

# NEW JERSEY NATURAL LANDS TRUST

## American lotus

Trypophobia  
virtuous  
species

resurrection  
ultrahydrophobicity  
immortality  
seeds



edible  
festival  
beauty

SPECIMEN  
*Nelumbo lutea*

botanical

Bartram

endangered **ANCIENT**  
#native flora oooooooooooooo!

2016 Annual Report



# Statement of Purpose

The New Jersey Natural Lands Trust was created by the Legislature in 1968 as an independent agency with the mission to preserve land in its natural state for enjoyment by the public and to protect natural diversity through the acquisition of open space. The Trust preserves land primarily by donations of open space through acquisition of title in fee simple or of conservation easements, and manages its properties to conserve endangered species habitat, rare natural features, and significant ecosystems. The Trust invites passive use by the public for recreational or educational purposes wherever such use will not adversely affect ecological communities and biological diversity.

The Trust also recognizes that ownership and management alone are not enough to achieve its mission. Public education is an integral function of protecting natural diversity. The Trust distributes information designed to convey a conservation ethic for the protection of open space and its natural values.

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Cover: Roman Senyk



# Index of Preserves Referenced Within the 2016 Annual Report

## Atlantic County

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Clarks Landing Preserve ~ 1  
Hamilton Preserve ~ 1, 8, 12  
Hirst Ponds Preserve ~ 1  
Mankiller Preserve ~ 1

## Burlington County

Bear Swamp at Red Lion Preserve ~ 1-3, 13  
Moorestown Preserve ~ 1  
Taylor Preserve ~ 15  
Warren Grove Bogs Preserve ~ 6-7, 12

## Camden County

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## Gloucester County

Raccoon Creek Preserve ~ 1

## Hunterdon County

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## Warren County

Buttermilk Bridge Preserve ~ 12  
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**In 2016...** the New Jersey Natural Lands Trust brought approximately 511 new acres under Trust stewardship, making the Trust responsible for over 29,500 acres managed as a system of more than 120 preserves throughout the state. Of the 511 new acres, 482 acres were donated to the Trust.

This year's acquisitions built upon the existing Bear Swamp at Red Lion, Bearshead, Great Piece, Hamilton, Hirst Ponds, Clarks Landing, Mankiller, Moorestown, and Raccoon Creek preserves.



*Coastal plain intermittent pond located on the new addition to Hirst Ponds Preserve*

## The Bear Swamp at Red Lion Preserve More Lands Within the Delaware River Watershed Protected

**A** whole lot of collaboration and cooperation have permanently protected 413 acres in Southampton and Tabernacle townships that are the headwaters to the Bear Swamp River, a tributary to the South Branch of the Rancocas Creek ultimately flowing into the Delaware River.

Initially acquired by the Trust for Public Land and the Rancocas Conservancy, the land was then immediately donated to the New Jersey Natural Lands Trust as an addition to its Bear Swamp at Red Lion Preserve. This acquisition occurred as part of a regional effort by the



*Hikers enjoying the Bear Swamp at Red Lion Preserve*

William Penn Foundation to protect the Delaware River watershed with the goal of ensuring an adequate supply of clean water for generations to come. The William Penn Foundation's Delaware River Watershed Protection Fund provides matching acquisition funds through a grant to the Open Space Institute to accelerate conservation and restoration of lands that contribute to the protection of the watershed, which is a drinking water source to over 15 million people. Funding for the Trust for Public Land and Rancocas Conservancy's acquisition was also provided by the State of New Jersey's Green Acres Program, Victoria Foundation and the Pinelands Conservation Fund.

As Michael Catania, Trust Chair, stated at the time of the acquisition, "The New Jersey Natural Lands Trust is delighted to accept the ownership of this parcel as an addition to our Bear Swamp Preserve. We salute the Trust

for Public Land and other partners for permanently preserving this important piece of the natural heritage of the Garden State." Geologically positioned at the transition between the inner and outer coastal plain physiographic provinces, the preserve is largely comprised of wetland forest that includes pitch pine lowlands, Atlantic white cedar bogs, American holly, sweet gum, swamp magnolia, and swamp pink. Supporting over half of all known populations, New Jersey is the world's stronghold for swamp pink, a federally threatened, state endangered plant. The wetland forest also includes habitat for Pine Barrens treefrog, timber rattlesnake, and barred owl. With this newest addition, the preserve has grown to almost 1,500 acres, all of which is open from dawn to dusk for the public to enjoy, especially during the spring migration of warblers and other songbirds. The preserve is best accessed from Hawkins Road, with limited roadside parking.



*Trail at the Bear Swamp at Red Lion Preserve*

# Warbling at Bear Swamp at Red Lion

Bird photographer Bill Schmitz recently volunteered to take over seasonal responsibility of the prothonotary warbler nesting boxes located at Bear Swamp at Red Lion Preserve in Burlington County. These warbler nest boxes were a project initially begun many years ago by longtime birder and conservation volunteer August Sexaur. Auggie had successfully built and monitored a series of boxes for prothonotary warblers along the streams and wetlands of the preserve which he also helped to protect. Sadly, since his passing some years ago, no one had taken over his maintenance tasks. As a regular birder who enjoyed seeing the warblers there, Bill accepted care for these boxes.

Once given the green light from the Trust, it became quickly evident that Bill already had a plan of action to make the boxes ready for the bird's arrival in spring. Hiking along winding streams and through thick tangles of briars, he relocated many of the old boxes, photographed their condition, and mapped their locations. Bill reported, "Unfortunately, I saw no signs that any of these (old) boxes were used by any birds this season. I visited the area several times during the spring and summer and never once did I see anything." The most likely cause of this was the fact that since Augie Sexaur died in 2013, no one had maintained, repaired or cleaned the boxes. In 2016, however, with some minor repairs to older boxes and installation of some new boxes using an updated design, Bill was ready to monitor and report on what is hoped to be a resurgence of nesting warblers at this preserve.

