

Natural Resources Protective Association

Coalition Against Water Disposal of Contaminated Sediments

Post Office Box 050328 • Staten Island, NY 10305



In Memory of Edward "Kerry" Sullivan

FALL 2018

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A HUDSON RIVER REVIVAL

By Tony Rose

The Clearwater Music and Environmental Festival is a singular treat. Begun by the late Pete Seeger and his wife, Toshi, it celebrates the mighty Hudson River and connects to the entire outside world.

Pete was saddened by global pollution and specifically the sorry state of the Hudson River. He began to provide concerts as fundraisers and to increase environmental awareness. One of the early goals was to fund the building of the Clearwater, a replica Hudson River sloop like those used in commerce and transportation up and down the river in the 19th century. It was built in a shipyard in Maine in 1968 and made its first appearance at the South Street Seaport. Clearwater became a not for profit organization and advocated for control of agricultural and industrial runoff in the estuary, overdevelopment and especially the dumping of chemicals into the river. The most famous campaign was pursuing General Electric for laying down Polychlorinated Biphenols (PCB's) into the Hudson and contaminating the riverbed. This activism led to the area being declared a Superfund site and having GE spend billions to re-

mediate the area.

The result of the work of Pete and his followers has been obvious to all. Sturgeon move up and down the river. Striped bass and even river otter have returned to the harbor and all the way up the watershed to the Adirondacks. The presence of large schools of menhaden, or bunker fish in the restored area has led to the appearance of humpback whales in the harbor and a pod has taken up residence just outside the bay; an unheard-of experience in the modern history of the harbor. Pete played a large role in the creation of the Clean Water Act. The Clearwater continues up and down the river and serves as a catalyst for local groups seeking to continue Pete's work.

The Clearwater festival celebrated its 40th anniversary this past Father's Day weekend and a rockin' good time was had by all. Performers included Jeff Tweedy, the former lead singer of Wilco, Ani DiFranco, The Willie Nile band, Tom Paxton and the Don Juans. Folk-influenced singers like Tom Chapin, the Kennedys, and Josh White turn up every year and provide satisfying continuity to the event.

The featured artists, The Mavericks, have a country-rock sound with a southwestern Tex-Mex feel. With their brass section and accordion, they closed the event Sunday night with a roar and had the crowd on their feet shouting for more.

There was a significant contingent of Zydeco musicians led by CJ Chenier, son of the world-famous Clifton Chenier, ambassador of this Louisiana music to the world. There was much dancing at the Zydeco venues.

In addition to the music there are handiwork vendors, artisan farmers and lots of tie-dye. I bought a bag of wine cap mushroom rhizomes and now have a number of mushroom beds in



The sloop Clearwater
(Used by permission: WorldIslandInfo.com)

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my garden. Healthy-living options such as dietary advice, solar energy and yoga were available and a major area of interest was the Environmental Alley.

Multiple volunteer organizations set up shop to provide, promote and enlist activists in a number of causes. Groups seeking to provide oversight of the closing of the Indian Point Nuclear plant, move state residents to support wind and solar energy in the state as well as prevent hydraulic fracturing for oil and gas in NY State all vied for attention and support.

Clearwater and the state DEC set up fish tanks and touch tanks to provide environmental education and enlist festival-goers as protectors of the planet. There is too much for one person to expect to see it all, what with African dance troupes, magicians, storytellers and the Clearwater Walking Chorus as well as the Working Waterfront.

In addition to the sloop Clearwater and the Mystic Whaler, another Clearwater historical boat, maritime activists such as Rocking the Boat, the Harbor School and kayak clubs from across the city and Hudson valley provided kayaking, canoeing and row boating for festival participants.

The festival is held at Croton-on-Hudson Park, a peninsula and reclaimed landfill about 90 minutes north of Staten Island. Camping was available and it was a great way to experience the event. Instead of



The Hudson from a kayak

walking the quarter-mile to the event, I brought my kayak and commuted to the festivities each day by water. Each night was closed by a community jam at the gazebo near the campsites. Campers went to sleep to the sound of guitars, congas and banjoes as well as singing and hand-clapping.

