 2001, the Kirkwood-Cohansey Project Work Plan has evolved into one of the most comprehensive studies of its kind, setting new standards for land- and water-use planning. The \$5.5 million study is funded through the New Jersey Water Supply Bond Act of 1981. The Pinelands Commission approved the work plan in late 2003 and the project is expected to continue through the year 2009.

The Kirkwood-Cohansey Study is a multi-agency effort involving cooperators from United States Geological Survey (USGS), Rutgers University, United States Fish and Wildlife Service (USFWS), New Jersey Department of Environmental

Protection (NJDEP), as well as the New Jersey Pinelands Commission. Six carefully selected stream basins are the focus of the study. These are located within the watersheds of the Rancocas Creek and the Mullica River, two major Pinelands waterways. Most study sites are located on public lands associated with Brendan T. Byrne, Wharton, and Bass River State Forests, and The Richard Stockton College of New Jersey.

Cooperating scientists have already initiated work on most of the twelve study topics outlined in the project work plan.

Hydrologists from the USGS have installed instrumented wells in various streams. These shallow observation wells continuously monitor water levels at hourly intervals. The data obtained from the wells will show trends in water level fluctuations. The USGS is also developing a hydro-geologic framework for each

*(Continued on Page 2)*



## Program Preserves 21 Pinelands Farms

Over the past 18 months, 21 Pinelands farms covering nearly 1,782 acres have been preserved in the Pinelands under a new State program designed to permanently protect the unique agricultural and ecological resources of the million-acre Pinelands.

The Pinelands Direct Easement Purchase Program is administered by the State Agriculture Development Committee (SADC) in cooperation with the New Jersey Pinelands Commission. It was created as a result of 1999 legislation that encouraged the permanent preservation of more land in the Pinelands.

“Some of New Jersey's most agriculturally and environmentally important land is located in the Pinelands,” said Agriculture Secretary Charles M. Kuperus, who chairs the SADC. “By permanently preserving these farms, we are ensuring they continue to contribute to the state's agricultural industry, and at the same time protecting the ecological diversity of this important region.”

Under the Pinelands Direct Easement Purchase Program, the SADC purchases the development rights including Pinelands Development Credits on farmland. Because those credits are permanently retired, the program helps to reduce potential development in Pinelands Regional Growth Area communities. These are areas where developers can redeem credits to increase housing densities.

In addition to the 21 newly preserved farms, another 6 farms totaling about 950 acres are slated for protection in late 2004 under this first round of easement purchases. The SADC has allocated \$9 million toward the purchase of development

rights on farms in this round, while the Pinelands Commission has provided \$2.1 million. A second round of Pinelands farmland preservation funded entirely by SADC, has preserved over 900 acres in 2004.

“The past year has marked a turning point in the effort to protect farmland in the Pinelands,” said James Florio, Chairman of the New Jersey Pinelands Commission. “With the enhanced coordination of the Farmland Preservation Program, Pinelands Development Credit Program and the agricultural land-use policies of the Pinelands Comprehensive Management Plan, we now have a better set of tools in place to promote the long-term viability of the agricultural industry in the Pinelands.”

Of the nearly 800 New Jersey farms permanently preserved under the State Farmland Preservation Program between 1983 and 2003, only eleven of those were in the Pinelands. Of those eleven, only one was in a Pinelands management zone where Pinelands Development Credits are allocated. The Pinelands Comprehensive Management Plan (CMP), authorized by the State and Federal Pinelands Protection Acts in the late 1970s, sets standards for the protection of Pinelands natural and cultural resources. The CMP establishes special management districts where agricultural land uses are encouraged, including a “right-to-farm” standard that protects farming operations in agricultural zones.

The Pinelands Direct Easement Purchase Program bolsters the CMP by providing economically viable protection options for Pinelands farmers.