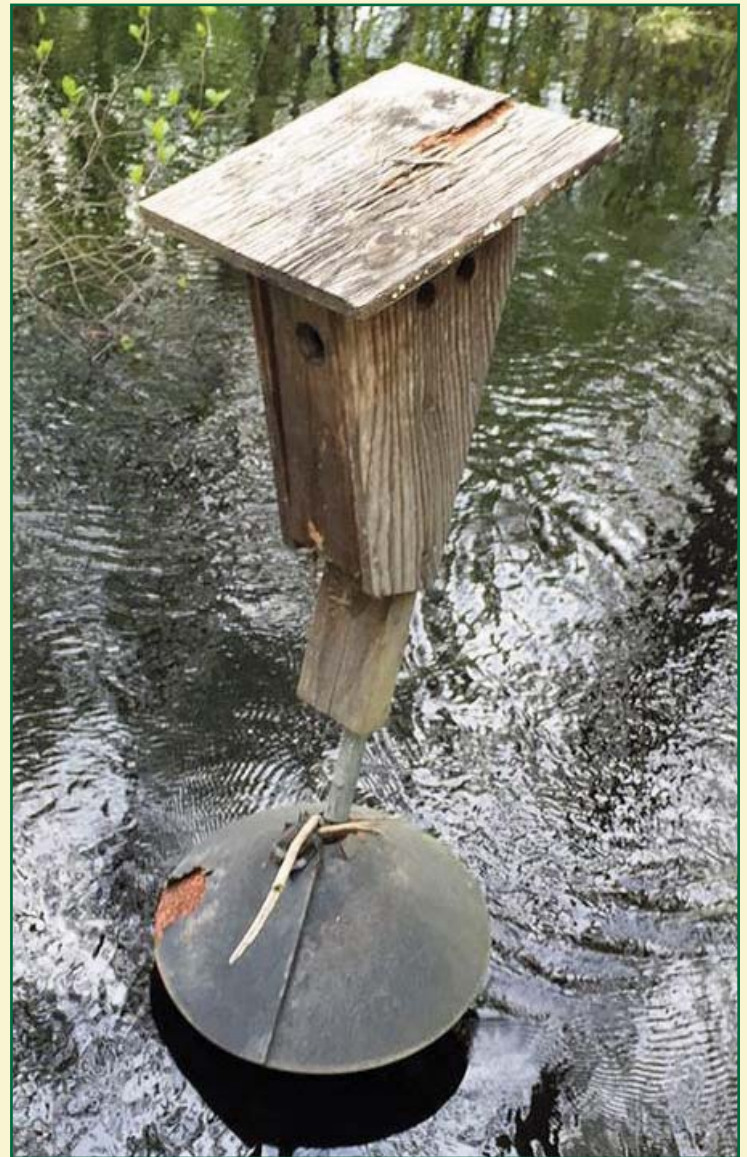
The Trust welcomes and commends Bill for taking such a strong interest in this project. Annual and routine maintenance of these boxes requires a commitment that only volunteers like Bill are willing to accept. Birders will again delight when they stop at the small wooden bridge over the Little Miry Run and hear the song and see the radiant yellow color of the prothonotary warbler.



*Bill Schmitz installing a prothonotary warbler nesting box*



*Prothonotary warbler*



*Prothonotary warbler box*

# Petty's Island Update

Throughout 2016, the Trust worked with the William Penn Foundation as part of its constituency building project intended to coordinate, expand and raise the visibility of the network of 23 environmental centers that are on a Delaware River watershed waterway. These centers are located in diverse landscapes across the watershed including densely populated urban areas, suburban spaces and rural regions. Through programming and creative use of technology, arts and communications, an overarching goal of the William Penn Foundation's funding is to convey the fundamental importance of clean water by increasing public access to and enjoyment of these waterways.

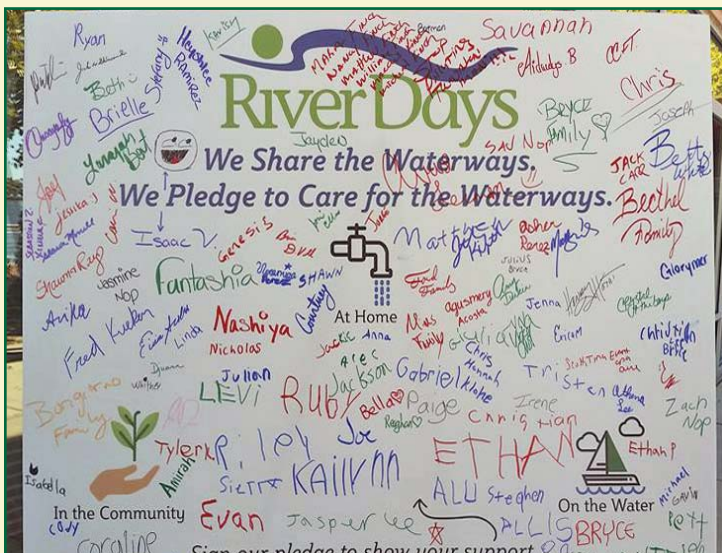
Petty's Island was one of the centers participating in the inaugural celebration of the Delaware River Watershed known as "River Days." Sponsored by the William Penn Foundation, River Days spanned over six weeks in September and October 2016 at 23 locations throughout Pennsylvania, New Jersey and Delaware. More than 15 million people rely on the Delaware River Watershed for clean drinking water. And the watershed also provides critical habitat for plant and animal life. To highlight these vital roles and inspire more people to become active caretakers of the waterways, the Petty's Island Preserve and the other 22 environmental centers hosted more than 30 interactive events to provide people with opportunities to run, bike, paddle and enjoy being on or near their local waterways. For its part, Petty's Island hosted three River Days events: a fall bird hike, a clean-up, and a photography workshop. Despite challenging weather conditions, many people participated in the Petty's Island events. Especially impressive were the more than 50 people, including many Rutgers-Camden students, who turned up on a rainy Saturday morning to pick up trash and other debris from Petty's Island shoreline and pledged to care about the

Delaware River Watershed.

