

Natural Resources Protective Association

Coalition Against Water Disposal of Contaminated Sediments

Post Office Box 050328 • Staten Island, NY 10305



Established in 1977

In Memory of Edward "Kerry" Sullivan

SUMMER 2022

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CLEANER WATERS

By Jack Bolembach

Seals have returned to the Harbor over the last 22 years because the waters are much cleaner. The Clean Water Act provided funds to NYC and other coastal river towns to build and improve Waste Water Treatment Plants back in the 1970s.



Around the late 1990s, after twenty years of combatting pollution with additional funding and construction/upgrades of Wastewater Treatment Plants, there was a significant improvement in water quality.

Micro-organisms began to inhabit the harbor and the fish arrived which feed upon these organisms. A healthy food chain starting with plant life up to predators became established in this fragile ecosystem.

New York Harbor was once very polluted. Swimming was banned along the shores of Staten Island. A walking path next to the Financial Center in Lower Manhattan was constructed using wooden pilings. But in a short time, the walkway along the river incurred structural problems.

Unknown to the architects and engineers, during the planning stages and construction, the water quality had improved. Small wood-boring aquatic animals now existed

causing the wood pilings to become compromised. A cofferdam was built and concrete replaced the wood pilings giving adequate protection and support for the walkway.

Rare sightings of seals were reported around 2000. As the harbor waters continued to improve the seals established a winter colony on Swinburne Island. Aquatic life became more prevalent so a colony of seals could survive from late November to early May when the waters are colder and fish more abundant.

The Harbor is now as clean as it was 150 years ago and still improving. Other unique predators which hadn't been seen for a hundred or more years began to reappear often around New York Harbor. Humpback Whales on their seasonal migratory travels up and down the eastern coast of North America now come into the harbor to feed on the Menhaden fish.



Bald Eagles were rarely seen in New York State. In 1970, they became an endangered species because of habitat loss, minimal aquatic food supply due to pollution and Acid Rain. A primary cause of their decline was the once-common use of the pesticide DDT causing serious

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problems Eagles laid eggs, but few resulted in a healthy hatchling. The eggshells were weak because of DDT and cracked, eliminating any chance of survival. Finally, this chemical was banned.

The NYCDEP Blue Belt Project began on the South Shore of Staten Island in the mid-1990s. The successful project protected and preserved acres of wetlands and forest providing a healthy habitat for wild animals. Bald Eagles made a surprising comeback and a few now reside on Staten Island thanks to the positive changes listed above.

The Staten Island Environmental organization the Protectors of Pine Oak Woods fought hard to save Mount Loretto from overdevelopment and today we have this treasure containing forest, wetlands, meadows, ponds, streams, shoreline, pland and animal life. The alternative could have been apartment buildings.

At Mount Loretto in 2017 two Bald Eagles were born and survived. This is a big triumph for our fragile environment always under attack by greedy over-developers. There is a constant struggle between conservation and unchecked overdevelopment. There must be a healthy balance between development and conservation.

This is why PPOW board member Mark LaTours' immense time-consuming project, identifying unprotected natural landscape remaining throughout Staten Island, is so very important and vital to maintaining the current natural environment on Staten Island. The destruction by over developers of a few of these natural sites will compromise the ability of a variety of wildlife dependent on the existing marshland and woodlands for survival.

Current and future generations living on this densely populated island will benefit. Their health and quality of life depend upon having access to these natural sites. Preserving as much of the existing natural unprotected landscape as possible should be essential.

A list is being prioritized so hopefully some of these critical environmentally sensitive lots can be purchased by the State for preservation.

OAKWOOD BEACH AT TARLTON AVENUE 2022

By Jim Scarcella

In March 2022, NRPA teamed up with NYCH2O and Councilmember David Carr to clean up Oakwood Beach at Tarlton Street on the East Shore. It was a little cloudy, approaching Fox Beach Avenue when I spotted Chelsea Weby of NYCH2O driving the rental van, filled with equipment and supplies. We turned on Tarlton and drove over the road bridge to the cul de sac. Rob Trocciola and Anthony got gloves, bags, and reachers distributed, David C, David, Chelsea, and Matt set up the compound. Soon students from Curtis H.S., St Joseph by-the-Sea H.S., Farrell HS, I.S. 7, Susan Wagner H.S., Tottenville H.S., Trout Unlimited, Liberty Coca Cola, NY/NJ Baykeeper, and Ms. American Clean (Ms. Nicole Doz) all showed up.



