



the Swamp Scene

friends of great swamp national wildlife refuge

ISSUE SEVENTY ONE
MARCH 2023

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IT'S WARBLER TIME—BUT YOU MUST ACT NOW!

By Paul Lauber, Friends Volunteer and Friends Board Member

Photos by Robert Lin

Each year, Nature provides birders with an offer they can't refuse: the spring migration of North American wood warblers.

Unique to the world, North America boasts over 50 warbler species, most of which are considered long-range neotropical migrants. Fortunately, there are a remarkable 38 warbler species that migrate through the eastern half of the United States. Traveling in waves of mixed flocks, warblers move north from the West Indies, Mexico, and Central and South America. Chiefly insectivores, warblers time their Spring migration to coincide with the emergence of the protein-rich bugs found in our eastern hardwood forests.



Yellow Warbler



American Redstart

Birders recognize that the “warbler game” is often frustrating. Birding icon Roger Tory Peterson called warblers, “the butterflies of the bird world”. Like butterflies, warblers are small, elusive, and difficult to identify on the wing. But with plumages straight out of Van Gogh's paint box, birders and determined photographers are quickly hooked on chasing these avian gems.

In the 1960s, world-renowned ornithologist Dr. Chandler S. Robbins created and championed the *Breeding Bird Survey*, where volunteers document breeding success through careful fieldwork. Importantly, the data collected provides information on bird numbers, distribution, and population trends. With the help of nearly 500 citizen scientist birders, a New Jersey state-wide survey was completed in 1999, and published by New Jersey

(continued on page 8)

A YEAR OF GOOD THINGS

By Tom Gula, President, Friends of Great Swamp National Wildlife Refuge

As I look back on my first year as president of the Friends of Great Swamp, I can honestly say that from this new perspective I am even more aware of the tremendous accomplishments of the organization - thanks to the dedication and hard work of our volunteers. The last three years of COVID-related restrictions have indeed been difficult, but we are now beginning a return to a new normal. Moving forward we hope to be better than ever at doing what the Friends do best - working together with Fish and Wildlife staff to support the overall mission of the Great Swamp National Wildlife Refuge.

Like the first daffodils emerging from the cold winter soil, the Friends have returned to hosting traditional activities that have been cancelled or slowed the past few years, and continue to explore exciting new opportunities for visitors to the Refuge.

The construction team, with funding from Fish and Wildlife, has been working on two major projects: the continuation of improvements to the White

Oak Trail (with the final Phase III to begin this year), and the replacement of sections of the 25-year-old boardwalk at the WOC, from the parking lot to the Garden Club blind (with assistance from a Fish and Wildlife team). They've worked through difficult winter conditions — the results when finished will be enjoyed by the many visitors to the WOC for years into the future.

Some other recent highlights include the growing popularity of the Friday Walks with Friends, and the recent addition of a Third Saturday Walk. But perhaps most of all, we've seen the return of many old "friends," activities that we missed over the past few years: the Fall Festival in 2022, the Annual Turkey Walk, expanded Outreach programs (including Ground Work Elizabeth initiatives such as a Christmas Bird Count), and the development of Second Sunday hybrid programs that can reach a large audience on Zoom.

Finally, with a return to full activity at the Refuge, we've welcomed a number of new Refuge staff members. Among

