

NEW JERSEY NATURAL LANDS TRUST

2017 Annual Report





New Jersey Natural Lands Trust

2017 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.



The beauty of Petty Island (pg. 3). No one would guess that an oil storage tank once stood here.

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Cover Artwork by Terry Lee Schmidt

In 2017... the New Jersey Natural Lands Trust brought approximately 171 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 10 new acquisitions, two were donations to the Trust.

This year's acquisitions built upon the existing Bear Swamp at Red Lion, Clarks Landing, Great Piece Meadows, Hamilton, Hardwick Meadows, Mankiller, Richard J. Buhlman, Sooy Place Preserve, and Wildcat Branch preserves.



Transformation. An old tank field has been transformed into a beautiful landscape of freshwater wetlands. Below, the view of Philadelphia from the island.

Petty's Island Update

"A Nice Place to Visit"

Among the many visitors to Petty's Island this year were members of the Henry L. and Grace Doherty Foundation. Their visit was exciting because Henry Latham Doherty founded Cities Service Company, a predecessor to CITGO, in 1910. Although Doherty was one of the oil magnates of the Gilded Age, he was a breed apart from most of the others. Doherty was a conservationist who believed in eliminating petroleum waste and who advocated for government regulation, so it seems appropriate that well beyond his 1939 death the company he founded is committed to restoration and preservation of Petty's Island in partnership with the Trust for the benefit of future generations.

In addition to his intrinsic conservation instincts, Doherty was a visionary. Cities Service was affiliated with the Crew Leveck Company which had built an oil storage and exporting facility on Petty's Island in 1916. Doherty, with his scientific instinct, had hired a geologist to perform exploration of an area in Kansas. On the first day there, the drilling rig struck oil leading to the discovery of the El Dorado Oil Field and marking the first time in the history of oil and gas exploration that a discovery of oil was based on the use of geology. The new discoveries of

oil put significant pressure on Cities Service to increase its storage and refining capacity, which most likely drove decisions to build and expand the facilities at Petty's Island.

The CITGO marketing brand was introduced in 1965 as part of an advertising campaign. After 80,000 names were proposed by members of the company and the public, the winning selection, CITGO, retained the first syllable of its long-standing name and ended with "GO" to imply power, energy, and progressiveness. With its new brand, CITGO embarked on a catchy marketing campaign titled "Zoom! Zoom! Cities Service is CITGO Now" which flooded radio and television airwaves and proclaimed that CITGO was "A Nice Place to Visit." More than fifty years after the debut of this campaign, we can agree that CITGO's Petty's Island is "A Nice Place to Visit."

CLEANING UP THE LAND

This is especially true this year following dismantling and removal of all the former oil storage tanks and ancillary oil storage and refining equipment from the island. CITGO hired demolition contractor Brandenburg and within the space of three months they made

quick work of removing all vestiges of the old tank field, which is now a beautiful landscape of freshwater wetland impoundments and grasslands offering vistas of the Philadelphia skyline. Even if you've been to Petty's Island before, we encourage you to participate in one of the Trust's public programs to see how different the island looks without its tanks.

Through its education programming contractor, New Jersey Audubon Society, the Trust offers many fun and interesting public programs and school field trips at Petty's Island. For information about upcoming programs, please check the NJAS program page at:





Demolition Contractor at Work. CITGO hired demolition contractor Brandenburg who made quick work of removing all vestiges of the old tank field.



William Penn Fellows. Jack Braunstein and Marcus Burrell stand in front of the future Petty's Island Visitor's Center.

Petty's Island Update (cont.)

<http://www.njaudubon.org/Go/Petty>

In addition to its regular programs, every year Petty's Island joins 22 environmental education centers within the Delaware River watershed, which have aligned as the Alliance for Watershed Education (AWE), to celebrate "River Days." Sponsored by the William Penn Foundation, River Days spans four weeks in September and October at many 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, River Days hosts interactive events to provide people with opportunities to run, bike, paddle, and enjoy being on or near their local waterways. For its part during River Days 2017, Petty's Island participated in a weekend-long event at the Adventure Aquarium and hosted three events on Petty's Island: a fall bird hike, a clean-up, and a photography workshop. We're looking forward to an even bigger, better River Days 2018.

The William Penn Foundation also sponsored each of the AWE centers to host a summer fellowship. The Trust partnered with the New Jersey Conservation Foundation to host two shared fellowships. The fellows, Jack Braunstein and Marcus Burrell, worked together to develop community surveys and outreach programs within the Camden County area to better understand what the local community wanted most in terms of opportunities to enjoy

local open space, such as Petty's Island and Gateway Park, and to provide stewardship of the Delaware River and Cooper River.