Andrew R. and Christopher from Troop 24 led the way in getting large items off the beach. There was plastic debris on the beach and a dead raccoon. I picked up 'Rocky', put him in a bag, and brought it up over the berm. Anthony, Robb, and I got the shovels and excavated a nice grave, and buried the raccoon.

On the more life-affirming side, Joseph went into the marsh with boots and a grappling hook and brought out fiberglass auto parts. In the cross-section of the impact guard was a colony of ribbed mussels and they appeared to be thriving! A Great Blue Heron with a seven-foot wingspan soared overhead and landed in the salt marsh cordgrass.



Meanwhile, Joseph Mazz and his daughter Jenna kept finding more dumped debris south of our staging area, towards the stormwater outfall jetty. Soon, the students, along with David, Chelsea, Cathy, Karen, and all involved, started to bring the illegally dumped debris up the road. It included clothes, household items, wood, a tube TV, a flatscreen TV, cabinet pieces, Styrofoam, and bags and bags of garbage.

Councilman David Carr and his teammate, Elena, came by and joined the cleanup, picking up trash from the beach and wetlands.

It was incredible, over 70 bags of garbage, 1500 lbs. of debris, 25 lbs. of aluminum, plastic, and glass were recycled. Over 115 persons participated.

The Oakwood Beach floodplain peninsula is beautiful, thanks to NRPA, our partners NYCH2O, Councilman David Carr, and the NYC Parks Dept. for this great effort to help our environment.

PROTECT MIGRATING BIRDS

By *Ida Sanoff*

Bird migration is in full swing and unfortunately, that means window collisions. It has been estimated that a billion birds are killed each year by colliding with windows, especially at night. You would think that this is only a problem with high-rise buildings, but surprisingly, most of the collisions occur with low-rise buildings.

The problems occur when birds become confused by our artificial lights when they migrate at night. The lights can make them disoriented so they end up flying in endless circles or they can be attracted by the lights. Rain, fog, and low clouds make the situation even worse and they end up hitting windows and walls. Plus, our windows reflect trees and open space. Birds don't realize this is a reflection and slam full speed into these hard surfaces, with disastrous results.

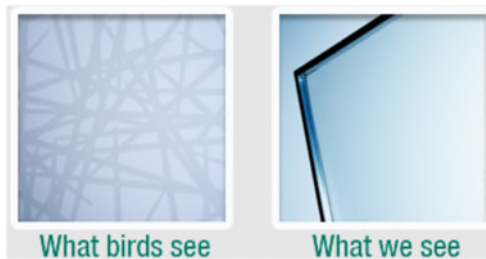
The problem isn't limited to physical injuries. Migration requires tremendous energy and if birds waste too much of their reserves disoriented and flying endlessly, they may die of exhaustion before they reach their destination.

The website of the Audubon Society www.audubon.org has a host of simple solutions that we can all do to make things safer for birds:

- Don't direct lights upwards. Yes, you have an absolutely lovely tree and you're proud that it's the centerpiece of your yard, but birds will end up spiraling hopelessly in the spotlight you placed beneath it. If you don't want to turn off the light, direct it downward or shield it. When the 9/11 Tribute in Light occurs each September, it is estimated that it endangers several hundred thousand birds, who can be seen as specks swirling around and around in the lights. It is estimated that bird density near the lights is about 150 times the normal level. So, in the last few years, a team of experts gathers to count the numbers of birds "trapped" in the lights. If too

many birds are seen, the lights are turned off for a while so they can disperse.

- Some light colors may attract birds more than others. White, red, and yellow lights attract more birds than blue or green lights.
- Change the way that your window glass appears to birds. You can get a patterned vinyl film that adheres to the outside of your window by static electricity. When you're inside, you can see right through the film, but from the outside, it looks opaque to birds. You can also put stickers on the glass, sort of like the safety stickers that are used on glass doors, or you can draw a design in a washable marker on the windows.



- Make use of your window treatments! Close the shades or the curtains so birds see a barrier. Window blinds are good too because they create a pattern.



- Move plants away from windows. Yes, our plants need sunlight, but that garden on your indoor windowsill looks like a great place for a bird to land.

Well, you did everything you could and you walked outside and there is an injured or stunned bird lying there. What should you do? The best thing to do is to call a licensed rehabilitator for further instructions. The best one around here is the Wild Bird Fund and their website is www.wildbirdfund.org. They're located in upper Manhattan but they

work with rehabbers throughout the city. My friend had an injured duck in her yard and they sent someone to pick it up.

But always remember that it's easier to prevent injuries than treat them, so try to make your home safer for migrating birds.