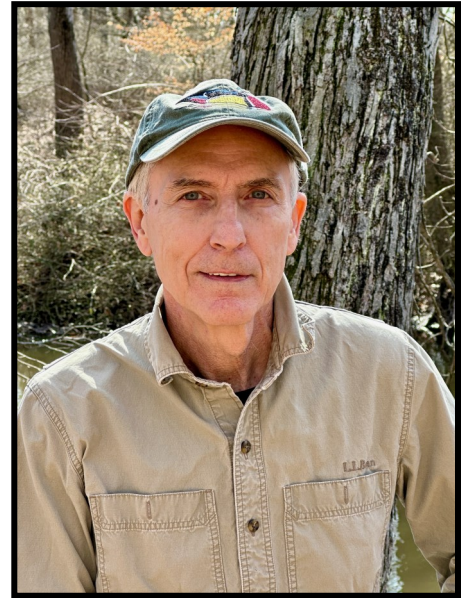


Photo by Richard Hiserodt

many other things, we can thank them for the recent installation of Bird Strike Window Treatment at the Visitor Center. Finally, we've seen renewed efforts to recruit new volunteers to the Refuge, as we continue moving forward to preserve this place we treasure - the Great Swamp National Wildlife Refuge.



A CHANGING SCENE

By Laurel Gould, Friends Volunteer

Regular readers will note that for the first time since 2002, there is no article by Friends member and Refuge volunteer Leo Hollein. Sadly, Leo passed away this past January. Leo donated over 7,000 volunteer hours at Great Swamp NWR, many of which were spent leading the team responsible for the refuge's Bluebird Trail. However, he also supervised the volunteers who maintained and monitored the refuge's 180 wood duck boxes and carried out annual duck banding. Leo was known for entertaining and informative Second Sunday presentations—and of course, writing articles for Swamp Scene. Leo wrote research-based, informative and engaging articles about the wildlife, especially birds, of Great Swamp. Each article was accompanied by remarkable photographs, most of which he had taken himself in the field while volunteering. Leo was an editor's dream. I could count on receiving one or more articles for every single issue, always on time, well-written, with a nice selection of photos to choose from. He will be missed.

Speaking of editors, welcome Patricia and Martha Wells, the new Swamp Scene editors. After more than 20 years and 68 issues, I am retiring to Virginia with my family. Publishing this newsletter has been such a rewarding experience. Over the years, with the help of so many talented, creative and generous contributors, we have published delightful stories and poems as well as important articles about current projects and momentous changes at Great Swamp. We have documented important research studies and spread the word about the importance of refuges and the national wildlife refuge system (*have you purchased your Federal Duck Stamp yet?*). Looking back, we have chronicled events that have become history and created an important archive. I will miss being a part of Swamp Scene, but I am looking forward to reading future issues from the shores of the Chesapeake Bay.

THE GREAT AMERICAN OUTDOORS ACT - EXTRA HANDS FOR REFUGES

By Laurel Gould, Friends Volunteer

Engineering Equipment Operator Dave Miller told me, “looking back over my 14 years, one thing I noticed at Great Swamp and at refuges around the Region was always needing an extra hand to get projects done...The GAOA team is now providing those extra hands.”

So, what exactly is GAOA? In August 2022, legislation was passed addressing decades of maintenance backlogs on federal lands. Known as the Great American Outdoors Act—or GAOA—the Act provides funding over five years for deferred maintenance projects on public lands in the Forest Service as well as four agencies within the U.S. Department of the Interior: National Park Service, Bureau of Indian Education, Bureau of Land Management and the Fish and Wildlife Service. The Act is funded by revenues received from energy development on Federal lands.

Now in its second year, the Act has had a noticeable impact on maintenance and deferred backlogs at refuges across the country.

So how does this work? GAOA strike force teams have been set up in the various regions within the U.S. Fish and Wildlife Service. Our Northeast Region is separated into 3 zones, each with a 3-person team. Projects across the region are identified by the Project Leaders and, if accepted, are planned, scheduled and implemented. Our Central Maintenance Zone Team, based here at Great Swamp NWR, includes Justin Battaglia and Collin Seip. It is led by Engineering Equipment Operator/Zone Lead Dave Miller, with overall supervision from Project Leader Mike Horne.

The many projects are diverse and scattered across the region. Some projects completed in 2022 include: rebuilding a boat launch dock at the Long Island NWR Complex; interior remodeling of a stone building at John Heinz NWR; demolishing and building a new observation deck and parking lot at Forsythe NWR; replacing a lamprey weir at the Lake Champlain Fisheries; removing misaligned culverts and installing an open span bridge to facilitate brook trout navigation at Silvio O. Conte NWR. Projects can last from a few days to as much as three weeks.