Some years recently, the fair has been plagued by rain. This past year, the weather was dry, but blisteringly hot and sunny. Good planning, hydration and shade can mini-



People stopped by to compliment me on my forethought and planning.

mize the discomfort. 800 volunteers work to make it a rewarding event for Clearwater, the environment and participants. I ran into Linda Cohen of the NRPA at the Dance tent and she introduced her daughter who was working as a Clearwater volunteer for the weekend. They provide support, organization and even manned the trash bins to ensure a zero-waste experience. Plates were paper and the 'plastic' cups and cutlery were made from recyclable plant-based material

People have asked me how my family feels about my being absent Father's Day weekend and I explain that it is a win-win. I get to listen to bluegrass music and they don't have to.

Join NRPA Today
See page 8

It is a rich, fulfilling weekend and I would highly recommend it to all. Let me know next year if you think you want to go.

A DAY ON SANDY HOOK BAY

By Jim Scarcella

In mid-August, I had the chance to visit the Sandy Hook Bay Catamaran Club (SHBCC) in Highlands, New Jersey. The members of SHBCC advocate for protection of our marine environment.

I was welcomed to the club by my friend Clay Halvorsen, a former Staten Islander. Clay expertly prepared the 20' double-hulled Hobie Cat with its cable-suspended 26' masts. The vessel also features a rectangular canvas deck about 16" above the water surface, and a dual rudder with metal tiller controls.

With life jackets secured, we pushed off about a mile from Highlands Bridge. Clay's friend Skip was sailing his Prindle catamaran adjacent to us.

It was a slow go with little wind, until the thermal winds scooped into the sail and the Cat started to gain speed. Thermal winds or "thermals" are created when the cooler bay temps meet the warmer temps of the land terrain. Soon we were slicing thru the water at a pretty fast clip. There is a science to steering the vessel upwind, which harnesses all of the power of the breeze. We saw some Double Crested Cormorants and magnificent Royal and Caspian Terns. We went across the Bay, staying a good distance from U.S. Naval Station Earle and giving a wide berth to the Seastreak commuter ferry.

Many boaters were using the Shrewsbury River channel to get out to Sandy Hook. We saw the 'Officers Row' of homes, where the American Littoral Society and Clean Ocean Action are headquartered. NY/NJ Baykeeper celebrated many a fine clambake fundraiser on this peninsula too. At Horseshoe Cove, several vessels were anchored with floats and kids in life jackets were cooling off. We went a bit further south and explored Fort Hancock, Battery Kingman, Sandy Hook. Battery Kingman was constructed during World War I,

(continued next page)

it had two twelve inch cannons, set at a 35 degree angle and they had a range of 16 miles. It's a place steeped in history but the natural world is starting to overtake its ruins. This place is also part of a rail transport system and the east pilings are submerged, providing intertidal habitat for barnacles, Rock Crabs, Sea Lettuce, brown algae, bright Red Beard Sponge, killifish, Atlantic Silversides, mullet, and even pufferfish.

After some more exploring and a swim, we pushed off from the Fort and headed back into the Bay. The thermals were a little more powerful later in the afternoon, and we were moving at about 15 knots (nautical velocity).

Back at SHBCC, we rolled the Hobie back to its rightful place in the boatyard, showered up and enjoyed a relaxing beverage at the water's edge. It was a great day!

Special thanks to SHBCC for their support of NRPA.

KAYAK STATEN ISLAND

By Tony Rose

Programs introducing kayaking to the public have been available all summer and will continue into September. KSI volunteers, including NRPA members Tony and Rob as well as Rich Dewar and Jim Scarcella



la have assisted members of the public into the water. After signing a release, participants are fitted with a life vest and given a brief orientation to boating in the harbor. In single and tandem boats, newly minted kayakers spend fifteen to twenty minutes paddling around a sheltered cove in Tottenville. KSI provides in-water and shore support for the fun-seekers. A number of boaters have returned to be volunteers. A calendar and further information can be found at KayakStatenIsland.org or on the group's Facebook page.