At the end of the fellowship, Jack and Marcus and the other fellows presented fellowship capstone projects at the John Heinz National Wildlife Refuge at Tinicum, PA. While each fellow's project was unique, collectively they increased awareness of and support for clean water in the Delaware River watershed through community outreach and education.

GET OUT THE POPCORN!

The documentary, *Saving Petty's Island: 500 acres of Controversy*, is available for viewing. Produced by John Gattuso of Gattuso Media Design and awarding-winning Bob Krist, it tells the compelling story of the community-corporate-government collaboration that worked from 2002 until 2009 to successfully preserve Petty's Island. The Trust's Chair Michael Catania and Board member Emile DeVito have starring roles along with Robert Shinn of the Cooper River Watershed Association and Camden County Historical Society, Fred Stine of the Delaware Riverkeeper, Jack McCrossin of CITGO Petroleum Company and many others. The Trust hopes to provide screening opportunities through many diverse media outlets.

A TURN FOR THE BETTER

Sometimes even events that happen far away affect us locally in interesting ways. When Hurricane Maria, a powerful Category 4 storm, struck Puerto Rico on September 20, 2017, it

was the strongest storm to make landfall there in 85 years. Trees were uprooted, homes were destroyed, and there were widespread flood events and power outages. Crowley Maritime Corporation, which operates on the southern end of the island and has served the Puerto Rican market since 1954, immediately began sending relief cargo and supplies to its terminal in San Juan. Crowley's lease at Petty's Island was due to terminate on December 31, 2017, but because of Puerto Rico's need for supplies as well as trucks to move the supplies to inland destinations and repair infrastructure, the uninterrupted of the roll on-roll off (RORO) operations at Petty's Island became critically important. For humanitarian reasons, CITGO and the Trust granted a four-month extension of Crowley's lease through April 30, 2018. Once the Crowley operation terminates, a radical change to the landscape is expected, similar to that experienced when the tank field was removed by CITGO.

With its changed landscape, it's easy to envision a future Petty's Island Preserve open to the public for hiking and biking and with a cultural and environmental education center at the former Crowley triple deck terminal structure. To create the conceptual designs for the future center, Crowley hired Vitetta Architects. Vitetta's conceptual designs {hot link} provide an exciting glimpse at the next chapter at Petty's Island, which will see the return of the island to its natural state and its visitors to the river. Based on his visionary conservation-oriented outlook, we can't help thinking that Henry L. Doherty would be pleased at this turn of events. ●



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 bog asphodel.

Lily of the Bog

The rarest of gems in the heart of the Pine Barrens

The State of New Jersey gets a bad rap. Yes, it's the most densely populated state in the United States. Yes, it has more than its fair share of polluted sites. Yes, it's a series of turnpike and parkway exits. But it's more than all of that. It's also home to many rare and wonderful plants. And for one of those plants, the bog asphodel (*Narthecium americanum*), New Jersey is the only place on the planet it calls home. Yes, this beautiful plant is only found in New Jersey, in the heart of the Pine Barrens.

The states of Delaware, North Carolina, and South Carolina used to lay claim to asphodel but no longer. The asphodel was last seen in Delaware on August 1, 1895 (Tatnall 1946). There have been no sightings in the Carolinas since the 1920s (Small 1933), and it is now believed that the plants from North Carolina was a different species all along (Small 1924). So, in botany jargon, the plant was historically known but is now considered extirpated from those states, and is only extant in New Jersey.

This perennial, a member of the lily family, consists of a simple, erect stem that grows to about 20 inches high with seven to nine basal leaves, approximately eight inches long and less than an inch wide, which fan out around the stem's base. During the months of June and July, it is topped with a pyramid-like spike covered with glorious yellow flowers. These yellow flowers shimmer in the golden light of the summer sun, calling to mind this poem by Emily Dickinson:

**Nature rarer uses Yellow
Nature rarer uses Yellow
Than another Hue.
Saves she all of that for Sunsets
Prodigal of Blue
Spending Scarlet, like a Woman
Yellow she affords
Only scantily and selectly
Like a Lover's Words.**

After it flowers the asphodel fruits, and this stage is just as beautiful as the flowering stage, with bright orange fruits in place of the flowers. While the asphodel fruits and produces seed, it also can reproduce clonally from a system of underground stems called rhizomes.