RED HOOK TO RED BANK

By *Jim Scarcella*

In April the NRPA teamed up with Ms. American Clean (Nicole Doz) and DSNY Brooklyn to clean Louis Valentino Waterfront Park in Red Hook. Tony Rose and Chuck Perry joined up for the ride over the Verrazano Narrows Bridge, then Third Avenue, over to Conover Street. The park is near the intersection of Ferris Street and Coffey Street and has a fishing pier with a plaza. There is also room for dog walking and running.

We met up with Nicole, Mike Pirella, Johnny Benedetto, NYPD community youth Explorers, and Troop 24 from Staten Island.

After a brief safety explanation (flag the broken glass and needles, if any) we took to the rip-rap shoreline with gloves, bags, and reachers. Over a dozen persons flooded the shoreline. The most common debris was plastic sheeting and cellophane wrappers, along with masks and latex gloves. We found a large 40-gallon drum that had been perforated, a bench cushion, a tire, and tugboat rope. Suddenly the wind picked up and the skies darkened. Within 5 minutes we were belted with pellets of semi-frozen hail and rain. The windows were open at my CRV, this did not help.

After the soaking rain, the sign-in sheets and mini donuts were quite waterlogged.

It was interesting, the park is a low point for the neighborhood. The stormwater formed puddles and rivers to the harbor and the puddles had phosphorus green pollen from the flowering trees and plants.

The rain stopped after 12 minutes, so we regrouped and went back to the task at hand, cleaning the shoreline.

This time we found broken plastic containers, beverage containers, cigarette butts, cigar packaging, and an intact 5-gallon cement pail. The shoreline closest to the harbor waters had beautiful Bladderwrack (*Fucus vesiculosus*) which is also called rockweed. We saw some waterfowl and Herring Gulls. If you can believe it, the skies darkened quickly again and we were subjected to another downpour of skyborne precipitation. This time, there were muted bad words, mumbling and displeasure expressed.

After 10 minutes, the rain stopped and Chuck visited the key lime pie bakery adjacent to Valentino Park. We regathered, condensed the garbage bags, and posed for a photograph with the cleanup team. We were joined by Mrs. NY for America Strong, Jessica, and her family. It was a great cleanup! Tony, Chuck, and I went to Lee's Tavern for a nice lunch.

The next day, I went to Palm Sunday mass and rode to Red Bank, New Jersey.

After Half Mile Road, I found West Front Street and Available Beach, a public access beach, bulkhead, and shoreline on the Navesink River, it's a beautiful river that NY/NJ Baykeeper, Clean Ocean Action, and Save Coastal Wildlife are trying to protect. After that, I met my friends Jennifer Lee, Susan Brady, and Andrea Bryant for fun times in town. So that's it, Red Hook to Red Bank in one weekend.

Join NRPA for our next cleanup, you'll be glad you did. Thank you.

LEMON CREEK SEGUINE 2022

By Jim Scarcella

Hi everyone, in April 2022 we joined up with NYCH2O and a multitude of students to clean up Lemon Creek (Lou Figurelli) Park at Seguine Avenue, Princes Bay.

The day was partly cloudy and seasonable. After getting some Tim Hortons coffee, Dominic Cenatiempo joined us for the ride on Hylan Boulevard. Traveling down Holten Avenue, I remembered the times when the old SS White factory was

on the site and later it became a nightclub. Tons of contaminated soils were removed and replaced. Artie Dennis Sr. and Junior, and Pete Glismann were stewards of Princes Bay, as part of the Princes Bay Boatmen's Association. There was Anderson's Annex Bar on the corner that was a pool hall and darts center. Now the first 10 houses are built, with 'flow through' first floors, on the Seguine peninsula. Lemon Creek Park was modified around 1986 and seems to be holding up well.



For the cleanup, the dog walkers including Bill Crowley were there early. In the 2000's, Bill led a group of Explorers who helped clean up Mariner's Marsh. Dominic and I set up the sign-in sheets, gave briefings, and distributed gloves, bags, and reachers.

Matt Malina had the van with the NYCH2O tables and supplies, and there were dozens of parents and students willing to help. Students from St John's University, IS 7, Curtis, St Joe's by the Sea, PS 62, and more came out to help. The volunteers hit the beach in waves of force, picking up household items, fishing debris, boating pieces, busted beach chairs, masks, gloves, bait boxes, cellophane wrappers, cigarette butts, and straws.

Staten Island Parks Commissioner



Lynda Ricciardone surprised us with a visit to our cleanup, Lynda provided enthusiasm and encouragement for us to keep going.

Out on Seguine Point, there was a dead beaver that was bloated and sun-dried. Matt, Lynda, Tony Rose, and I retraced our shoreline steps to excavate a suitable beach grave. We then placed the dead animal in there and said good thoughts for its soul.