## Aquifer Study *(Continued from Page 1)*

study area by compiling information on existing wells. A site has been selected in Byrne State Forest to be used by USGS for monitoring weather conditions, including evapotranspiration.. Data collected at this site will be used in determining recharge to the aquifer system.

The USGS has also selected several sites for monitoring stream discharge and has teamed up with the Pinelands Commission to study the effect of variable stream flow on fish and macroinvertebrates. Several study sites have been selected within three stream systems.

Biologists from USFWS are conducting a study of swamp pink (*Helonias bullata*) a federally listed endangered plant. Study plots are being selected, and the plant's abundance and distribution relative to different water levels and other environmental characteristics will be evaluated.

For the Wetland Forest Community study, Pinelands Commission scientists have selected more than 200 vegetation plots in five study basins representing a range of different community types. Based on species composition, plots generally follow a gradient from upland community types (e.g. pine-scrub oak woodland) to wetland community types (e.g. cedar

*(Continued on Page 8)*

*Jonathan Kennen of the USGS, records data in Shamong Township as part of the Kirkwood-Cohansey Aquifer Study (Photo by John F. Bunnell)*





## Witt and Slavin Join Pinelands Commission

Early 2004 brought two new members to the Pinelands Commission. Francis Witt now represents Gloucester County while Patrick Slavin serves as the representative for Burlington County.

Fran Witt is a Partner in the firm of Joseph F. McKernan Architects and Associates in Cherry Hill, where he also serves as Treasurer and Marketing Principal. A licensed real estate agent for over 30 years, he has represented a host of US and international companies as a consultant.

Mr. Witt has a long career in public service. He served for 16 years as Mayor of the Borough of National Park and, prior to that, served eight years on Borough Council. He is past Vice President of the New Jersey League of Municipalities and past President of the Gloucester County Mayor's Association. Mr. Witt served 15 years on the Board of the Gloucester County Utilities Authority, including as Director and Chairman, and on the board of the Gloucester County Solid Waste Council. Additionally, he is active in a number of civic, business, church and governmental organizations.

Pat Slavin presently serves as a Lecturer in Biology at Burlington County College. Prior to that, he served for 14 years as Manager of agricultural operations for A.R. DeMarco Enterprises, a 10,000-acre cranberry farm in Woodland Township. Mr. Slavin also served as the Director of Public Health for Cumberland County, Director of the Cumberland County Mosquito Control Commission, as an entomologist with the Ocean County Mosquito Commission and as a Research Associate with the USDA Agricultural Research Service. Among other civic and professional involvement, Mr. Slavin has served on the Board of Directors of the American Cranberry Growers Association, the New Jersey Blueberry/Cranberry Research Council, New Jersey Pesticide Control Council, Woodland Township Planning Board and the Millville Shade Tree Commission. Mr. Slavin holds a Ph.D. in ecology from Rutgers University, a Masters degree in entomology from University of Maine and a B.S. degree in Biology from Marquette University in Wisconsin.

## Ross Honored for TDR Work

John T. "Jack" Ross recently retired as Executive Director of the Pinelands Development Credit (PDC) Bank. Jack has managed the day-to-day operations of the PDC Bank since its inception in 1985 and has been instrumental in developing the PDC program into one of the most successful regional transfer of development rights program in existence anywhere. The PDC Program helps redirect growth in the Pinelands from important environmental and agricultural areas to designated growth areas. The PDC Bank guarantees loans using credits for collateral, maintains a registry of credit owners and purchasers and can buy and sell credits. Jack's successors at the PDC Bank are Tom Byrne, Executive Director and Guil Vivas, Deputy Director.



*Pinelands Commission Chairman James J. Florio (Left) reads the inscription on a plaque he presented to Jack Ross (Right) in recognition of his long standing service and commitment to the protection of the Pinelands National Reserve.*

## Avery Marks Twenty Years as Pinelands Commissioner



*Pinelands Commission Chairman James J. Florio presents a plaque to Alan Avery Jr., Pinelands Commission Vice-Chairman, for his twenty years of dedicated service to the New Jersey Pinelands Commission. Avery has served as the Ocean County representative on the Commission since 1983.*



## Report Tracks Economic Health of Pinelands Communities

The Pinelands Long-Term Economic Monitoring Program is a cooperative project administered by the Pinelands Commission and funded by the U.S. Department of the Interior National Park Service. The program monitors, collects, and analyzes data to gauge the economic health of the Pinelands region over time.