As part of River Days, visitors and guests were asked to show their support for the Delaware River Watershed by pledging to take simple actions at home, in the community or near waterways that all add up to real progress for the region's water health. The River Days "We Share Our Waterways, We Pledge to Care for Our Waterways" campaign encouraged visitors to sign the pledge to take actions, such as:

- Plant a tree
- Collect rainwater with rain barrels
- Use less water for household activities
- Limit or eliminate lawn fertilizers & pesticides
- Volunteer at local river or trail clean-ups
- Spend 20 minutes three times a week in natural areas
- Help plant a rain garden
- Reuse, recycle, repurpose plastic items

This year the Trust got into the movie-making business. We awarded a contract to Bob Krist, videographer, and John Gattuso, producer, for the production of a 20-minute documentary film that uses a narrative style to tell the compelling story of the community-corporate-government



*Lots of people pledging to protect the Delaware Watershed at River Days*



*Volunteers at Petty's Island Clean-up*

collaboration that worked from 2002 until 2009 to successfully preserve Petty’s Island. Bob Krist is a videographer and photographer who works regularly for National Geographic, Smithsonian, and many other publications and media organizations. His videos have won two consecutive Lowell Thomas Travel Journalism awards, a silver and a gold, in 2014 and 2015. A recent short film, “A Thousand Autumns: Rettir in Iceland,” placed in the Johns Hopkins Film Festival and won Best Short Documentary at the Trenton Film Festival. John Gattuso runs a communications design studio specializing in mission-driven organizations. His most recent video work with Bob Krist includes a series of videos about climate change in New Jersey produced for the NJ Climate Adaptation Alliance at Rutgers University. The Petty’s Island documentary should be completed in 2017. The Trust expects to provide screening opportunities through many different media outlets.

In June of 2016, the Trust approved an 11-month extension of CITGO’s lease with Crowley Marine provided the lease would not extend beyond December 31, 2017. The extension was presented by Crowley as a needed “buffer” period to ensure its smooth relocation to another facility in the region. The terms of the lease extension, as well as conditions of the Trust’s approval, included Crowley hiring an architect to provide conceptual designs/plans for the reuse of its triple deck structure as the Petty’s Island Cultural and Environmental Education Center and, if the Trust agrees that reuse of the structure is appropriate, to have the structure remain on Petty’s Island at no cost to the Trust after the termination of the lease. Based on these terms, the Trust was persuaded that the 11-month extension would not adversely

impact the purposes of the conservation easement or the milestones towards the overall goal of transferring fee ownership of the island to the Trust, including the construction of a cultural and environmental education center and general public access for passive recreation.

To produce the conceptual designs for the reuse of the triple deck structure as the future center, Crowley hired Vitetta Architects, who had previously been hired by the Trust in 2015 to survey and evaluate the retention of existing industrial objects at Petty’s Island. The conceptual designs should be available to the Trust in 2017 and the Trust will make them publicly available on its website.

Finally, the Trust re-bid a contract to provide educational programming at Petty’s Island. The initial contract was awarded to the New Jersey Audubon Society (NJAS) in 2011 as a one-year contract, with the Trust’s option to renew it for four additional years, requiring it to be re-bid in 2016. After five years of successful NJAS educational programming, the Trust was pleased to be able to award the 2016 contract to NJAS again with the opportunity to renew it for four additional years. NJAS is required to provide at least 12 programs each year. Some of NJAS’s programs are for Camden County school groups but many are public programs such as birding and history hikes and photography workshops. For information about upcoming programs, please check the NJAS program page at <http://www.njaudubon.org/Go/Petty>. NJAS and the Trust continue to seek new kinds of programming and community engagement at Petty’s Island and would be pleased to hear your ideas.



*Bob Shinn and group on a history hike*

# Warren Grove Nature and Lore

Some locals might say that Warren Grove is the epicenter of “Piney Power.” You can purchase a “Piney Power” bumper sticker at Lucille’s County Cooking, along with their signature apple pie.

Warren Grove, with its deep dark woods of Atlantic white cedar at the edge of the vast pygmy pine forest, is where the locally renowned old piney Jack Cervetto moved to when he left the city life of Garfield, New Jersey in 1930. Warren Grove was, and still remains, a small hamlet in Stafford Township, Burlington County supporting a small school house and a church. Jack cut and milled Atlantic white cedar using his home-built sawmill, hunted deer and rabbits, and constructed a series of cranberry bogs. The school is now a private home and the church bell is mostly silent. But Lucille’s continues to bake pies and old Jack would recognize the woods and remember his log cabin fondly. The bogs, forest and log cabin are now preserved by the Trust.