Within the heart of the Pine Barrens, asphodel grows in bogs and riverside fens known as savannas along old oxbows, channels, and branches of rivers such as the Wading, Oswego, Batsto, and Mullica. In these areas, the plant finds the sphagnous bog mat or firm peaty sandy substrate habitat it favors. As noted by Witmer Stone in *Plants of Southern New Jersey*:

On the branches of the Wading River ... where broad, wet sandy bogs abound, I have seen great patches of [asphodel], the short stiff leaves curving up from the root stalks in thick ranks like short grass, and the yellow spikes standing close together make a golden sheen over the bog that can be seen at quite a distance. Even when in fruit they make quite a show, the seed capsules being rich reddish brown and the stalks and bracts buff like wheat chaff (Stone 1911).

ILLUSTRATION: TERRY LEE SCHMIDT



The Fruit of Their Labor. Asphodel produce bright orange fruits that are just as beautiful as their flowers.

Lily of the Bog (cont.)

With its Pine Barrens riverside savanna habitat concealed from the rivers and roads by dense Atlantic white cedar swamps and shrub thickets, asphodel grows in some of the most remote areas of New Jersey (Kelly 2014). In his 1968 book, *The Pine Barrens*, John McPhee eloquently describes this remoteness:

From the fire tower on Bear Swamp Hill, in Washington Township, Burlington County, New Jersey, the view usually extends about twelve miles. To the north, forest land reaches to the horizon. The trees are mainly oaks and pines, and the pines predominate. Occasionally, there are long, dark, serrated stands of Atlantic white cedars, so tall and so closely set that they seem to be spread against the sky on the ridges of hills, when in fact they grow along streams that flow through the forest.

McPhee (1968) described the Pine Barrens as a “six hundred and fifty-thousand-acre virgin forest reserve that dominates the southern half of New Jersey. The Pine Barrens region is sparsely populated at about 15 people/square mile, in

contrast to New Jersey’s average population density elsewhere of 1,000 people/square mile (the greatest in the US).”

The asphodel relies on groundwater seepage which makes it less vulnerable to drought and other climate events (Kelly 2014). Groundwater reliability probably stems, at least in part, from the “natural reservoir of pure water that, in volume, is the equivalent of a lake seventy-five feet deep with a surface of a thousand square miles.” (McPhee 1968)

On a hot summer day in the 1960s, John McPhee took a field trip in the Pine Barrens with the Philadelphia Botanical Club. Joining the group was Edgar T. Wherry, professor emeritus of botany at the University of Pennsylvania. When asked what plants in the Pine Barrens are botanically most important, Wherry noted the curly-grass fern, which was discovered in the Pine Barrens and grows almost nowhere else, but continued, “after that, ... *Narthecium*, the bog asphodel, is isolated here. It’s disjunct. You don’t see it again until you get to the North Carolina mountains.” Wherry would likely find asphodel even more important today now that we know

the asphodel grows nowhere else but New Jersey (McPhee 1968).

There is evidence from the pollen records within sediment cores that bog asphodel has been present in the Pine Barrens for millennia suggesting that historically the plant has been quite resilient (Southgate 2000, Walz 2018 Pers. Comm.). But maybe it was not so much the asphodel’s resiliency as its isolation deep within the heart of the undeveloped Pine Barrens.

While the remoteness of its Pine Barrens habitat within the Atlantic white cedar stands has historically sheltered the asphodel, it may now spell its betrayal. Within the New Jersey Department of Environmental Protection’s (NJDEP) Office of Natural Lands Management (ONLM), botanists monitoring the plant have observed two factors that appear to represent the greatest threat to the species’ long-term survival: regional changes in groundwater hydrology; and the succession of woody vegetation often associated with it (Kelly 2014).

Inspired by McPhee’s book, New Jersey Governor Brendan Byrne took unprecedented action to protect the Pine Barrens and its

Lily of the Bog (cont.)

vast underground water resources from being developed in the manner of the rest of New Jersey. He courageously issued an executive order to halt development while he pushed for passage of the Pinelands Protection Act in 1979 and the creation of the Pinelands Commission and Comprehensive Management Plan. These regulatory protections helped to protect a million acres of ecologically-sensitive land. Unfortunately, since 1980 urbanization of the three counties surrounding the Pine Barrens has increased more than anywhere else in New Jersey (Kelly 2014). This runaway development has stressed groundwater resources, generated stormwater and agricultural run-off affecting water quality, and resulted in suppression of natural fire in order to protect the public and their homes. In turn, these factors may have led to changes in the growth patterns of woody vegetation, resulting in more extensive forest canopy and encroachment into asphodel habitat, as well as a lowering of the water table limiting the asphodel's access to a steady water level (Kelly 2014).