The GAOA team has also been busy at the refuges within the Lenape NWR Complex maintaining and repairing on old railroad bridges, part of a Rails to Trails project that runs through that refuge. At Cherry Valley NWR, the team remod-

eled a bathroom to make it ADA compliant and painted the headquarters meeting room. And here at Great Swamp, the team has rebuilt walkways at the old headquarters building, assisted with installation of the bird strike window film at the Visitor Center, and spent a week scraping and re-painting the Visitor Center exterior. Perhaps the biggest project here at Great Swamp has been the replacement of the aging and decrepit boardwalks at the Wildlife Observation Center. In October, the team, with some help from maintenance workers from Great Swamp and Wertheim NWRs as well as the Friends Construction Crew, was able to complete 500 feet, about ¼ of the 2,100 foot boardwalk. Another 2-week session is scheduled for May.



GAOA team working on WOC boardwalk, October 2022
Dave Miller left of boardwalk. Photo by Dave Katz

Dave Miller reports that the success rate of the GAOA teams in the Central Zone has been tremendous and Project Leaders at each refuge have been thoroughly impressed with how much has been accomplished and the quality of work given to each station. Dave says their calendars are filling up with projects planned out to July. Right now, they are at Eastern Neck NWR in Maryland working on reconstructing a 500-foot section of boardwalk and overhauling a 100-foot fishing pier. According to Dave, “the extra hands provided by the GAOA team are exactly what was needed to realize an overall improvement of facilities on refuges for the enjoyment and safety of visitors, volunteers, and employees.”

WELCOME JOE GREEN TO THE GREAT SWAMP NWR

Joseph Green is the Facility Operations Specialist at the Great Swamp National Wildlife Refuge. Prior to this appointment, he came from the Patuxent Research Refuge, Maryland.

Joe has over 35 years of experience operating and maintaining large and small equipment and an extensive knowledge of electrical, plumbing and general contracting. He has owned and operated his own landscape and small construction business.

Joe was born and raised in Bath, Maine. He attended Northern Maine Technical College. He enjoys volunteering in his local community. Joe is dedicated to actively coordinating and participating in fundraising events and educating the community about Huntington's Disease in memory of his mother and sister-in-law. He is married with three grown children, grandfather of two and enjoys spending time with his Great Dane and Cane Corso Mastiff.



WELCOME NEW FRIENDS BOARD MEMBERS

PAUL LAUBER

I grew up in West Paterson (now Woodland Park) and have lived in Jersey my entire life. In high school, our biology teacher showed us a documentary that featured the flora and fauna of freshwater wetlands, and even included the (then exotic) white-tailed deer. Later, we learned the film was from the Great Swamp, only 25 miles away. Soon after, my dad took me to the Wildlife Observation Center. I still recall that the narrow boardwalks had no railings and lay just inches above the dark water. Since that visit 50 years ago, the Swamp has held a mystique for me.

I graduated from Penn State in 1981 with an accounting degree and began a career in healthcare insurance. Although I have no formal education in science, I soon heard the siren call of birding, and learned that New Jersey's unique physiography was a goldmine for hundreds of species. Moreover, I found Jersey's birders to be a welcoming and generous group, always willing to help a novice.

I began volunteering with the Friends in February 2020, just



before the Covid lockdown. Even with biting winds, my first shift at the Robbins Platform was rewarding. I met many visitors, showing them woodpeckers, kingfishers, and wintering ducks in the Great Brook. Late in the afternoon, when a Bald Eagle sailed by with its bright head, golden talons, and 7-foot wingspan, an ecstatic visitor began singing "God Bless America". Needless to say, I signed up for more shifts.