The 326-acre Warren Grove Bogs Preserve in Ocean County was acquired by the Trust in 2005. Because of its mix of natural habitats, including open water bogs, shallow wetlands and swampy Atlantic white cedar forests, the area was of keen interest to botanists, birders and other naturalists. Straddling the Oswego River, the area was home to beavers and otters, prairie warblers and wading birds. In 2016 the Trust set out to determine what other unique and unknown interests of nature were waiting to be discovered there. To do the job of identifying all the plants, reptiles, amphibians, butterflies and moths, the Trust hired BioStar Associates, Inc. to conduct field searches and prepare a report of their findings. More than 22 field days were spent in hip boots wading the wetlands and scouring the uplands to develop an inventory of species observed. Ultimately, several dozen plant species were confirmed along with more than a dozen animal species, many threatened or endangered. BioStar partnered with Blaine Rothausser who spent two nights shining bright lights to attract, photograph and document 194 species of moths. Mr. Rothausser developed a study method to correlate the hundreds of specialized moth species, some uniquely and biologically linked to specific host plants, with the moth’s specialized habitat. He intends to use



*Giant Leopard Moth*



*Automeris Io Moth*



*Lucille's Country Cooking*



this moth data to characterize high quality natural areas. Getting back to old Jack, he built his log cabin on an oak upland overlooking the cedars of the Oswego River. The Trust wanted to keep this cabin standing as an integral part of the landscape. Years earlier, the Trust had windows and doors shuttered until a time when the cabin might serve as a scout retreat or nature cabin. But vandals, squirrels and weather always seem to find a way in. When the police called the Trust one day to report that they had the cabin surrounded, staff was pretty sure it wasn't to free a squirrel trapped inside. With a tip from the ever watchful Lucille, the police learned that squatters had taken up residence in the cabin. Following that unfortunate incident, demolition seemed like the best option for the Trust. But, as it turned out, the demolition contractor hired by the Trust always admired this log cabin and its "Piney" lore. With the support of Lucille and the Barnegat Bay Sportsmen's Club, Trust staff put together a solution to keep the log cabin secure, maintained and closely watched. A special permit was issued to the Club, whose members went to work cleaning, replacing damaged windows and doors, and securing the cabin from unwanted humans and other animals, as well as the elements. Now, using no electricity or running water, the club holds periodic meetings in the warmer months. Club members encourage visitors to stop by the log cabin and see the natural landscape that surrounds it the way old Jack might have remembered it best, and to share stories and reminisce about that old piney life. Hunger for the good ole days? Head down to the center of "Piney Power," visit the cabin and get yourself a bumper sticker and a fine slice of pie.



*Winter stream at Warren Grove*



*Warren Grove cabin*

# Bill Henry Pond



*Edge of Bill Henry Pond*

After being deemed a “priority wetland” by the U.S. Environmental Protection Agency way back in 1994, Bill Henry Pond has finally been preserved! It took years of negotiation, but Green Acres closed on the property in Egg Harbor Township, Atlantic County at the end of 2016, and it is now officially part of the Trust’s Hamilton Preserve.

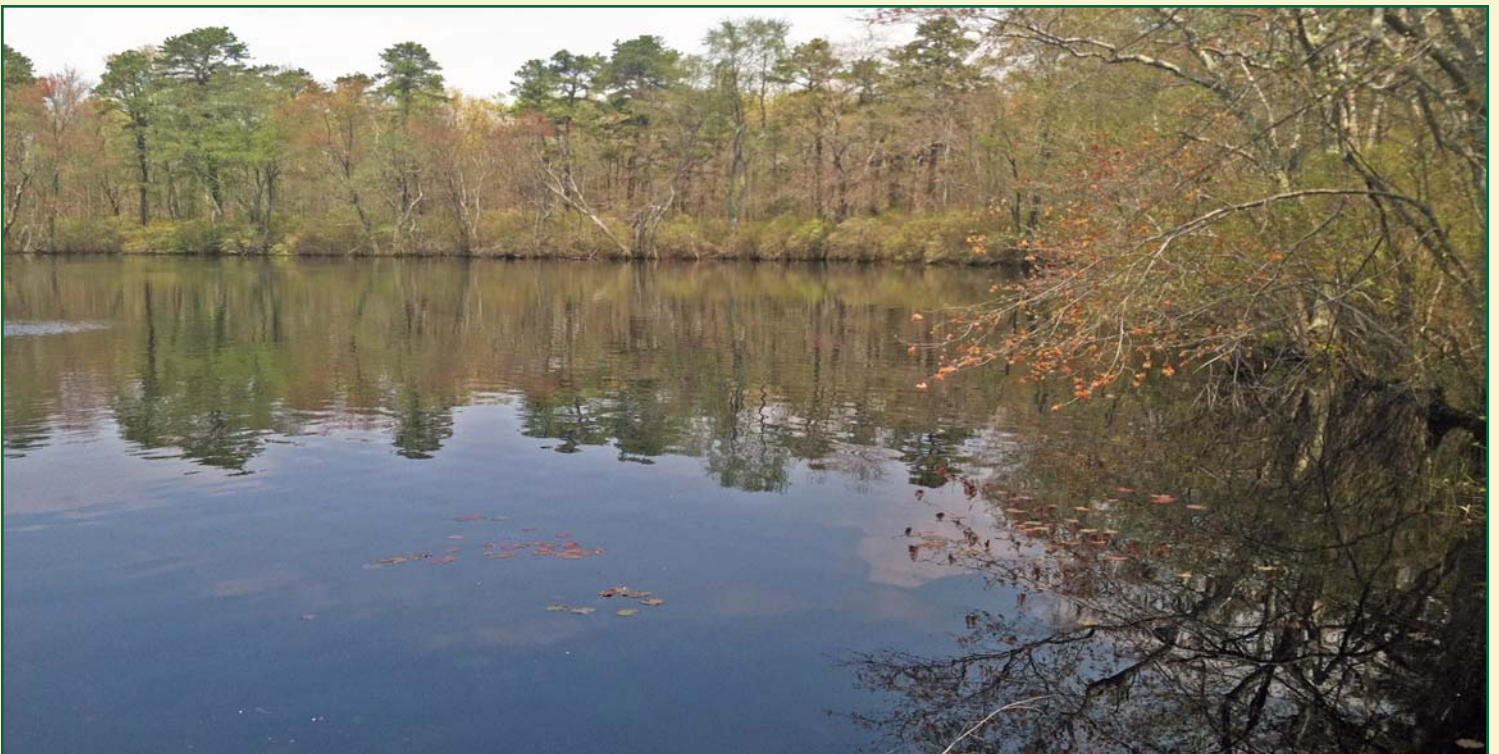
The Miry Run, a tributary to the Great Egg Harbor River and designated a Wild and Scenic River, establishes the northern boundary of the property. But the property’s centerpiece is a large, five-acre coastal plain intermittent pond, that includes a globally rare natural community surrounded by pine-oak forest.