The 2003 Long-Term Economic Monitoring Report is available to the public in CD-ROM format and on the Commission's Internet website at: [www.nj.gov/pinelands/](http://www.nj.gov/pinelands/).

The Long-Term Economic Monitoring Program is an important component of the Commission's efforts to better understand the effects of Pinelands programs on local communities and the regional economy. Data collected in 2003 reveals some key findings about the Pinelands economy:

- Following a decline in 2001, the average number of building permits issued in Pinelands communities in 2002 increased by 17%;
- The inflation-adjusted median home price rose by 8.4% in the Pinelands to \$122,500, the first significant increase in 14 years. This compares to an increase of 6.6% to \$129,200 for a non-Pinelands home. The Pinelands share of the state's total real estate transactions increased steadily from 8.2% in 1999 to 9.4% in 2002;
- An analysis of block-level census data revealed that approximately 276,890 people live inside of the Pinelands boundary, while 412,560 people live in portions of Pinelands municipalities that lie outside of the Pinelands boundary;

- The population density of Pinelands municipalities was 304 people per square mile, compared to 1,046 people for the non-Pinelands region of South Jersey;
- The unemployment rate rose from 4.7% in 2001 to 5.3% in 2002, but is still lower than areas outside of the Pinelands. Unemployment rose from 4.5% to 6.0% in the non-Pinelands region and from 4.2% to 5.8% for the state as a whole; and
- The average inflation-adjusted 2002 property tax bill in the Pinelands was \$3,010. This is \$500 lower than the non-Pinelands region and \$1,740 lower than the state average.

The 2003 Economic Report includes an enhanced version of the Municipal Fact Book, which was first introduced in the 2002 Report. The Municipal Fact Book provides data on the unique economic characteristics of 52 Pinelands Area municipalities. Additionally, data for each Pinelands municipality is ranked and averages are compared using data from over 200 South Jersey municipalities. The 2003 Municipal Fact Book features the addition of population graphs and color maps showing aggregates of Pinelands Management Areas and State Planning Areas outside of the Pinelands, as well as other data.

Also new this year, the Commission added four supplemental variables, including population density, census of housing data, place of residence and work data as well as data on municipal services such as police protection and garbage collection. This supplements data on core variables in areas such as retail sales, income, real estate sales, employment, property taxes, property values, and agricultural production and sales.

## First System Installed Under Pinelands Wastewater Pilot Program

Inspectors from county and local area health departments participated in a field training session to observe the installation of the first Pinelands Alternative Design Wastewater Treatment System, an Amphidrome system, on March 11, 2004 in Hamilton Township, Atlantic County. The Pinelands Alternate Design Wastewater Treatment Pilot Program was created to improve protection of surface and groundwater resources by reducing the amount of the nitrogen pollution from conventional septic systems. For more information, contact Ed Wengrowski, Pinelands Commission Wastewater Manager, at (609)894-7300.





## 15th Annual Pinelands Short Course

## Municipal Council Officers Elected



Emile D. DeVito, Ph.D., Manager of Science & Stewardship for The New Jersey Conservation Foundation explains the importance of the Pinelands to the survival of neo-tropical song birds during the 2004 Pinelands Short Course.

The Pinelands Commission's newly formed partnership with Burlington County College, and The Pinelands Institute for Natural and Environmental Studies helped to make the 15th Annual Pinelands Short Course a success.

This year's Short Course was held on Saturday, March 6, at Burlington County College in Pemberton. Continuing a successful tradition, the popular Short Course had over 300 participants.