Working alongside dedicated Friends volunteers, I have enjoyed contributing to the *Pervasive Invasives* and *Trail Blazers* teams, participating in *Outreach* events, co-leading the *Friday Walks with Friends*, and co-chairing the *Second Sunday* programs. I have also served on the Visitor Services and Volunteer Committees, and now look forward to serving as a Friends' Board member.

These experiences have increased my awareness of the effort required to manage the Refuge's natural resources, and also serve a diverse public. With that in mind, I hope to continue helping the Friends pursue the mission of protecting and supporting the Great Swamp NWR.



WELCOME NEW FRIENDS BOARD MEMBER

TOM CARTWRIGHT

Tom, a New Jersey native and longtime resident of Summit, NJ, retired in 2018 and moved to Warren, NJ. A former employee of both Prudential Financial and Metlife, Tom brings with him much valuable experience in the financial services industry. "I am so pleased to be able to make a contribution to something in which I believe so strongly," Tom said.

Together with his wife, Elena Caravela – nature lover and professional artist – both have enjoyed many years as visitors to Great Swamp. Upon his retirement, Tom began by volunteering at the Visitors Center before engaging with George Solovey's Construction Team. The Robbins Platform, the new White Oak Trail renovations, the Riding Arena Garden Center and the current Wild Life Observation Center boardwalk improvements are all projects that kept Tom busy in the last five years.

As Tom states, "I love the ideas behind and the reality of our National Wildlife Refuge network in this country, especially



the wonderful history of Great Swamp NWFR. Our impressive group of volunteers, through their worthwhile efforts and contributions, are leading the cause for sustainability of open land as well as preservation of our treasured native plants and animals."

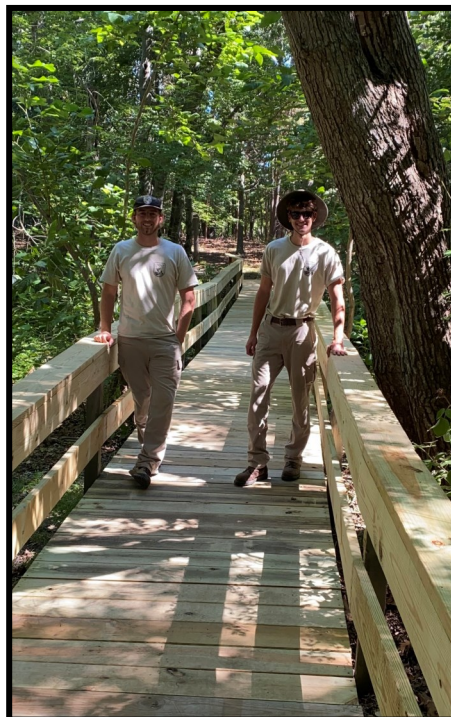
WELCOME GAOA STRIKE FORCE TO LENAPE NATIONAL WILDLIFE REFUGE COMPLEX

COLLIN SEIP

GAOA MAINTENANCE WORKER

Hello, my name is Collin Seip. I am a maintenance worker for the central zone of our region. I started working for the Fish and Wildlife Service in January 2021. I am based out of Great Swamp where I spend most of my time. However, I travel between New Jersey, New York, and Pennsylvania doing various projects that can last up to two or three weeks at a time.

Some of my hobbies and interests include hunting, fishing, and being outdoors. I have been a volunteer firefighter for my local community for 6 years. I really love having the opportunity to work with everyone at the Great Swamp where we have been able to complete several projects in the last several months. I look forward to working with and seeing everyone!



Collin (L) and Justin (R) standing on some of their handiwork.

JUSTIN BATTAGLIA

GAOA MAINTENANCE WORKER

Before joining the Fish & Wildlife Service I was in school to be an HVAC technician. When a family friend pointed this job out to me, I tried my luck and got it! From the first day on I fell in love with what I do. Every week I get to fall in love with more and more. I travel the region doing projects that refuges do not have the time and manpower to get done. Although I am assigned to the Strike Force, when I'm around, I'm always willing to lend a hand.