In 1990, the U.S. Fish and Wildlife Service (Service) determined this species was a candidate for protection under the Endangered Species Act, meaning that adding the species to the list of threatened or endangered plants was warranted but precluded by the Service's need to first protect species at greater risk of extinction. Soon afterwards, the NJDEP listed the species as State Endangered. Between 2004 and 2009, the ONLM, working with Dr. Jay F. Kelly, an Associate Professor of Biology and Environmental Science of the Department of Science and Engineering at Raritan Valley Community College, searched along 112 miles of potential habitat in New Jersey and found 30 new populations of bog asphodel. Based on these surveys, the Service determined that the total number of populations had increased 57 percent, and the area of known populations of bog asphodel had increased by 86 percent. Armed with this information, and what it perceived as increased regulatory protections, the Service felt the outlook for the status of bog asphodel had improved. Therefore, based what it determined was the best available science, the Service determined the asphodel was secure within its current range and delisted it from candidate status in 2012 (U.S. Fish and Wildlife Service 2012).

This loss of candidate status resulted in a loss of federal research funding at a time when there had been a notable decline (more than

Push for Passage.
Governor Brendan Byrne signed Pinelands legislation.



25 percent) in the size of asphodel populations since 2007 from unascertained, but suspected threats. More significantly, bog asphodel occurs primarily in the Mullica River watershed on the inner coastal plain of New Jersey. While there may be many occurrences in this watershed, a single stochastic event affecting the watershed could potentially wipe out critical populations or even the entire species (Walz 2018 Pers. Comm.).

Back in 2009, the American Society of Botanical Artists sponsored a project entitled, *Losing Paradise? Endangered Plants Here and Around the World*, which profiled 24 plants from the United States and 20 plants threatened worldwide with extinction (American Society of Botanical Artists 2009). The asphodel was among those profiled. While the exhibition focused on our love of plants and appreciation of their beauty through artwork, it was also intended to educate and remind us of our total dependence on plants and the complex consequences of our actions which limit their abundance, diversity, and very existence. In his introduction to the exhibition, Peter H. Raven speaks to our complex relationship with plants:

We are completely dependent on plants, directly or indirectly, for our food; most people in the world depend on them for their medicine; and they collectively protect our soils, regulate the natural flow of water, and provide the pollinators that make a high proportion of our crops productive. By capturing a small measure of the energy from the sun that bombards the earth continuously in enormous amounts and transforming it through the process of photosynthesis into chemical bonds that store energy, they, along with algae and a few kinds of bacteria, provide the basis of life on earth. Particularly at a time when we are still building our knowledge of

molecular biology rapidly, we look forward to many unknown but important further uses of plants and their products in the future.

We hope never to have to imagine the New Jersey Pine Barrens without bog asphodel, one of its rarest and most beautiful plants. On January 4, 2018, New Jersey lost Governor Brendan T. Byrne, long a Pine Barrens champion. Thanks to his and others indefatigable efforts, the bog asphodel's only known home on the planet is secure for now. ●

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Trashing the Drinking Water

Identifying potential solutions to clean our waterways

The garbage we see along our shorelines is not just unsightly, it's unhealthy. Chemicals from this garbage can leach into our waterways and affect our drinking water. One of the biggest reasons people litter is that they don't realize where it ends up—in their drinking water. This is because most people don't know the source of their drinking water. Many people would be surprised to learn that they drink water from the Delaware River. Indeed, more than fifteen million people rely on the Delaware River Watershed for their drinking water. That's five percent of the United States' population.

The Delaware River watershed is also home and habitat to many animals and plant species; turtles, eagles and shad to name a few. These animals can swallow or become entangled in all the garbage, killing or injuring them.

To study the issue of marine debris along the Delaware River and explore potential solutions, Dr. Jay F. Kelly, an Associate Professor of Biology and Environmental Science of the Department of Science and Engineering at Raritan Valley Community College, and his students have teamed up with Clean Ocean Action.

To identify potential solutions, Dr. Kelly and his students wanted to better understand the cause of the problem and have been surveying the Delaware River shoreline to answer burning questions such as: Where does all the trash come from? What types of debris are most common?