At the beach, a Killdeer was playing hide and seek with us to keep us away from its nesting site. Eventually, David C. snapped a quick photo of the bird on its nest. Sometimes there are toads here also. Back with the rest of the crew, there was a container with about a dozen marine invertebrate 'sandworms'. People were either attracted to them or repulsed. The worms have a proboscis that lunges forward to bite food and transport it to the worms' stomachs. Some worms were released into Raritan Bay and some were given to an aspiring fisherman.

In an effort led by Dan Kennedy to conserve plastic bags, the lighter payloads were combined, and NRPA saved 14 plastic garbage bags. We also separated and recycled an additional 15 lbs. of aluminum and glass.

A total of about 750 lbs. of trash was removed. Thanks to Marisa, Matt, Chelsea, Dominic, Tony, Howie, Vince, Dan Kennedy, Bill Crowley, Lynda, Jessica, Cathy, and everyone who pitched in.

A great effort, over 200 people, 3/4 of a mile of beach cleaned, a super day. Thank you all!

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RIVERKEEPER SWEEPS AT ALICE AUSTEN

By Jim Scarcella

Hi everyone, in May 2022, NRPA teamed with Hudson Riverkeeper and American Rivers to clean the Hudson River Estuary at Lower NY Bay, at Alice Austen and Buono Beach, Rosebank.



The overnight was miserable, and the day featured a Nor'easter that gave us 20 mph plus wind and a wild gloomy sky view. Howie Fishbein was first on the scene, and we set up the sign-in table, banner, and equipment. We caught a break, the rain stopped and we went to work. Tony Rose, Ian Granda, and Jack Bolembach joined in to scour the beach sand and rip rap. But traversing the rip-rap rocks was a challenge, because it was wet, windy, at differing elevations, and usually, we had only one hand free.



Regardless of the challenges, I thought of the sacrifices Matthew Buono made, and then I was humbled and grateful to clean the sand and rocks of trash. One thing we did leave at the edge of the shore was a dead dog, may it rest in peace. We removed over 20 single-use plastic bags, most were used for carrying menhaden bait and refreshment containers. We threw about a dozen dead bunkers back into the river for them to be reassimilated by crabs and seagulls.

And there was a broken 2-gallon bucket with 5 large shrimp left as debris. Most likely, these were farm-raised shrimp, at what cost of protein pellets, water filtration, and discharge of fish excrement? There are no easy answers, just difficult questions.

Parks Department Stephanie Gutierrez provided the gloves and bags, Katie Leung at Riverkeeper provided support, and we were in business. A full, new human hair wig was found and we placed it on the traffic bollard, certainly an item of curiosity. We found Modello bottles, 'Twisted Tea' 16 oz canisters, Budweiser tallboys, and coke cans. A large, molded plastic stabilization frame, 6 foot by 6 foot (The Hite) was removed from the rip rap. There was a 2 foot by eight-inch galvanized aluminum hot water radiator bracket that was being used for bait cutting and presentation, worth money at the scrapyard. And I was startled when a Norway Rat scampered very close to where I was picking up trash in the rocks. The Parks mobile clean team came by and emptied the trash cans. Tony Rose gave us a couple of great songs on acoustic guitar. Overall, we cleaned up 120 lbs. of trash and recycled 5 lbs. of glass and aluminum. The cleanup was a success, join us for our next event.

THE JAMAICA BAY WILDLIFE REFUGE NEEDS HELP

By Ida Sanoff

The Jamaica Bay Wildlife Refuge is a jewel. It's one of those places that you think would always be thoughtfully maintained. But as we recently learned, it really needs help, and a lot of it.

The Refuge is a stone's throw from JFK Airport and a universe away from it. Approaching from the Belt Parkway, you head south through



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Howard Beach, down heavily trafficked, commercial Cross Bay Blvd. All of a sudden, the vistas open up and you're traveling over water, on the Joseph P. Addabbo Memorial Bridge, named for the former Congressman. Then you're driving on a roadway through the wilderness, with nothing but woodlands on either side. If you pay attention, you may see an Osprey platform or two. And all of a sudden, there it is A small sign where you turn off to get into the Refuge.



The Wildlife Refuge was the brainchild of Robert Moses, the NYC master planner, who was also the Parks Commissioner for many years. It became part of the National Parks Service when Gateway was formed in 1972. Its 12,600 acres cover a wide variety of habitats, including upland fields and woods, salt marshes and marsh islands, and freshwater and brackish ponds.