I'm based out of The Great Swamp National Wildlife Refuge, but I live in Bangor PA, where I grew up. A new hobby I recently took up is hunting. I'm learning more and more about it every day. I also love to go to the gym and lift weights and play sports with my friends.

IMAGINE A GLACIER

By Jack Donahue

Take a large ice cube and slide it along the dirt for several feet. Notice the path the ice cube made in the dirt, and all the dirt and small pebbles piled up in front of it. This is exactly what glaciers did many thousands of years ago when they slid down from Canada into New Jersey.

These huge, thick masses of ice were as much as two miles high, and they devastated everything in their path pushing dirt and rocks of all size ahead of them.

When these glaciers finally stopped their southern advance, the pile of dirt and rocks in front of them, called a terminal moraine was enormous. The terminal moraine of the Wisconsin Glacier formed a nearly continuous low ridge that stretched from Belvidere to Perth Amboy.



*Terminal moraine left at leading edge of Wisconsin Glacier
Used with permission of Great Swamp Watershed*



*Formation of Glacial Lake Passaic
Used with permission of Great Swamp Watershed*

Look what happened to the ice cube you left in the dirt. It melted. This is exactly what eventually happened to the glaciers.

When the Wisconsin glacier began to melt due to climate warming, it left behind Glacial Lake Passaic. This body of water was thirty miles long, eight to ten miles wide and up to two-hundred feet deep. Today, a portion of this glacial lake has become the Great Swamp.

The retreating glacier took some of the debris it had collected with it, and it dropped these boulders randomly in its retreat. These random drops are called glacial erratics. One of these glacial erratics sits atop Pyramid Mountain in Boonton. It is nineteen-feet long, ten-feet wide and it weighs one-hundred-forty tons.

So, the next time you go to the Great Swamp to enjoy all the many wonderful things the Great Swamp has to offer, try to imagine what the Great Swamp looked like thousands of years ago when it was not a swamp but a two-mile high wall of ice.



DUCK STAMPS: NOT JUST A LITTLE THING

By Martha Wells, *Friends Volunteer*

In 1929, the Migratory Bird Conservation Act was signed by President Herbert Hoover authorizing the acquisition, preservation and conservation of wetlands as waterfowl habitat. However, no provision was included for funding.

To solve that problem the Migratory Bird Hunting Stamp Act was passed by Congress and signed by Franklin D. Roosevelt in 1934. The first Federal Duck Stamp was designed that year by Jay “Ding” Darling. He was a Pulitzer Prize winning cartoonist and was instrumental in the founding of the National Wildlife Federation.



He also designed the Blue Goose logo that you see on the boundary signs in the Great Swamp National Wildlife Refuge today.



*First Federal Duck Stamp, 1934
Mallards by Jay “Ding” Darling*

In 1949, the first art contest was held for the design of each year's Duck Stamp. Any American artist could enter. Through the years, it has become an exciting event. This



*2022-2023 Federal Duck Stamp
Red-Headed Ducks by James Hautmen*

past September there were 187 entries, with 54 moving on to the final round of judging. The artists, including the winners and runners-up, are not paid (there is actually an entry fee of \$125). Their reward is the admiration of their peers, national publicity, and ultimately, fame.

Over the past three decades, the most famous winners have been a trio of brothers - Joseph, Robert, and James Hautman. Joe, Bob, and Jim, along with their four siblings were raised in St. Louis Park, Minnesota, a suburb of Minneapolis. Their father, Tuck, was a lawyer, amateur artist and passionate duck-hunter. Their mother, Elaine, was a professional artist before she started raising her growing family. She encouraged her children in their many self-taught creative endeavors. To quote her daughter, Amy, “Maybe more important than teaching us how to paint, she taught how to see”.