In March of 2017, Dr. Kelly, his students, and Clean Ocean Action brought their study, strength and stewardship to the Trust's Taylor Preserve, which sits along the Delaware River shoreline in Cinnaminson and Delran townships in Burlington County. In addition to logging-in each and every piece of marine debris they found at the Taylor Preserve, they also removed all of it. The Friends of the Taylor Wildlife Preserve were on hand to pitch in, and all the garbage filled up a dumpster provided by the Trust.

Until we can educate folks that litter finds its way into our drinking water and into the habitats of the animals and plants we treasure, more debris is sure to come in with the next tide. But the success of clean ups of the historic debris at the scale accomplished at the Taylor Preserve is long lasting. Many thanks to Dr. Kelly, his students, and Clean Ocean Action, as well as the Friends of the Taylor Wildlife Preserve, for trying to turn the tide on this important issue! ●



Pollution Problem. Above, floatable plastic bottles are a big part of the marine pollution problem. Below, Raritan Valley Community College students clean up the Delaware River shoreline.



Built like a Concrete (Well, You Know) House

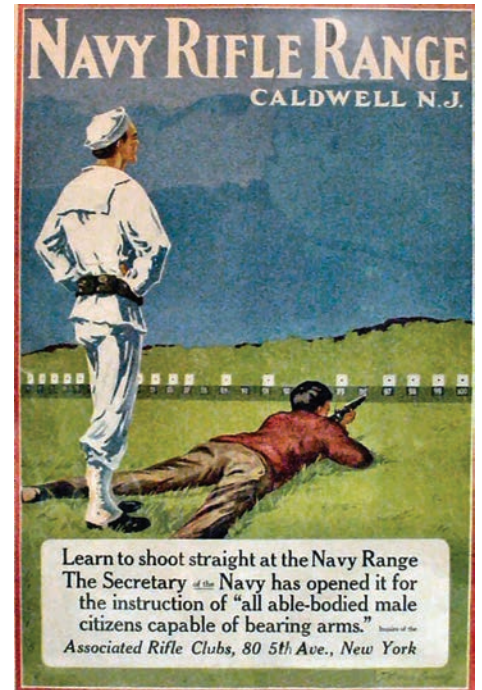
Discover the history of the Great Piece Meadows.

Our Country is celebrating its one hundredth anniversary of the First World War. In 1917 nearly all of NJ was rural farmland. From these rural farms, villages, and towns came the men and boys who were soon to become soldiers to uphold the values of America. A small part of that history is being set aside at Great Piece Meadows, as a reflection of this “war to end all wars.”

Great Piece Meadows is a wet soggy marsh along a wide sweeping bend of the Passaic River which divides Morris and Essex Counties. The “Meadows” are the ancient lake bottom of Glacial Lake Passaic, which formed as melt waters collected from the retreating Wisconsin Glacier during the last ice age. The temperament of the Passaic River has always dictated the development of these flat, deep, fertile soiled floodplains. Parcels and property lots in the Meadows are marked out with drainage ditches. Here within such confines, small family farms produced an abundance of vegetables for city markets.

THE RANGE

Things seemed peaceful in Great Piece Meadows that year. Far from Fairfield, or Caldwell as it was known then, WWI was raging overseas. In fall of 1918, the war ended in victory to the Allies. The US Navy was now the premier armed force fighting both on land and at sea, and marksmanship for soldiers and sailors was essential to a continued strong-armed force. The US Navy soon learned of the open areas of Great Piece Meadows and determined that this would make an ideal location for construction of a new US Navy small bore rifle range. As it turned out, it would be the largest in the country, built for enlisted men but open and welcoming to all citizens, both men and women. It would be called the Caldwell Rifle Range. The Range was charged to sharpen the shooting skills of rifle carrying personnel. In military hands this would include 30/30 and similar caliber. For the public who came to shoot and compete side by side with military, it would include the popular new .22 caliber rifle. It was labeled a point of interest on the Automobile Club of America road maps of the time. A military detachment hastily began constructing infrastructure for the range which would need to support numerous shooting platforms and mounded dirt target backstops built at ranges of 100, 150 and 200 yards. The camp-like setting would also include tent housing for 2000 troops and



Vintage Advertisement. J. William Cromwell Poster for Caldwell Rifle Range.

Lost in Time. The behemoth WWI-era shooting range latrine still stand in the Great Piece Meadows.





Fields & Streams. The Great Piece Meadows highlights include a wide winding bend of the Passaic River and beautiful sweeping meadows.

Concrete House (cont.)

3000 civilians, in addition to a mess hall, chapel, administration building, and a concrete latrine.