Attendees were presented with opportunities to gain valuable knowledge on many Pinelands topics from top experts in the field.

People from throughout New Jersey and neighboring states attended this year's Short Course. All seemed to have a common goal of discovering, experiencing, and learning about the Pinelands region's unique environments, culture, and history.

A number of the attendees are teachers or involved with education and participated to gain knowledge and information to pass on to their students. Many believe that their participation will aid them in becoming a positive force on the future of the Pinelands, a belief also held by the sponsors of the Pinelands Short Course.

*Mark your Calendar; Saturday, March 5, 2005 for the 16th Annual Pinelands Short Course. Details available in late 2004*

### This year's short course offered a variety of topics including:

*A Pinelands Overview  
Presented by William Dunscombe*

*Soil: The Living Entity that Sustains the Pine Barrens  
Presented by John Dighton*

*Industrial Revolution in the Pines  
Presented by Barry Brady*

*Adaptations of Woody Plants of the Pinelands  
Presented by Terry O'Leary*

*Ecological Fire and Forest Management in the New Jersey Pinelands  
Presented by Andy Windisch*

*Habitat Conservation Planning A Next Step in the Pinelands  
Presented by Chris Krupka and Jessica Kubida*

*Rare, Threatened and Endangered Pinelands Plants and Their Habitats  
Presented by Ted Gordon*

*Pine Barrens to Tropical Forest Long Distance Migratory Songbirds  
Presented by Emile DeVito*

*Foodways in the Pines  
Presented by Angus Gillespie*

*Pinelands Frogs and Toads  
Presented by John Bunnell*

*Community Design for Growing Communities  
Presented by David Kutner and Shawn McCaney*

*Health Benefits of Cranberries and Blueberries  
Presented by Amy Howell*

*The Pinelands Traveler Ghost Towns, Bogs and Legends  
Presented by Mike Fowler*

*A Sheltered Existence: Turtles of the Pinelands National Reserve  
Presented by Christina Watters*

*Tour of Whitesbog  
Presented by Maria Peter*

The Pinelands Municipal Council recently swore in its officers for 2004. All office terms are for one year beginning on April 1st, and extending to March 31st 2005.

This year's Officers are:

- **Chairman: William Pikolycky,** Mayor, Woodbine Borough;
- **Vice-Chairman: Chuck Chairello,** Mayor, Buena Vista Township;
- **Secretary: Edward J. McGlinchey,** Winslow Township Zoning Officer & Director of Public Works;
- **Treasurer: Richard Bethea,** Mayor, Bass River Township;
- **Member at Large: Robert Hagaman,** Township Committee member and Former Mayor, Mullica Township.

The Pinelands Municipal Council, established under the Pinelands Protection Act, is made up of the mayors of the 53 municipalities in the Pinelands area or their designees. The Council is empowered to review and comment upon changes proposed by the Pinelands Commission to the New Jersey Pinelands CMP.

## Commission Looking at Housing Needs

The Pinelands Commission has formed a special housing task force to recommend how future population projections and housing demand should be factored into housing opportunities for Pinelands Regional Growth Areas.

Under the project, the Pinelands Commission is reviewing projections to help determine how much population growth should be anticipated throughout southern New Jersey. A broad-based task force of government agencies and non-governmental organizations will then recommend ways to apportion future growth within the 24 Pinelands Regional Growth Area municipalities. The task force, includes representatives from the following organizations:

- NJ Department of Community Affairs;
- NJ Dept. of Environmental Protection;
- NJ Department of Transportation;
- 7 Pinelands County Planning Offices;
- Coalition for Housing and the Environment;
- NJ Builders Association;
- 5 Pinelands Municipalities;
- Pinelands Preservation Alliance; and
- NJ State Chamber of Commerce.