The winning entry in September 2022 is of a beautiful trio of Tundra Swans by Joe Hautman. It is his record-tying sixth time, making it the 15th time a Hautman brother has won first prize. You can see their work at <https://artbarbarians.com>.

Hunters of migratory waterfowl are required to purchase an annual Duck Stamp as a hunting permit, but anyone that cares about helping support our National Wildlife Refuge System, including the Great Swamp National Wildlife Refuge, can buy one. The 2023-2024 Stamp is scheduled to be issued in late June and will be available in the Helen Fenske Visitor Center gift shop. 98% of every dollar raised by the purchase of a Duck Stamp goes to funding conservation of over 6 million acres of federal wetland habitat. As of September 2022, the amount of money raised by the sale of Duck Stamps totals more than \$1.1 billion!



*2023-2024 Federal Duck Stamp
Tundra Swans by Joseph Hautman*

IT'S WARBLER TIME *(Continued from page 1)*



Canada Warbler

Yellowthroat, and both the Louisiana and Northern Waterthrush. At mid-level, look for the breeding American Redstart, as well as Blue-winged, Chestnut-sided, and Black and White warblers. And if you bird along the Passaic River, look for the Prothonotary Warbler, the only eastern warbler that nests in a tree cavity. Feeling lucky? Scan the fields for a Yellow-breasted Chat singing from a tangled hedge-row. (If you find one, play the lottery that day too!).

During migration, warblers can often be found where trees, shrubs and running fresh water meet. In Great Swamp NWR, a good example of this convergence is at the North Gate bridge on Pleasant Plains Road. There, the road is somewhat elevated and offers an unobstructed view of the Great Brook and the understorey at the water's edge. In addition, with the rising sun behind you, the well-lit trees bordering the open edges of the adjacent parking area (Lot 5) offer ideal conditions for viewing hungry migrants at breakfast.



Prothonotary Warbler

Audubon. The survey showed that 27 species of warblers were breeding throughout NJ. Not surprisingly, with an extensive swath of deciduous hardwood and pine forest, the northwestern Highlands and the Kittatinny's Ridge and Valley regions attracted the majority of New Jersey's breeding warbler species.

However, our own unique oasis cannot be sold short. The Great Swamp's bird checklist (W. Boyle and S. Byland. 2009.) shows that 11 warbler species typically breed on the refuge and are residents from spring through mid-summer. Just look around...you can't miss the ubiquitous Yellow Warbler; if you look low, you may see the Ovenbird, Common



Black-Throated Blue Warbler

Like most special offers, this one is for a limited time only. Generally, the return of warblers to Great Swamp NWR is predictable, with the first Palm and Pine warblers arriving in late March and Mourning and Wilson's warblers arriving in mid-May. In addition to the breeding warblers, an additional 20 to 25 migrant warbler species will typically pass through the Refuge between April 20th and May 15th.

So, brew the coffee, grab the binocs, and pack the field guide. **It's warbler-time at Great Swamp, but you must act now!***

(continued on page 9)

(Continued from page 8)

***Author's note:** To increase your chances of seeing warblers and other migratory birds, join the "Friday Walks with Friends", which meets at the Fenske Visitor Center every Friday morning, all-year round. Beginning in April, Friday Walks start at 9:00 am. Bring your binoculars and your curiosity!



Black and White Warbler

MEET THE NEW EDITORS

PAT: In 1967 our family purchased a house in Chatham Township looking directly across the street to the Great Swamp. Its wildlife crosses our land, its birds feed and nest in our yard and its wildflowers have found their way into our gardens as if by magic.

I earned a degree in biology and love anything having to do with zoology and botany. Five years ago, we started raising monarchs. In summer our kitchen now looks like a laboratory. Thank you, Dorothy Smullen, for showing us what monarch eggs look like. We are gradually transitioning our gardens into native plant habitats.