NEW MANAGEMENT

When the NJ Natural Lands Trust took management of Great Piece Meadows Preserve in 2008, Martin Rapp, Preserve Manger for the Trust, was searching the internet for background information about the Meadows. Getting lost in the web of the internet, he came upon a reference to the US Navy Caldwell Rifle Range and thought it curious. He commented, “To me this was interesting since shooting sports and marksmanship were old interests of mine. I had shot .22 as a boy and even competed on the Parsippany Hills High School Rifle Team.” Today, driving on Horseneck Road and River Road through the heart of the swampy Meadows, you can still pass by more than one modern and active target shooting range. There, members shoot paper targets with pistols and tossed clay target “birds” with sporting shotguns. But this website article included a shooting range at a much bigger scale.

At work at his desk, Martin called the staff of the NJ Green Acres Program for information about Great Piece Meadows. He was referred to Lou Batta, a neighbor to the Trust’s preserve, who said his house in the Meadows has flooded for the last time. Batta was interested in selling to the NJ Blue Acres Program. He wanted to know if it would be okay if he didn’t have to knock down the WWI concrete latrine from the old shooting range, located in his back yard. Martin agreed, which is how he found the unseen remains of the WWI Caldwell shooting range! But locals like Mr. Batta, who grew up and

farmed this land on Horseneck Road his whole life, had known where it was all along. Soon afterwards, Martin met with a representative of the NJ Blue Acres Program and Lou and his wife Valerie at their home.

WWI RELICS

This year, as part of the one hundredth anniversary of America’s entry into WWI, the NJ State Historic Preservation Office (SHPO) is highlighting the roll New Jersey played during WWI, including ship building, munitions, deployment and many other essential functions. But the story of the US Navy Caldwell Rifle Range was not in their sights. After a brief discussion with a member of SHPO, Martin had his interest piqued. For this was one of New Jersey’s few WWI era relics left standing. Captain Edward Cathcart Crossman, whose name adorns a popular brand of BB guns, was appointed as Chief Range Officer at Caldwell. Even Annie Oakley, the cowgirl trick shooter, made an appearance at the range to show the “doughboys” and crowd how it’s done. But as important as accurate shooting was to the war effort, Caldwell Rifle Range would be short lived. High waters came to the Passaic even before the range was fully completed. Those ever-present mosquitoes were not far behind. The influenza flu virus of 1918, which went on to kill millions worldwide, made a “bullseye” at the wet swampy Caldwell Range in early September 1918, sickening several men stationed there. Soon, even the US Navy lost the battle against repeated flood waters when the lazy Passaic left its banks. By the fall of 1919 a military detachment hastily began to dismantle most of the range and building it had built just a few months earlier.

In the back corner of their property, Lou and

Valerie Batta saw the latrine from their backdoor steps every day. For many years, Lou was the Superintendent of the Fairfield Township Public Works Department. The 100-year-old above-ground engineering, which used gravity to move the latrine water downhill, clearly made sense to Lou. He explained the system of how the piping and leach fields all had an eventual outfall into the Passaic River. Lou shared the story of when his father determined one day to vanquish the latrine from his back yard. Batta Senior, like his son, could operate a boom dragline machine which he used for digging drainage ditches. With determination and farmer engineering, he fastened a massive wrecking ball to the cable of the crane and with a wide swing of the boom, preceded to watch the multi-ton iron wrecking ball bounce off the 9-inch thick concrete walls of the latrine. Making little headway, the farmer re-purposed the above ground pit, turning it into an organic leaf compost pile.

Some artifacts and very few photographs of the range exist today. One special item was collected by the Battas. It’s a heavy, handle-less ceramic mug/bowl which is a presumed relic from the mess hall and stamped USN 1919 on the bottom. The Battas pieced this mug back together from broken shards they collected in their yard. A cold and darkened stone chimney which stands in the woods by the side of the road is all that remains of that mess hall. To meet the intentions of the NJ Blue Acres Program, the Batta’s house was demolished. But the property is preserved and added to the Great Piece Meadows Preserve. Today, as you drive down Horseneck Road you’re reminded of the one-hundredth anniversary of America’s entry into WWI and perhaps imagine gunshots ringing from the US Navy Caldwell Rifle Range. ●

Biodiversity Inventory Updates

Biodiversity Inventories and “Surgical Surveys”



SETTING PRIORITIES

Determining what’s important. We all have our list of things that need our attention, those things that need doing. Sometimes that list is short and simple, as remembering to bring home milk. Sometimes our priorities compete or must co-exist with other planning needs, budgets, and schedules, which makes it tricky to sort which tasks get accomplished now and which are put off...for now.