Although the area appears "all-natural", human hands have played a significant role in shaping it. Historically, Jamaica Bay itself was a huge saltmarsh with relatively shallow water. But in the early 20th century, there were plans to turn it into a commercial port. Many of the channels were artificially deepened before that plan was abandoned.

Within the Wildlife Refuge itself, some of the ponds were artificially created. There is a small freshwater pond, called Big John's Pond. It's a simple, quarter-mile depression that collects rainwater. Legend has it that workers at the Refuge thought it would be really nice to have a freshwater pond on the premises and a good-natured bulldozer



operator who was in the area was happy to oblige. He dug out the pond in a few days and the grateful park rangers named it in his honor. The West Pond is another artificially created freshwater pond in the park. It was built with a system to not only add fresh water when needed but also to reduce the water level so that mudflats form. The mudflats attract many species of migratory shorebirds.

So, what has happened to this magnificent place?



Don Riepe, the well-known birder and naturalist, gave a presentation at the May 2022 Jamaica Bay Task Force meeting and it was a real eye-opener. For those who don't know Don - and it seems impossible that anyone in the greater metro area DOESN'T know Don, he worked for

many years at the Refuge as a ranger and manager. In 2004, he was officially granted the title of Jamaica Bay Guardian by the NYS Dept. of Environmental Conservation (NYSDEC) and he is still very involved with the American Littoral Society.

He showed a photo of the Visitor Center at the Refuge and asked if this was a medical center or a wildlife refuge. The photo showed expansive mowed lawns, instead of wide beds of native flowering plants with a narrow, mowed border. We don't realize that the cocoons of many species of butterflies look like dead leaves and for that reason, the cocoons are formed in piles of dead leaves. When the dead leaf piles are removed for landscaping, we lose the butterflies. And that is exactly what has happened in the Jamaica Bay Wildlife Refuge. Just like there are birdwatchers, there are butterfly watchers too and they have reported a significant decline in butterfly populations in Jamaica Bay. Dead leaves and grass stems also provide a habitat for various species of bees, which pollinate native flowers.



Don also showed photos of birdhouses and bat houses (yes, bats need houses too!) that had been knocked down and vandalized. And at a time when NYC has banned plastic shopping bags, plastic straws, and other items because they kill marine life and birds, Jamaica Bay has seen a marked increase in plastic debris and garbage. The area under the Addabbo Bridge has become a popular spot for religious ceremonies and people are leaving behind huge quantities of statues, food, bowls, candles, dead chickens, coconuts, large pieces of fabric, etc., etc. Don discovered that there is nothing in these religions that prohibits the removal of the items after the ceremonies are over and he

tries to speak to as many participants as possible. But he is only one person and can do only so much. The National Parks Service needs to provide more enforcement to prevent the destruction of this natural area.

Animal populations have shifted too. There are more raccoons than ever in the Refuge and they have become experts at locating the nests of Diamond Backed Terrapins. The raccoons excavate the nests and feast on the eggs, leaving behind piles of soft, rubbery eggshells.

The presentation concluded with a plea that a Refuge Manager was badly needed. There was one many years ago, but this position hasn't been filled in a long time. We urge the National Parks Service to heed this advice before conditions deteriorate even further.

KILL VAN KULL 2022

By Jim Scarcella

In Spring 2022, NRPA joined forces with United Activities Unlimited, Inc. (UAU) and NYC Audubon to clean up and restore the shoreline and wetlands of Snug Harbor, Livingston. It was a beautiful start to the day, Tony Rose had the table set up with guitars strumming and sign-in sheets, equipment, and snacks.



Howie Fishbein and Vin Rocanova helped to distribute supplies and equipment. Several people came by to lend a hand. We did some shoreline cleanups and I found a 'Smith System' driving school pen with helpful slogans like 'Don't forget your keys', 'Keep your eyes moving' 'Get the big picture' 'Make sure they see you', 'Aim high in steering' and 'Leave yourself an out'. Good advice, even to the present day.



We downloaded the iNaturalist application and set about documenting the wildlife. Dave Tolmach then recruited us to help remove the phragmites at the Snug Harbor wetland pond. The pond has snapping turtles and Red-eared Sliders. Then we took a break and went to a more forested parcel over by Henderson Avenue. Tony found the Red-backed salamanders and uploaded their data to 'iNaturalist'. It was another successful NRPA event.

Join us for our great shoreline activities! Check out our Calendar in the newsletter for upcoming events.