Both of us became intimately familiar with the Lord Stirling Stable part of the Swamp during the many years we rode, taught and volunteered there. Now both of us are retired. I worked in and taught nuclear medicine technology. Martha taught horseback riding. She still runs the family interior design business, John Morrison Curtis. So it has only been in the last few years then we began to spend more time in the National Wildlife Refuge portion of the Swamp. We quickly discovered what we've been missing.

MARTHA: We've been Friends of Great



Martha (left) and Pat (right) with Libby

Swamp members for a long time. I've been part of Refuge Readers almost since their beginning. For years the gift shop at the Visitors Center gift shop has been our favorite place to get a special gift for Mother's Day, a birthday, or a holiday. We never left empty handed. But in the past few years, during the pandemic, the Refuge has indeed become a refuge. The Friday morning walks! They are now a weekly meeting of old and new friends eager to share their knowledge. Second Sunday Speakers, Third Saturday guided walks, Fall Festival – we just need to be there. It has been eye-opening to learn more

about the symbiotic relationship between the Friends and the Refuge staff, and some of what goes on behind the scenes. What an amazing place this is.

When we adopted our dog, Libby (a rescue from a western puppy mill where she was a breeder), the first ride we took with her was a drive through the Refuge. I was sitting in the backseat with her. For the first time, the timid girl climbed onto my lap and looked out the open window, drinking in the scene and the aroma. I felt a thumping on the back of the seat next to me. It was her wagging tail! She had discovered the Great Swamp, and everything was going to be OK!

PAT: Both of us have been officers in the Chatham Township Historical Society since 2012 and are involved in all aspects of the Society including research, display design, writing, giving presentations and teaching. We have both become history and architecture fanatics. Now we are becoming swamp devotees.

We're looking forward to editing the *Swamp Scene* and hope you will share your knowledge, stories, and pictures with us so we can share them with everyone else.

IN PRAISE OF CATTAILS

By Patricia Wells, Volunteer

Cattails are a common sight in the Great Swamp NWR. The cigar-shaped flower spikes stand as markers of marshy areas throughout the year. Cattails look deceptively simple, but look again.

Each flower spike or inflorescence is a complex structure loaded with thousands of reproductive structures. The upper portion of the inflorescence is made up of staminate or male flowers and the lower portion of pistillate or female flowers. After producing pollen, the male flowers fade away and that portion of the flower spike will shrivel. The seed matures in the female flower and develops an umbrella of fluff. In the fall, the inflorescence opens and the wind picks up the umbrellas and carries away many of the seeds. The umbrellas allow seeds to be carried more than a half mile from the mother plant. Each inflorescence can produce 20,000 to 70,000 seeds. The seeds produce allelopathic chemicals that suppress the growth of competing plants. Even with these apparent advantages, few of the seeds will successfully germinate. The adult plants produce the same allelopathic chemicals preventing their own seeds from germinating in place.

The primary method of cattail spread is by clonal expansion via the rhizomes. Just a few plants can produce a dense mini-forest of cattails. The cattails of the Great Swamp are limited in their spread because of the depth of water and the nutrients found in the water and soil. In areas of the country where there is high agricultural runoff of fertilizers, such as in the marshes around the Great Lakes and in the Everglades, cattails have become overly aggressive, pushing out other native species. In the Great Swamp, cattails are easily pushed out by exotic, invasive phragmites.

The rhizomes and roots are a protein-rich source of food for muskrats, beavers, crayfish, ducks, and geese. The dense stands of underwater stems provide cover for frogs, salamanders, and small fish, as well as their eggs.

Redwing blackbirds, mallard ducks, and geese will nest in stands of cattails. Many songbirds will use the fluff from the seedhead to line their nests. The marsh wren is the master of using cat-



Anatomy of Cattail, 1903

tails. The male will use the dried leaves to weave a nest within the cattails that will then camouflage it. The fluff is used to line it. He will build multiple nests in the area to give his intended a choice of locations and prove his ability as a provider. The nests and the birds are difficult to see, but the tiny bird's big song can be heard early in the day.