## Toms River Corridor Conservation Plan *(Continued from Page 1)*

The project area covers nearly 17,000 acres in the northern Pinelands of Ocean County. Of that land area, approximately 15,000 acres lie in Jackson, with the remaining acreage in Manchester. The area includes six Pinelands Management Area districts ranging from the ecologically critical Preservation District to the Pinelands Regional Growth Area.

The area also includes the three designated Pinelands Villages of Cassville, Legler and Vanhiseville.

Under the impetus of the Pinelands Commission's Permanent Land Protection Committee, the Task Force was established in April 2003 to address growing concerns over the potential for development conflicts in the region. The area is home to a wealth of important land and water resources, including more than a dozen plant and animal species that are classified as threatened or endangered. At the same time, the area features significant swaths of developed land with a population of several thousand people.

"If fully implemented, this plan will enhance the predictability of growth opportunities and reflect the community development objectives of Jackson and Manchester Townships," explained Pinelands Commissioner Candace McKee Ashmun, Chair of the Permanent Land Protection Committee. "The plan makes the use of Pinelands Development Credits more realistic and enhances development potential in the Villages and Regional Growth Areas."

In its report, the Task Force set forth three key findings:

- Development pressures exist and are growing, with approximately 1,500 residential units currently proposed for construction within the corridor and more are expected;
- Water resources are threatened, with both water quality and quantity in jeopardy from the inter-basin transfer of wastewater and proposed development near high-quality waterways and groundwater recharge areas;
- Clusters of threatened and endangered species exist within and around the Corridor in large, relatively undisturbed landscapes.

The Toms River Corridor Plan proposes to utilize a combination of planning, zoning and resource protection tools in the area. A series of Pinelands and municipal re-zonings are proposed to provide greater protection of water quality and critical wildlife habitat; enhance habitat buffers, and establish connectors between large areas of undeveloped and protected habitat.

These will be supported by reductions in permitted housing densities and implementation of stronger clustering provisions in a number of areas. On-site clustering standards will help to minimize impacts on environmentally sensitive land while allowing for appropriate residential development.

The Plan also calls for enhanced use of conservation easements as well as stepping up efforts to acquire land for permanent protection. The State, County, and Townships are all actively pursuing land acquisitions of up to 2,000 acres that would be consistent with the recommendations of the Task Force. As long-term strategies, the Task Force is also encouraging the expansion of the Pinelands Density Transfer and Pinelands Development Credit Programs to allow greater use within the Toms River Corridor.

Seventy-three percent of the Corridor will be protected through conservation-oriented zoning measures and 2,600 fewer homes will be built in the future. Future non-point source pollution of the Toms River and Barnegat Bay will be reduced and clustering will ensure that future development is directed away from the most environmentally sensitive lands.

The Task Force also developed a systematic approach for establishing, up-front, the type and scope of endangered and threatened species surveys that would be required of potential developers. This includes a set of criteria that tailors survey procedures based on zoning districts and the type of development being proposed. This approach recognizes the habitat conservation measures already set forth in the overall plan and simplifies the survey process to provide greater predictability of regulatory requirements.

In early 2003, the Pinelands Commission concluded an intensive review of the

Pinelands Protection Program. As part of a five-year strategy plan, the Commission decided to pursue sub-regional conservation plans as a means to better protect Pinelands resources in cooperation with its municipal partners. It specifically called for the Toms River project as well as other projects.

### Grant to Fund Evesham, Medford Conservation Plan

The New Jersey Pinelands Commission has received a \$73,000 grant from the William Penn Foundation to fund an innovative natural resource conservation planning project for southern portions of Evesham and Medford Townships in Burlington County.

The initiative is in response to new data on important natural resources in the area which supports a re-evaluation of the zoning and development policies. The objective is to develop approaches that protect these important resources and accommodate development at appropriate locations.

Under this project, the Pinelands Commission will organize a steering committee, comprised of representatives from the New Jersey Department of Environmental Protection and the two municipalities to oversee development of a conservation plan for the 22-square-mile project area. In addition, an advisory task force will be formed that includes representatives from non-governmental sectors, including environmental and development organizations.