NEW INVASIVE SPECIES: THE ROUND GOBY

By Ida Sanoff

The Round Goby (*Neogobius melanostomus*) doesn't look very dangerous. It's a little bottom-feeding fish that ranges in size from two to six inches long and its drab olive-colored body with brownish spots makes it easy for it to be overlooked. It's native to the Black and Caspian



Seas in Eastern Europe, but around 1990, it somehow hitched a ride to North America. Now it looks like it's going to be a huge threat to Hudson River fish populations, especially Striped Bass.

Tracking of the fish began in 2016. It moved through the Erie Canal and Mohawk River and in June 2021, it was captured five miles upstream of the Hudson. One month later, in July 2021, the little fish had made their way into the Hudson River. NYS DEC Marine Fisheries people captured four of them over 20 miles south of the Troy Dam. Not much later, they had made their way as far south as Poughkeepsie.

The NYS Dept. of Environmental Conservation (NYSDEC) declared it to be one of the biggest threats to New York waters. It has already spread through all five of the Great Lakes and is now invading inland waters, including Lake Champlain.

Although the Round Goby is a freshwater fish, they are thriving in brackish water. While they seem to prefer rocky habitats, they've been reported in open sandy areas too. They can tolerate a broad range of temperatures, but the warming of our nearshore waters seems to be beneficial to them.

The little fish can spawn several times each season, maturing after a year or two and the females can lay from 400 to 1,000 eggs at a time. They gobble up food and take over habitat that is used by native species and eat the eggs and larvae of other fish and shellfish, including Striped Bass, Sturgeon, and Blue Claw Crabs. To make things even worse, the Goby can transmit botulism disease all the way up the food chain to waterfowl.

In March 2022, NYSDEC announced a Rapid Response Plan to deal with the Round Goby, which includes measures to try to keep it out of Lake Champlain as well as extensive public education. Let's hope that these efforts are

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successful and prevent it from moving further down the Hudson.

HORSESHOE CRABS

By Richie Chan and Jack Bolembach

Horseshoe Crabs are marine and brackish water arthropods of the family Limulidae and the only living members of the order Xiphosura. Despite their name, they are not true crabs or crustaceans; they are chelicerates, most closely related to arachnids, such as spiders and scorpions.



Horseshoe Crabs live primarily in and around shallow coastal waters on soft, sandy, or muddy bottoms. They tend to spawn in the intertidal zone at spring-high tides. They are eaten in some parts of Asia and used as fishing bait, fertilizer, and in science (especially *Limulus Amebocyte Lysate*). In recent years, population declines have occurred as a consequence of coastal habitat destruction and overharvesting.



Fossil records for Horseshoe Crabs extend back as far as 480 million years ago, with extant forms being living fossils. A 2019 molecular analysis places them as the sister group of Ricinulei within Arachnida. They look like prehistoric crabs but are actually more closely related to scorpions and spiders. The horseshoe crab has a hard exoskeleton and 10 legs, which it uses for walking along the seafloor.

The body of the Horseshoe Crab is divided into three sections. The first section is the prosoma or head. The name "Horseshoe Crab" originates

from the rounded shape of the head, because just like the shoe on a horse's foot, the head is round and U-shaped. It's the largest part of the body and contains much of the nervous and biological organs. The head has the brain, heart, mouth, nervous system, and glands—all protected by a large plate. The head also protects the largest set of eyes. Horseshoe Crabs have nine eyes scattered throughout the body and several more light receptors near the tail. The two largest eyes are compound and useful for finding mates. The other eyes and light receptors are useful for determining movement and changes in moonlight.



The middle section of the body is the abdomen or opisthosoma. It looks like a triangle with spines on the sides and a ridge in the center. The spines are movable and help protect the horseshoe crab. On the underside of the abdomen are muscles, used for movement, and gills for breathing.

The third section, the Horseshoe Crab's tail, is called the telson. It's long and pointed, and although it looks intimidating, it is not dangerous, poisonous, or used to sting. Horseshoe crabs use the telson to flip themselves over if they happen to be pushed on their backs.



Female Horseshoe Crabs are about one-third larger than males.

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(46 to 48 centimeters) from head to tail, while the males are approximately 14 to 15 inches (36 to 38 centimeters).

The Horseshoe Crab species found around the United States (*Limulus polyphemus*) lives in the Atlantic Ocean along the North American coastline. Horseshoe Crabs can also be seen along the East and Gulf coasts of the United States and Mexico. There are three other species of Horseshoe Crab worldwide, which are located in the Indian Ocean and in the Pacific Ocean along the coast of Asia.

Horseshoe Crabs utilize different habitats depending on their stage of development. The eggs are laid on coastal beaches in late spring and summer. After hatching, the juvenile Horseshoe Crabs can be found offshore on the sandy ocean floor of tidal flats. Adult Horseshoe Crabs feed deeper in the ocean until they return to the beach to spawn.