On the Sunday of the barbecue, the group decided to act on the adage, "Life is short, have dessert first." The opening activity was to load up the kayaks with coolers of dry ice



Robert Carrano kayaking the South Shore of Staten Island as seen from Perth Amboy, NJ

and head off to the Bayside Creamery in Perth Amboy. Eight kayakers in seven boats headed south to the absolute tip of New York State.

Gathering just off the site of gazebo construction at Conference House Park, the band looked left, looked right and made a dash across the channel headed for New Jersey. Passing sailboats and powerboats moored off the Raritan Yacht Club, the group beached their boats on the shore and made the trek inland.

Upon their return from the four to five -mile trip, the paddlers feasted on hot dogs and hamburgers before digging in to their Garden State dairy treats.

Volunteers are always welcome and they often have as much fun during the day as visitors. Newcomers get to pick the brains of the experienced paddlers and can join them on trips when not putting the public in jeopardy in the Atlantic Ocean. That web address again is www.kayakstatenisland.org.

CONFERENCE HOUSE PARK

by Jim Scarcella

In August, NRPA visited Page Avenue beach in Tottenville, as part of the Kayak Staten Island (KSI) Picnic Celebration. It was a sunny afternoon, and seven paddlers from KSI took to the water to Perth Amboy.

Exploring the beach, there was some Sea Lettuce remaining from the incoming tide. The debris and garbage was not overly plentiful, which is a good thing. The waters are thriving with hard clam (Quahog) and Zebra Mussels.

Walking north, the birding is fantastic. On this day I saw a Great Egret stalking baitfish at the edge of a tidal creek. This is NYS Mt. Loretto property and it's a wildlife sanctuary. An adult Osprey with a giant wingspan and a shadow to match flew overhead. Deer tracks and raccoon markings were in abundance. There were interesting rocks, including ironstone and quartzite and we also discovered some hickory nuts.

Visit us at www.nrpa.com
Like us on [Facebook](https://www.facebook.com/nrpa)

NRPA will be cleaning the Page Avenue beach on October 6, 2018. Please join us for the fun and adventure!

A DAY ON RARITAN BAY

by Jim Scarcella

NRPA members monitor water quality and wildlife habitat throughout the summer. It's also a great way to enjoy the outdoors.

In early August, NRPA Trustee Chuck Perry, Ray Matarazzo and I went for a sail on Raritan Bay. It was a warm sunny day and there was a breeze in Great Kills Harbor. Royal Terns were diving for silversides and young of the year Menhaden (peanut bunker). There were three members of an Osprey family, feasting on Menhaden at the mouth of the Harbor, one adult and two juveniles. Across the channel at Gateway Great Kills Park, it appeared that Menhaden were being pursued by snapper Bluefish. Many sail and power boats were navigating the fairly narrow waterway. It was just beautiful, silent except for the sound of the water slicing away and the cries of Herring Gulls and Terns.

Ripples in the water off Huguenot Beach brought us to schools of menhaden, each fish about a foot long, weighing up to a pound. It was amazing to see hundreds of them lingering at the surface, undisturbed. They were swimming towards the incoming tide, feeding on phytoplankton and zooplankton – tiny,



floating plants and crustaceans, protozoans, etc.

Chuck expertly alerted the crew to “tack” the sailing vessel and as we headed back, we saw Double Crested Cormorants diving for peanut bunker.

After securing the vessel back to the mooring, one of us jumped into the water for a refreshing swim.

It was a great day to be on the Bay!

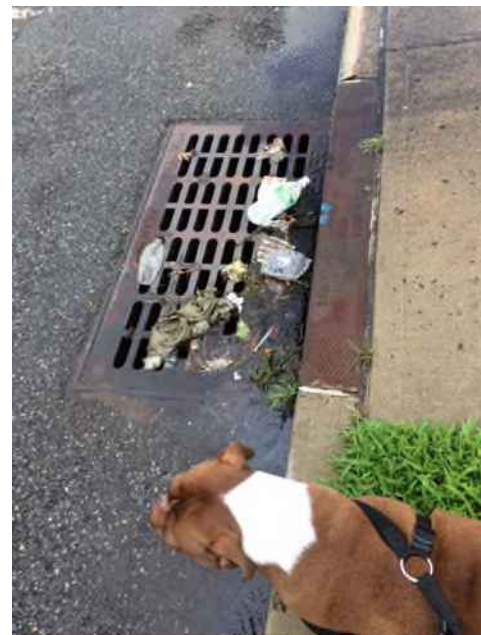
WHAT GOES DOWN YOUR STORM DRAIN?