Floristically diverse, coastal plain intermittent ponds are typically wet in the winter and spring and dry during the summer and fall. These ponds, or “spungs” as they are sometimes referred to in the Pine Barrens, are thought to be the result of freezing and thawing in the periglacial climate at the end of the Wisconsin glacialiation, more than 14,000 years ago.<sup>1</sup> Based on their glacial history, the ponds typically include sandy and gravelly soils with high acidity levels. With this soil composition, and because they are sometimes flooded and sometimes dry, some

of the state’s rarest plants can be found in coastal plain intermittent ponds. Bill Henry Pond provides habitat for rare plants such as the state endangered slender arrowhead (*Sagittaria teres*) and the short-beaked bald-rush (*Rhynchospora nitens*). Historically, the state endangered slender water-milfoil (*Myriophyllum tenellum*) was known from the pond after being discovered by brothers Frank and Bob Hirst in 1962 on one of their many botanical ponding adventures. They enjoyed exploring the coastal plain intermittent ponds of the New Jersey Pine Barrens and were known to say to each other, “Let’s go pondin’ today!”<sup>2</sup>

Fortunately, the entire pond is now preserved offering today’s botanists plenty of time to explore it as the Hirst brothers did in bygone days. This new addition to the Hamilton Preserve is tricky to access but there is some parking available at the portion of the preserve on the other side of Ocean Heights Boulevard. Happy Pondin’!

<sup>1</sup> Kathleen Strakosch Walz, Scott Stanford, Nancy Lee Adamson, Linda Kelly, Karl Anderson, Kim Laidig, and John Bonnell. 2006. Coastal Plain Intermittent Pondshore Communities of New Jersey. New Jersey Department of Environmental Protection, Division of Parks and Forestry, Office of Natural Lands Management, Natural Heritage Program, Trenton, NJ. 50 pp. - <sup>2</sup> Walz, K.S. 2012. The legacy of Hirst Brothers’ panic grass. United States Fish and Wildlife Service, Endangered Species bulletin, November-December 2012.



*Autumn reflections at Bill Henry Pond*

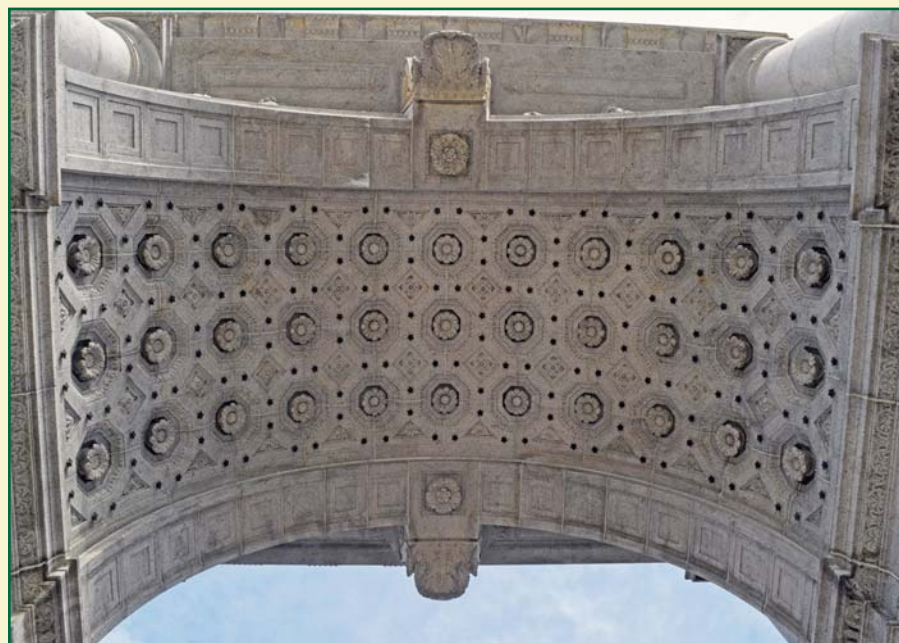
*Because the Trust's mission is to preserve land in its natural state and protect New Jersey's natural diversity, our annual report will now profile a rare plant each year. This year we profile the American lotus.*

## American Lotus: Native Species of Beauty and Purity

Impressively, the American lotus (*Nelumbo lutea*) produces the largest flower of any plant in North America. According to the U.S. Department of Agriculture, it is a member of the Order Nymphaeales and of the lotus-lily Family (Nelumbonaceae). The generic name, *Nelumbo*, is from *nelumbus*, which is a Ceylonese name for "lotus." *Nelumbo* also means "sacred bean" referring to the lotus seeds. *Lutea* is from *luteum* or *luteus*, which are both Latin for "yellow," the color of the lotus flowers.

In mid-July to mid-August, an exquisite flower emerges from the muck of lake, pond and stream bottoms, spreading its white, oval petals high above the water and at its center an irregularly patterned seedcase (which strikes fear in the hearts of those suffering from Trypophobia—an intense fear of irregular patterns or clusters of small holes or bumps). At night the flower closes and as the sun rises so does the lotus again spread its petals into glorious bloom. That it thrives in muddy waters is what gives the lotus spiritual significance; rising and blooming from the muck to achieve a form of resurrection or enlightenment.

Commonly referenced in ancient Egypt, the lotus is sacred. Within the lotus family, *Nelumbo nucifera* is sacred to Hindus and Buddhists. Throughout history, the lotus has occurred as a common feature on war memorials and monuments, such as the National War Memorial at Valley Forge, as it has been linked with some of mankind's noblest deeds and sacrifices, and the search for immortality because it symbolizes renewed life.