Many shorebirds, migratory birds, turtles, and fish use Horseshoe Crab eggs as an important part of their diet. Horseshoe crabs are a keystone species within the Delaware Bay ecosystem.

Horseshoe Crabs like to dine at night on worms and clams and may also eat algae. A Horseshoe Crab picks up food with appendages located in front of its mouth. Because it has no mandible or teeth, the Horseshoe Crab crushes food between its legs before passing it to the mouth.

During the late spring and early summer, adult Horseshoe Crabs travel from deep ocean

waters to beaches along the East and Gulf coasts to breed. The males arrive first and wait for the females. When the females come to shore, they release natural chemicals called pheromones that attract the males and send a signal that it's time to mate. Horseshoe Crabs prefer to breed at night during high tides and new and full moons. The males grasp onto the females and together they head to the shoreline. On the beach, the females dig small nests and deposit eggs, then the males fertilize the eggs. The process can be repeated multiple times with tens of thousands of eggs.



Horseshoe Crab eggs are a food source for numerous birds, reptiles, and fish. Most Horseshoe Crabs will not even make it to the larval stage before being eaten. If the egg survives, the larval horseshoe crab will hatch from the egg after about two weeks or more. The larva looks like a tiny version of an adult Horseshoe Crab, but without a tail. Larval Horseshoe Crabs travel into the ocean water and settle on the sandy bottom of tidal flats for a year or more. As they develop, they will move into deeper waters and begin to eat more adult food. Over the next 10 years or so, the juvenile horseshoe crabs will molt and grow. The molting process requires shedding small exoskeletons in exchange for larger shells. Horseshoe Crabs go through



16 or 17 molts during their development. At around 10 years of age, Horseshoe Crabs reach adulthood. They are ready to start breeding and will migrate to coastal beaches in the spring. A horseshoe crab can live for more than 20 years.

Threats to Horseshoe Crabs include habitat loss and overharvesting. Beach developments hinder horseshoe crab breeding. *Limulus polyphemus* is internationally listed as vulnerable.

During full moons, new moons, and high tides in May and June, hundreds of thousands of Horseshoe Crabs converge on the Delaware Bay to breed.



The Horseshoe Crabs' blood is not the color red like ours and other mammals but blue. Our blood is based on Iron while the Horseshoe Crabs' blood is based on copper. Their blood has strong immune cell response to many bacteria and viruses used in developing Vaccines including COVID vaccines. Their blood contains a natural source of *Limulus Amebocyte Lysate* enhancing their ancient immune system causing this unique blood to clot in the presence of bacteria. Its very valuable for pharmaceutical company's to develop safe drugs. Half a million Horseshoe Crabs are harvested from the ocean each year and although returned, around a third die. In Delaware Bay the spawning population declined from one and a quarter million down to just around 300,000 in thirty years.



Taking part in a beach cleanup is one way to keep the oceans healthy for generations to come. Join us at our next beach cleanup!

Their populations once abundant on the shores of North America are now declining and are an endangered species. Horseshoe Crabs can be found along the East-shore of Staten Island and their habitat extends from Nova Scotia down to Mexico. In late May and June during high tide, and under the influence of a full moon, the females lay anywhere from 3,000 to 10,000 eggs along the beaches. A female Horseshoe Crab can lay as many as 80,000 eggs throughout the entire spawning season. Eggs hatch in two weeks and if they survive can reach maturity in nine years. Their life expectancy averages 20 years. They are living fossils but now facing an uncertain future due to humans need of their ancient blood.

If you are walking along the beach and find a Horseshoe Crab that is turned over on its back and struggling, lend it a hand, turn it over and put it back into the water.

DON'T TRASH ON ME

By Jim Scarcella

In late May, NRPA joined @sibpvito and a list of partners to prevent and reduce trash on Staten Island. Borough President Vito Fossella and all of us are tired of people dumping trash in the streets, in our parks, and on our beaches.

To that end, all of our elected officials, agency partners, and Chamber of Commerce will work together to report illegal dumping, recycle and pick up the litter and trash to make SI a better place.

It was great to meet the Dept of Sanitation people, Community Affairs Joan Byrnes-Daly, Daniel Lindley, and NYC Parks Dept SI Commissioner Ricciardone, Joseph Homsey. Giuseppe Deserio, Councilmember Carr, Sherry Diamond, Congresswoman Malliotakis, Frank Rapacciuolo,

Councilmember Borelli, and Lisa Robinson for District Attorney Mike McMahon. The primary contacts for the 'Don't Trash on Me' campaign are Tiffany Arguello at 718-816-2069, TArguello@statenilandusa.com and Zsakee Lewis at 718-816-2147, ZLewis@statenilandusa.com.