With The New Jersey Natural Lands Trust managing over one hundred preserves and 30,000 acres, setting priorities for conservation is tricky. How to weigh the habitat importance of one parcel of land versus another? How can both plants, wildlife, and other resources be managed for mutual gain? Setting priorities is supported by a foundation of crucial information. So having current and accurate information about the biodiversity resources the Trust strives to protect will better direct how to manage those resources into the future.

In 2017, starting with currently known background data on its network of preserves, the Trust reviewed the details about rare and endangered plants and animals at each of its preserves. With this, staff focused on determining which preserves warranted a biodiversity inventory in the coming year.

The Trust picked two preserves for conducting inventory and developing management recommendations. In north Jersey, the Hardwick Meadows Preserve in Warren County was chosen. This preserve has long been a known hotspot for rare plants, but records were old and it was time for an update of their status. The south Jersey priority was the Game Branch Preserve in Salem County. This preserve has some of the last remaining forest habitat left amongst a vast agricultural area. Little was known about what plants or animals depended on this remaining woodland habitat.

More than a Number (left). Three hundred and thirty moth species were documented at Hardwick Meadows Preserve.

OBTAINING INVENTORIES

For the last several years obtaining biodiversity inventories has been a priority for the Trust. The Trust completed its first inventory in 2007; by 2017 the Trust had completed eight major inventory projects statewide. All these inventories, including the two completed this year, included a one-year effort to compile a comprehensive list of species on a preserve. Qualified ecologists and naturalists are sought to do these inventories due



Rare Sighting. The Puttyroot plant.

to the Trust’s limited staff. In 2017 BioStar Associates Inc. was the successful bidder for both inventories. The requirements and guidelines for these inventories are prepared and directed by staff and customized for each preserve based on ecological information amassed from the staff’s long history of field visits. The core targets for inventories stay mostly constant and include plants, reptiles, and amphibians. Surveys for other suites of species like birds, butterflies and dragonflies are considered if there is some expectation of results.

HARDWICK MEADOWS PRESERVE

The Hardwick Meadows Preserve inventory would require a minimum of 20 days of fieldwork and included surveys for butterflies and moths. The rich limestone forest and quality wetland habitats had the potential to support rare, endangered and threatened species. And this potential was realized. So much so that BioStar Associates Inc. ultimately devoted double the allotted time for fieldwork and exploring every corner of the preserve.

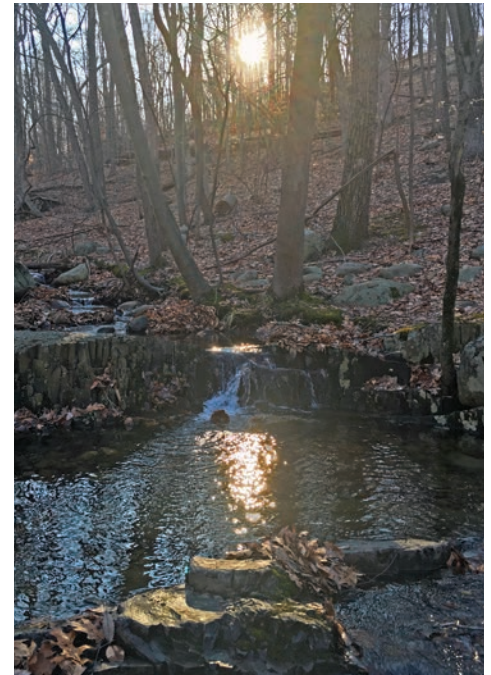
Ten occurrences of threatened or endangered animals or species of special concern were discovered. This included a dozen separate occurrences of long-tailed salamanders. Twenty-eight different occurrences of rare plants were discovered. The rare plant results were in addition to an exhaustive list of more than 300 common native plant species. Dozens of both butterfly and dragonfly species were also revealed. But the six nocturnal surveys for moths yielded the most striking results. Going about their lives for the most part unnoticed, moths

Biodiversity Inventory (cont.)

exhibit high species diversity. Three hundred and thirty moth species were documented at Hardwick Meadows Preserve, and an additional 13 were observed that could only be identified to genus in the field. Six of the moths were rare finds for New Jersey. The final results make evident that Hardwick Meadows Preserve retains a healthy intact and diverse ecosystem which supports populations of some of the state's most sensitive species. The report also recommended habitat management which would help keep it that way.