The Commission and its cooperating partners will prepare a detailed natural resource conservation plan, which may include innovative zoning, land preservation, resource management and community design recommendations. The southern portions of Evesham and Medford Townships include significant areas designated under the Pinelands protection program for low-density residential development. However, data compiled in recent years has documented that no less than seven threatened and endangered plant and animal species are found in this area.



## Forestry Review Underway

Pinelands Commission Chairman James J. Florio has assembled a blue ribbon panel to review the forestry provisions of the Pinelands Comprehensive Management Plan. This action is part of a new initiative aimed at ensuring that harvesting, land preparation and re-vegetation practices conducted in the Pinelands are consistent with the Commission's mandate to protect and maintain the Pinelands environment while ensuring that forestry is a viable economic and cultural resource. "Forestry is a traditional activity in the Pinelands," said Florio. "When done properly, forestry can help to revitalize the forest landscape, but when done improperly, it can affect the natural biodiversity of the Pinelands. The Pinelands Commission's last comprehensive review of its forestry standards was nearly a decade ago and the time is now right to take a fresh look at how well the program is working and what we can do to improve it."

Florio added that he is pleased that Michael Catania, former Deputy Commissioner of the New Jersey Department of Environmental Protection (NJDEP) and past Executive Director of the New Jersey Chapter of The Nature Conservancy, has agreed to chair the Pinelands Forestry Advisory Committee. Catania is currently Founder and President of Conservation Resources, Inc., a non-profit organization which provides technical and financial assistance to New Jersey's conservation community. An attorney, Catania also teaches environmental policy and law at the Eagleton Institute for Politics at Rutgers University and serves as Chair of the New Jersey Natural Lands Trust. He was a founding member and Co-Chair of the Stockton Alliance.

Other members of the committee include:

- James Barresi, the State Forester and Assistant Director of Forestry at NJDEP. Jim represents New Jersey for the National Association of State Foresters, where he serves on the Forest Fire Protection and Urban Forestry Committees;
- Thomas Bullock, an attorney with a private general real estate practice. Tom is Director, Treasurer and past President of the New Jersey Forestry Association, an organization of over 1,000 woodland

owners and conservationists who advocate the wise use and management of the State's forest resource;

- Robert Williams, a certified professional forester and wetlands scientist, is Director of Forestry Operations at Land Dimensions Engineering. He manages 75,000 acres of private woodlands in four states, including southern New Jersey;
- George Zimmermann Ph.D., Professor of environmental studies at Richard Stockton College, teaches forest ecology and forest management. Through his research, he is recognized as a national expert on the physiology, restoration and regeneration of Atlantic White Cedar;
- Troy Ettel, Director of Conservation at the NJ Audubon Society. Troy has served as Tennessee State Ornithologist and Texas Natural Heritage Program State Zoologist and has developed forest management plans for a variety of habitats;
- Marc Matsil, Senior Policy Advisor for Natural Resources at NJDEP. Marc previously served as Assistant Commissioner for Natural and Historic Resources at NJDEP and Chief of the Natural Resources Group of the New York City Department of Parks and Recreation;
- Jon Wagar, Assistant Director of Stewardship with the New Jersey Conservation Foundation and former field botanist with the USDA Forest Service. Jon holds a Masters of Forestry from Yale University and taught plant physiology at National University;
- Robert Zappalorti, President and Executive Director of Herpetological Associates, Inc. an environmental consulting firm which specializes in the study of threatened and endangered plants and animals.

A Pinelands Forestry Advisory Committee was first established in 1987 to assist in the review of harvest and forest management plans for state-owned lands as well as to advise the Commission on other forestry-related matters. This latest effort is the first time the Committee's charge has been expanded to review the policy framework for all Pinelands forests, both public and privately owned.