Also, thanks to Colleen Siuzdak at the Borough President's office for bringing us all together.

Anyone can participate, and reports and photos will be uploaded to @Dontrashonme to keep everyone aware of the trash problem and our solutions! Thanks!

RETURN OF THE BALD EAGLE

By Richie Chan

Back in 2013, Staten Island first saw the return of the American Bald Eagle to our shores. Since then, more and more sightings of these grand symbols of national pride are making themselves right at home on our island. Only one pair of eagles was known to nest in all of New York State in 1960, compared to 173 pairs counted in 2010. The presence of breeding Bald Eagles in NYC is a testament to the success of the environmental conservation movement in cleaning up New York's waterways and wild habitats and is a cause to celebrate for all New Yorkers.



Eagles have been spotted flying around Wolfe's Pond Park, Lemon Creek Park, over the wetlands on the eastern shore, and even soaring above Fresh Kills.

Sightings during September and October are more common as the birds migrate south, sometimes only as far south as southern New York and northern New Jersey along the Delaware River.

Schedule of Events:

NRPA Calendar All events, including face to face monthly meetings are **TENATIVE** due to **COVID-19**, please call to confirm Jim Scarcella to confirm - 718-873-4291

Tuesday, June 7, 2022, 7:30 PM, NRPA monthly meeting at Regina McGuinn center or Zoom, Info: Jim Scarcella 718-873-4291

Sunday, June 12, 2022, Cedar Grove Beach cleanup, meet at Ebbits Street and Cedar Grove Avenue, New Dorp, Gloves, bags, refreshments provided, Community service certified, info Jim Scarcella, 718-873-4291

Sunday, July 17, 2022, City of Water, Fort Wadsworth Beach Clean Up, 11:00 AM to 1:00 PM. In conjunction with National Park Service. Meet At Hudson Loop Camp near Battery Weed beach. Gloves, bags, and refreshments provided. Info Kathy Garofalo 718 354 4655, Jim Scarcella, 718-873-4291.

Tuesday, September 6, 2022, NRPA monthly meeting at Regina McGuinn center or Zoom Call in. 7:30 PM. Info Richie or Jim 718-873-4291

Saturday, September 17, 2022, Lemon Creek Park at Sharrott Avenue pier beach cleanup, co-sponsored by NYCH2O, 9:00 AM to 12:00 PM, gloves, bags, refreshments provided, community service certified, Info Jim: 718-873-4291.

Saturday, October 1, 2022, Conference House Park beach cleanup, co-sponsored by NYCH2O, 9:00 AM to 12:00 PM, gloves, bags, refreshments provided, community service certified, Info Jim: 718-873-4291.

Tuesday, October 4, 2022, NRPA monthly meeting at Regina McGuinn center or Zoom Call in. 7:30 PM. Info Richie or Jim 718-873-4291.

Tuesday, November 1, 2022, NRPA monthly meeting at Regina McGuinn Center or Zoom Call in. 7:30 PM. Info Richie or Jim 718-873-4291.

Saturday, November 12, 2022, Oakwood Beach Tarlton beach cleanup, co-sponsored by NYCH2O, 9:00 AM to 12:00 PM, gloves, bags, refreshments provided, community service certified, Info Jim: 718-873-4291.

Tuesday, December 6, 2022, NRPA Holiday Gathering with Friends of Blue Heron Park at Blue Heron Park Visitors Center 7:30 PM. Info Richie or Jim 718-873-4291.

Sunday, January 1, 2023, 33rd Annual New Year's Day Beach walk from 12:00 PM to 2:00 PM at Gateway NRA Great Kills Park

Dedicated to preserving the marine environment, the Natural Resources Protective Association is a 501 (c) (3) non-profit organization. All contributions are tax deductible.

All memberships expire on December 31, so please renew NOW!

(All **NEW** memberships paid after October 1 will also receive credit for the upcoming year)

Are You A Member? Have You Renewed? Please Join Us NOW!

- \$15.00 Individual**
- \$25.00 Organization**
- \$500.00 Lifetime Member**

- \$20.00 Family**
- \$100.00 Sponsor** (after 5 payments you become a Lifetime member)

YES! I/We want to join the fight!

Name: _____

Address: _____

Phone: _____ Email: _____

Mail to: Natural Resources Protective Association
C/O Richard Chan, Treasurer
Post Office Box 050328
Staten Island, NY 10305

Join NRPA today