No less important, but with less exciting discoveries, was a biological inventory at the Game Branch Preserve in Salem County. Vegetable truck farms and more often grain farms cover wide expanses across this part of the state. Game Branch is too wet for farming and has remained a swampy forest to this day. Spattered with natural shallow wet depressions and man-made drainage ditches, it is one of few large forested tracts around. Located within a mile of the Delaware River, it would seem that migratory songbirds should find this patch of tall old maple, black gum and swamp white oaks a handy rest spot during migration or an ideal summer residence. Also, the shallow wetland ponds would appear to provide a stronghold for amphibians. Being off the beaten track of most birders or botanists, it's likely few naturalists have taken time to look here. That's why a closer look at Game Branch was a Trust priority. The Trust's consultant was directed to perform standard inventories for plants and amphibians, and because of suspected significance for migratory stopover, an added study of all birds was included. However, all the traversing of the dark wet forest in hip boots and bug spray didn't pay off. After fifteen plus days in the field searching under logs, not much new or out of the ordinary was revealed. Ground that was soaking wet in the rainy season turned dry and hard in the summer resulting in unfavorable habitat conditions for most amphibians, many birds and plants too. Although hope for new discoveries was unrealized though this study, the old growth forest continues to provide for clean waters in the Game Branch headwaters, and will continue to support waves of songbirds during their long migration.

The Trust sets and resets its priorities as it continues to learn more about each of its one hundred preserves across New Jersey. It's all important. ●



Photos above (clockwise left to right): Monarch butterfly, views from the summit and stream at High Mountain Preserve.

Surgical Surveys Provide Quick Answers

Surgical surveys is a term the Trust uses to describe the smaller, quicker, and more precise ecological inventories the Trust periodically undertakes. These projects are much less comprehensive than the Trust's biodiversity inventories, mostly requiring fewer field days and focusing on just a single resource the Trust wants to know more about. This year, four such surveys were completed.

An outstanding study was completed by BN Applied Ecological & Biological Sciences to determine if Barking Treefrogs (*Dryophytes gratiosus*), that were known to occur at Bennett Bogs Preserve in Cape May County in 1956, still existed some 60 years later in 2017. Walter F. Bien, PhD was well qualified to do the call response study. The study also included frog call work at other Trust preserves. Interviews of some prominent New Jersey herpetologists rounded out the study. Unfortunately, no barking treefrogs were relocated during the study and the researchers concluded the high habitats needed to support the treefrogs may no longer exist.

Not a single monarch butterfly was found in a field at Bear Creek Preserve in Warren County during 2017. Following a citizen science study protocol, college undergraduate Kevin Rodriguez was hired for this summer study. Though unfortunate in terms of results, Kevin gained valuable field and report writing skills.

In 2017 the Trust retained Jason Tesauro Consulting, LLC to perform herpetological survey of High Mountain Preserve, Passaic County. After four survey days, however, mostly common species were found. But the results provided a solid baseline and will direct future actions to support the amphibians and reptiles on this preserve.

For a second year in a row, Wild Ridge Plants performed a four-day plant survey at Sweet Hollow Preserve in Hunterdon County. Four rare species were found that were not sighted the previous year. ●



Finding Balance. The Trust's policy to allow only deer hunting at some of its preserves helps preserve New Jersey's biodiversity.

Hunting Season News

During the 2017-2018 hunting season approximately 3,491 hunters registered at Trust preserves through its website: 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. As in past years, this year the Trust used a "lottery" system for the ever-popular Limestone Ridge Preserve and Thomas F.

Breden Preserve at Milford Bluffs, but next year it is expected that the Trust will allow bow hunting only at these preserves.

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

The 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.



Petty Island Cleanup (top and bottom photos)



Above, Crossley Preserve Cleanup





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:

NJ Conservation Foundation

Maxine Drusendahl

Charles Richard Effron

CITGO Petroleum Corporation

Covanta Camden Energy Recovery Center

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

AmeriCorps/PowerCorps Camden

Kevin Rodriguez

Joyce Cloughy

DEP Endangered and Nongame Species Program

Duke Farms

William Penn Foundation

Herpetological Associates, Inc.

Jay Kelly / Raritan Valley Community College

Friends of Taylor Wildlife Preserve

Clean Ocean Action

Pinelands Preservation Alliance

Bruce Bieber

Keith Seager

William "Bill" Schmitz

Barnegat Bay Sportsmen's Club

Trust for Public Land

Rancocas Conservancy

Upstream Alliance

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

The New Jersey Natural Lands Trust financial report is available upon request.



New Jersey Natural Lands Trust

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of a nominating caucus of conservation organizations, and five members are State officials.

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