*Lotus relief--National War Memorial at Valley Forge*

The plant's spiritual significance is supported by its purity. It is nearly impossible to get lotus leaves wet or dirty even though they are aquatic plants. This is due to what's termed the "lotus effect," or ultrahydrophobicity, a self-cleaning property, caused by nano-sized wax papillae on the upper side of each epidermal cell. To simplify, the upper side of the leaf is covered with very tiny wax-covered bumps that force water to congeal and roll, resulting in the almost magical removal of water, dust, dirt and fungal particles from the leaf. As Chinese Neo-Confucian philosopher Zhou Dunyi wrote of the virtuous lotus during the Song Dynasty, "I love only the lotus, for rising from the mud yet remaining unstained; bathed by pure currents and yet not seductive."

While the plant is beautiful and pure, it is also useful. This plant was once a favored food of Native Americans. While the root, shoots, flowers and young seeds are edible, it was the root the Native Americans counted on to get them through the winter. The seeds can be eaten when mature or immature. The immature seeds have no shells and can be eaten raw, boiled or roasted and are said to taste like chestnuts. The mature seeds have hard, thick shells that need to be removed before eaten. They can be dried, boiled, roasted or ground into flour. These seeds are highly nutritious and a good source of protein. Dried lotus pods are also popular in flower arrangements.

In many states, American lotus is considered rare or endangered. According to NatureServe, the following states list American lotus as a rare native plant species: Delaware, Illinois, Indiana, Iowa, Kentucky, Maryland, Michigan, Nebraska, New Jersey, North Carolina, Pennsylvania, Virginia and West Virginia. It is also considered rare in Ontario Province, Canada.

The earliest report of American lotus growing in New Jersey is in the sixteenth century. In "Travels of William Bartram," Bartram writes, "I have observed this aquatic plant, in my travels along the Eastern shores of this continent, in the large rivers and larks, from New Jersey to this place [Mobile River, Alabama]...."<sup>3</sup>

According to Bartram's Garden curator Joel Fry, "There is a very large growth of the American lotus ... in the tidal wetlands [along Mannington Creek, a tributary to the Salem

River]—several acres with thousands of plants in bloom. That’s a rare native species this far north and it was discovered by John Bartram and the Swedish botanist Peter Kalm around 1750 in the same general location—tidal creeks in southern NJ.”<sup>4</sup>

Indeed, every catalog or checklist that has ever been published on New Jersey flora has listed American lotus as a native species: Nathaniel Lord Britton’s 1889 “Catalogue of the Plants on New Jersey” (published by the New Jersey Geological Survey); Widmer Stone’s 1912 “Plants of South New Jersey” (published by the New Jersey State Museum); and Norman Taylor’s 1915 “Flora in the Vicinity of New York” (published by the New York Botanical Garden) list American lotus as native to New Jersey. And although long documented in New Jersey, American lotus has only ever been documented from six locations in the state. The earliest was collected by T. Seal in 1853 from the Delaware River near Camden. It was next collected in 1875 from a pond at Woodstown, Salem County. Prior to 1879, it was reported by T. Porter at Swartswood Lake, Sussex County, although the first collection of this population was not made until 1879 by H.H. Rusby. In 1882, it was collected by N.L. Britton at Sharptown, Salem County. In 1923, it was collected by B. Long along Oldman’s Creek, Salem County. And in 1938 R. True collected it from Mannington Creek, Salem County. Wonderfully, all of these populations are documented by scientific voucher specimens in the collections of the Gray Herbarium at Harvard University, the herbarium of the New York Botanical Garden, the Herbarium of the Academy of Natural Sciences of Philadelphia, and the Chrysler Herbarium at Rutgers University.

Although all six of these native New Jersey populations are documented, only two populations are now confirmed extant; one in Salem County and one at Swartswood Lake. Three populations were destroyed and a fourth has not been observed since 1925. While the Swartswood specimen was likely gathered by H.H. Rusby, a prominent member of the New York Botanical Garden and the North Jersey Botanical Club, on August 13, 1879, the earliest recorded observation for the lotus at Swartswood lake is September 2, 1878, reported by Thomas C. Porter, Professor of Botany at Lafayette College, Pennsylvania. According to Porter, specimens of the lotus had been sent to him by Trail Green at an unspecified earlier date. In a letter printed in the October 1878 issue of the *Botanical Gazette* (published by the Chicago University Press), Porter writes of a field trip to Swartswood Lake:

No time was lost in hiring a boat and a man to row it. Off we pushed and directed our course to the largest of the three patches of *Nelumbo* in the lake. It occupies a sheltered, curving bay on the north, and is perhaps a dozen acres in extent, and is discernable to the practiced eye afar off.

Given its rarity, the lotus is annually monitored by the New Jersey Department of Environmental Protection at Swartswood Lake in Swartswood State Park. It continues to thrive in the northern portion of the lake but has not expanded much beyond that area since it was first observed 138 years ago, suggesting that the particular habitat conditions are especially conducive to lotus.

Although American lotus is native to North America, that is not to say that the plant has not been introduced to other places. In New York, for example, the plant’s status was recently changed from native to introduced. In the 1997 “Revised Checklist of New York Plants,” Richard Mitchell and Gordon Tucker state that American lotus was planted in Cayuga Lake and that the “single historic site, at Sodus Bay on Lake Ontario, was very likely planted as well.” According to Steve Young, botanist for the New York Natural Heritage Program, there is convincing evidence that the Lake Cayuga population was planted, but merely an assumption that the Sodus Bay population was planted. The species was recently introduced to Maine and its status as a native plant in Connecticut has been questioned.