## Pinelands Smart Growth Program Honored

In March, the Pinelands Commission received an "Achievement in Planning" Award for Regional Planning. The award, from the New Jersey Planning Officials organization, recognized the Pinelands Excellence Program as an innovative approach to address increasing growth pressures on Pinelands municipalities.

The Pinelands Commission recently completed work with two Pinelands Regional Growth Area communities - Hamilton Township in Atlantic County and Winslow Township in Camden County - to develop innovative community design plans that encourage sustainable, mixed-use development. Funded by a \$187,000 grant from the Geraldine R. Dodge Foundation, the Commission created the Pinelands Excellence Program, to promote smart growth working together with state, county, and municipal governments, as well as community planning consultants. The intent is to develop strategies for creating vibrant, livable communities that maintain essential natural and cultural resources.

These strategies include, mixed-use development and better community design by utilizing tools such as zoning, planning, and infrastructure improvements.

A seminar on the Pinelands Excellence Program, was held on April 19<sup>th</sup> in Medford Township. Geared toward elected officials, community planning professionals and planning and zoning board members, the purpose was to share the Program's planning, design, transportation, and open space concepts that are applicable to communities throughout the State.

Both the Hamilton Township Livable Community Action Plan, and the Winslow Township Livable Community Action Plan, are available on the Pinelands Commission website.





## Aquifer Study *(Continued from Page 2)*

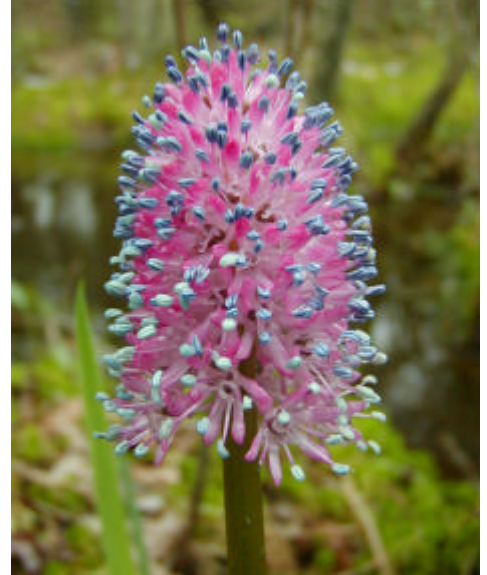
swamp). Each plot will be characterized by a number of vegetative and environmental variables, including plant cover, soil moisture, and ground water level. To characterize water levels, observation wells are being installed in each of the 200 plots. Monthly water level data gathered over the next two to three years will be used to develop a hydrologic signature, or benchmark, for each community type.

An Intermittent Pond Vegetation Study has been initiated and will focus on 15 ponds in the Rancocas Creek and Wading River watersheds. The ponds are subject to seasonal periods of water inundation and drawdown, a process that affects plant distribution. Monthly water level data along with plant data will be related to differences in plant composition along hydrologic gradients. Because frogs frequent this habitat type, three of the ponds will be included in the Anuran-Larval Development and Recruitment Success Study. In this study, Commission scien-

tists will place tadpoles in mesh enclosures along a gradient of deep to shallow water to determine an influence of water levels on tadpole development. In addition, Pinelands Commission planning staff have started to collect pertinent geographic data and compiling data on current and future water consumption patterns.

Scientists from Rutgers University will evaluate the potential for nitrogen release to wetland soils at different moisture levels and the impact that changes in soil moisture regimes might have on plant water stress and photosynthesis.

Rutgers scientists will also work with all the cooperators to apply data gathered from the component studies to the landscape scale. The USGS is managing the huge mass of data gathered by the different cooperators involved in the Kirkwood-Cohansey project. Commission scientists will continue to keep the public updated on the project. A Commission web page will be established for this purpose.



*Swamp pink (Helonias bullata) is a federally listed endangered plant. As part of the Kirkwood-Cohansey Study the USFWS is comparing relationships between the plant's abundance and distribution relative to different water levels and environmental characteristics. (Photo by Kim J. Laidig)*



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