About 25 species of insects use the cattail during their lifecycles. Different insects use the flower spike, leaves, stalks or rhizomes as food and/or shelter. The effects of the shy cosmet moth are a visible example to the casual observer.

The shy cosmet moth (*Limnaecia phragmitella*) spends most of its lifecycle within the cattail. The innocuous little moth lays its eggs on the plant. When the larva hatches from the egg, it burrows into the inflorescence and begins to consume seeds. It uses silk threads to anchor the fluff in place so it will not blow away. The shy cosmet is able to overwinter inside the old seed head because the inside of the dense structure remains dry. When you see flower spikes with portions of fluff still puffing out of them in the winter, they are probably home to cosmet caterpillars. In the spring, the caterpillar resumes feeding on the seeds. When ready to pupate, it crawls deep into the head or burrows into the stem and produces a tough cocoon. About 1 month later it hatches into a moth.

When the Lenape lived around the Great Swamp, they used every part of the cattail. In spring the new shoots and young flower spikes were eaten raw. The rhizomes were peeled and boiled or dried and ground into flour, which has as much protein as corn flour. Pollen was also used as flour.

The dried leaves were used for weaving mats and baskets and could be twisted into cord. The fluff was used for moccasins linings and baby diapers. (During World War II the fluff was used to stuff life jackets.)

The jelly-like substance found between young leaves was used to stop bleeding and act as a bandage.

In this modern era of pollution, cattails have proven effective for breaking down and removing industrial, agricultural, and mine waste. They can remove and sequester numerous metals from soil and water.

The next time you walk through the Great Swamp, take some time to appreciate this ordinary and extraordinary plant.



FRIENDS OF GREAT SWAMP NATIONAL WILDLIFE REFUGE

MEMBERSHIP APPLICATION

The Friends of Great Swamp is an independent, non-profit organization organized in 1999. Our operations and activities are managed by an all-volunteer Board of Directors. As our mission statement indicates, our focus is Refuge-centric — we support the goals, projects, and mission of the Great Swamp National Wildlife Refuge.

To become a member of the Friends of Great Swamp, fill out the information on this form, and mail with your check to:

Friends of Great Swamp National Wildlife Refuge
32 Pleasant Plains Road, Basking Ridge, New Jersey 07920

ANNUAL MEMBERSHIP APPLICATION

☐ **EASTERN BLUEBIRD—\$15-\$49**

☐ **PAINTED TURTLE—\$50-\$99**

☐ **RIVER OTTER—\$100-\$249**

☐ **MONARCH BUTTERFLY—\$250-\$499**

☐ **WOOD DUCK—\$500 +**

☐ **New Member?**

TOTAL ENCLOSED \$ _____

You may also join online at www.friendsofgreatswamp.org

Name _____

Address _____

City _____

State, Zip Code _____

Phone Number _____

E-Mail Address _____

Gift Membership From: _____

(If this is a gift, please include your full name on the line above so we may notify the recipient)

We need more Friends ...

**Become a Friend Today—or,
Give a gift membership to a friend.**

Thank you



Memberships help support the projects and programs at Great Swamp National Wildlife Refuge.

Membership Benefits

- The Swamp Scene Newsletter.
- A 10% discount in Friends Nature Shop.
- Notifications of upcoming events.
- Satisfaction in knowing you are helping protect wildlife and wild places while safeguarding a national treasure for future generations.

Friends of Great Swamp NWR
32 Pleasant Plains Road
Basking Ridge NJ 07920

Non-Profit Org.
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Chester NJ 07930



THE SWAMP SCENE MARCH 2023

Friends of Great Swamp National Wildlife Refuge
Is an independent, volunteer, non-profit organization
dedicated to

Promoting stewardship of the natural resources of the Refuge,

Inspiring an appreciation of nature through education and outreach,

Engaging in partnership activities that support and enhance the Great Swamp National
Wildlife Refuge and the National Wildlife Refuge System.