While some treat the lotus as introduced and invasive, others choose to celebrate the potential of the spectacular, multi-faceted lotus each year with a festival. The friends of Mount Harmon will celebrate the “lotus effect” each year on



*American lotus seed pod*

<sup>3</sup> James & Johnson 1791, Page 408. - <sup>4</sup> <https://bartramsgarden.org/searching-american-lotus-south-jersey/> -

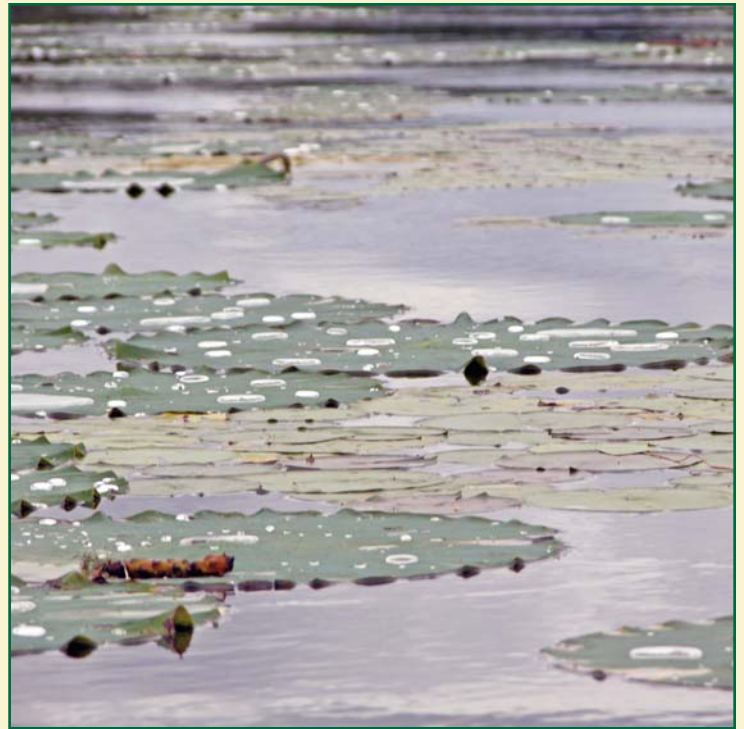
the first Saturday in August. For more details on attending the festival and embracing your “inner lotus” in Maryland see [www.mountharmon.org](http://www.mountharmon.org). Or, if you would rather travel further afield, the City of Los Angeles holds an annual week-long Lotus Festival the third week of July each year at Echo Park Lake.

Finally, the lotus profile would not be complete without Dr. Masaru Emoto’s inspiring words about resurrection and the lotus: “If you feel lost, disappointed, hesitant, or weak, return to yourself, to who you are, here and now and when you get there, you will discover yourself, like a lotus flower in full bloom, even in a muddy pond, beautiful and strong.”<sup>5</sup>

<sup>5</sup> “Secret Life of Water” 2005 Atria Books, page 141



*Lotus Drawing by William Bartram,  
Natural History Museum, London*



*Ultrahydrophobicity or water resiliency of lotus*



*American lotus flowers and pods*

# Biodiversity Inventory Updates

## Biodiversity Inventories and “Surgical” Surveys

The Trust continues to assemble an ever wider understanding about the plants and animals that live on our preserves. It has been a priority of the Trust to conduct biodiversity inventories at our most unique and diverse preserves. This species inventory work goes far to update previous species accounts, and oftentimes documents new data on rare, threatened or endangered species. With ever increasing threats to our natural environments, it is essential to establish a baseline species account today.

Biological inventories and surveys during 2016 resulted in studies on 10 preserves. Surveys spanned habitats from the hilly forest lands in northern Warren County south to the cedar swamps of the Pinelands. Of particular interest was an inventory of the 326-acre Warren Grove Bogs Preserve in Ocean County. This study, conducted by BioStar Associates, Inc. revealed new data on several rare plant and animal species. Discovered floating in the backwater areas of the Oswego River was the tiny rare floating purple bladderwort (*Utricularia purpurea*). The federally threatened and state endangered Knieskern’s beaked rush (*Rhynchospora knieskernii*) was discovered in open patches of moist sandy soils. At night, the BioStar biologist confirmed the calling of whip-poor-will and state threatened barred owl as their flood lights beamed onto white sheets to attract a variety of moths, some very uncommon for our area.

During 2016, data was also received for a similar biodiversity study at the 2,203-acre Hamilton Preserve in Atlantic County. Begun in 2015, this study, conducted by Herpetological Associates, Inc. established the preserve as the northern-most site for the state threatened Cope’s gray treefrog, along with state threatened Pine Barrens treefrogs from edges of wetland swamps and vernal ponds. Many rare plant locations were also documented. The biologists were able to document direct impacts to sensitive plant populations from illegal ATV and motorcycle activity, a reoccurring problem the Trust continues to work to control.

Utilizing smaller, more focused “surgical” surveys, the Trust was able to gain new understandings about individual target species living on Trust preserves. Often these surveys are short and quick, lasting only a day or two. One of these surgical surveys was able to relocate the state’s only known population of the endangered Seneca snakeroot (*Polygala senega*) at the



*Cope’s grey treefrog*

Buttermilk Bridge Preserve in Warren County. In another study, several rare wetland dependent plant species were discovered at Hyper-Humus swamp in Sussex County. Information on these rare plant locations will be shared with the Office of Natural Lands Management, Natural Heritage Program, to help in stewardship planning for their ultimate protection.

Of particular note was a survey for the rare wild comfrey (*Cynoglossum virginianum* var. *virginianum*) at Sweet Hollow Preserve in Hunterdon County. Enforcement action against a timber trespass at this preserve led to the Trust’s collection of a substantial fine. The Trust then reinvested this money into a survey for rare plants that proved productive in locating many species, including wild comfrey.

Additional time was spent this year to find Pine Barrens treefrog at Bear Swamp at Red Lion and Penny Pot preserves. However, due to drought conditions these surveys met with only mixed success, such as hearing frogs calling from wetlands at Penny Pot Preserve in Camden County.

Some effort was made to look for butterflies at four North Jersey preserves last summer. An undergraduate wildlife biology student studied populations of monarch butterflies at Hagedorn and Gravel Hill preserves in Hunterdon County. Following survey guidelines from the Monarchlab.org website, searches were made amongst clusters of common milkweed plants to discover monarch caterpillars as well as adult butterflies. Across their range monarch populations are in decline, and these studies will add data to help in their protection.

Butterfly species counts were conducted on special wetland habitats at Mt. Rascal Preserve and Hardwick Meadows Preserve in Warren County. Limestone fen areas have long been regarded as hotspots for rare butterfly species. A two-day survey was conducted by Wander Associates, Inc. at each preserve to ascertain the use of the wetlands by butterflies. As it turns out, this was a poor year for butterfly counts all around New Jersey and these surveys produced little information. The Trust will search again in later years, hopefully with more success. But, successful or not, these inventories and surveys help to establish an important baseline for plants and animals on Trust preserves.



*Seneca snakeroot plants*

# Hunting Update



*Bear Creek is the most popular preserve for hunters.*

During the 2016-2017 hunting season approximately 3,700 hunters registered at Trust preserves through its website: [www.njnlt.org](http://www.njnlt.org). The Trust allows deer hunting only at many of its preserves to maintain biodiversity. The deer population in New Jersey is far greater than the ecosystem can sustain. Over-browsing by deer depletes native vegetation resulting in impacts to animal and plant habitat, such as decreased food sources and increased invasive plants.

To hunt at selected Trust preserves, hunters access the Trust's website, electronically submit information to the Trust, and print their own hunter registration letter with the required accompanying preserve map. The Trust can use this information to sort hunter registrations by preserve. Trust staff may reach out to hunters registered at a specific preserve to determine their interest in volunteering for clean-ups and maintenance projects. The Trust continues to use a "lottery" system for the ever-popular but limited hunting opportunities at our Limestone Ridge Preserve and Thomas F. Breden Preserve at Milford Bluffs.

It is important to note that the Trust does not allow hunting for waterfowl, small game, turkey or bear, as it maintains that only over-browsing by deer poses a threat to biodiversity. In addition, Sunday bow hunting is not authorized on Trust preserves as it is on state wildlife management areas and private property during deer season.

While hunting on Trust preserves, all rules and regulations in the New Jersey Division of Fish and Wildlife game code must be followed. Hunting deer by bow and arrow, shotgun or muzzleloader are acceptable, depending on the preserve. No target shooting or discharge of weapons other than for deer hunting purposes is permitted. Permanent deer stands are not allowed, and portable deer stands, while permitted, must be removed after the hunting season is completed or are subject to confiscation by the Trust.





## Thanks to Our Volunteers

**T**he Trust would like to acknowledge and thank its many volunteers for their invaluable contributions to the maintenance of Trust preserves. If you are interested in becoming a Trust volunteer monitor or attending a workday, please contact the New Jersey Natural Lands Trust at 609-984-1339, or email [NatLands@dep.state.nj.us](mailto:NatLands@dep.state.nj.us).



*Volunteers at a clean-up at Taylor Preserve*



## **Donations**

The New Jersey Natural Lands Trust gratefully extends its thanks to the following who have donated land, funds or services to the Trust in 2016 to help preserve and protect New Jersey's natural diversity:

**The Trust for Public Land**

**Rancocas Conservancy**

**The Estate of Josephine Gervase and Dawn S. O'Connell**

**Carol Widmaier**

**Kurt Widmaier**

**CITGO Petroleum Corporation**

**Covanta Camden Energy Recovery Center**

**Stewards of Open Space Camden County, South Jersey Land and Water Trust**

**AmeriCorps/PowerCorps Camden**

**Matthew Sullivan**

**Joyce Cloughy**

**DEP Endangered and Nongame Species Program**

**Duke Farms**

**William Penn Foundation**

**Herpetological Associates, Inc.**

**Evergreen Environmental**

**Dr. Jay F. Kelly, Raritan Valley Community College**

**Friends of Taylor Wildlife Refuge**

**Pinelands Preservation Alliance**

**Bruce Bieber**

**Keith Seager**

**NJ Conservation Foundation**

**William "Bill" Schmitz**

**Barnegat Bay Sportsmen's Club**

For more information about how you can make a donation to further the Trust's mission to acquire, preserve and manage natural lands for the protection of natural diversity, please call 609-984-1339.



*"Peregrine Falcon"*



*"Gentian"*

## Stefan Martin Prints for Sale to Benefit the Trust

In 1984, the Trust commissioned a series of limited edition prints created exclusively for the Trust by New Jersey wood engraver Stefan Martin. Each of the three prints highlights an object of the Trust's preservation efforts: the State-endangered Peregrine Falcon, titled "Peregrine Falcon;" a northern New Jersey stream habitat titled, "Morning Stream;" and a grouping of three Pine Barren gentian, titled "Gentian." After Stefan Martin's death in a 1994 fishing accident, a fellow artist noted that Martin was "absolutely one of the most important artists in New Jersey. He won many awards, was nationally known, and very well-loved."

Unframed prints are \$150 each, or \$400 for all three (a \$50 savings).

To order, contact the Trust at 609-984-1339, or email [NatLands@dep.state.nj.us](mailto:NatLands@dep.state.nj.us) and indicate which print or prints you would like to order and your name and phone number. We will get back to you with ordering details.



*"Morning Stream"*

# The New Jersey NATURAL LANDS TRUST

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An 11-member Board of Trustees sets policy for the Trust.

Six members are appointed by the Governor from the recommendations of a nominating caucus of conservation organizations, and five members are State officials.

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