By Jim Scarcella

While recently walking our friend's dog, Lucas, I found this garbage-strewn storm drain and started to get a little sick. All of us have a collective responsibility to protect our waterways by being aware of what we purchase and properly disposing of our garbage.

This particular storm drain is at Rari-

tan Avenue in (Governor Thomas) Dongan Hills. The street name is appropriate because the storm sewer carries lawn and garden pesticides, petrochemical fluids from trucks and automobiles, plastic straws, cigarettes, single use plastic bags, cardboard soft-drink carriers, dog poop bags, Styrofoam, cellophane wrapping material, pharmaceuticals packaging, beverage containers, fast-food packaging and condiments, napkins and more to the storm water outfall in Ocean Breeze. The garbage and worse sloshes around until it destroys our beaches and water quality.



As Borough President Jim Oddo has stated, “Don't be a Litter Jerk”.

Also, please join us for one of our beach clean ups to help deal with this problem.

LEARN TO ADORE THE SHORE - THE 2018 STATEN ISLAND STUDENT SUMMIT

By Tony Rose

The NRPA is joining with Clean Ocean Action to present an environmental awareness program for between one hundred and one hundred fifty kids, parents and teachers on Thursday, October 25th (projected) from 9 AM till 1 PM. The day will begin with a plenary session for the entire group and then the kids will split into two cohorts. Half the group will rotate through six, 10-



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minute learning stations while the rest do an hour-long beach experience specializing in a specific topic such as fishing, dunes, oyster gardening, etc. the groups then switch places and repeat the first experience.

Here is a link to a video about the 2017 Summit. <https://theenvironmentv.com/2018/04/28/staten-island-student-summit/>. Or, just Google Staten Island Student Summit.

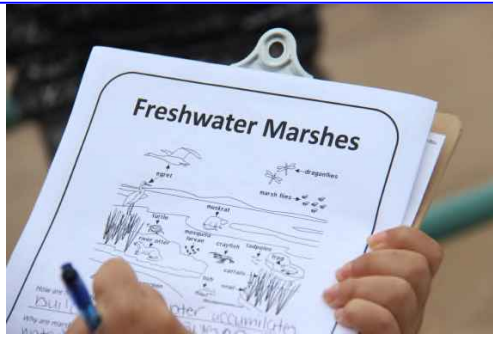
We will be giving the kids re-useable nylon, drawstring backpacks and insulated steel water bottles to build conservation awareness, initiative and love of the shore. We would like



to introduce the students to the mantra Reduce/Re-use/Recycle. Each child gets a workbook to focus their learning on the day.

We are in need of participating schools and volunteers. Our target audience is middle-schoolers; sixth or seventh-graders. Please feel free to pass this information on to your junior high school or upper grade K-8 teachers. It is an amazing day. Schools must apply to participate and will be chosen based on how they plan to incorporate the information gained that day into their ongoing curricula. The program is free.

We are also looking for volunteer interpreters to assist at stations that morning. You don't need to know



the specific content or have an identified interest. We can give you the information you need. If you have a talent or know something about a specific topic; fishing, shorebirds, scuba, nature photography, we would love to have you come share your interest with the children. We are also in need of people to direct the students from station to station.

We are planning on videoing the event this year to produce a documentary. Anyone who would be willing to help tape events (particularly if you have a camcorder you could bring that day) would be very helpful. If you might be able or know folks who could assist us, please contact me.

Contact Tony Rose at nobends@aol.com and call or text 917 604-5581.

THAR SHE BLOWS!

By Robert Carrano

On a hot weekday in August, we circumnavigated the Lower New York Bay by car, north along the east shore of Staten Island, across the Narrows, and along the shoreline of Brooklyn to Flatbush Ave where we crossed the Gil Hodges Bridge to Breezy Point. Nestled in the shadow of that bridge, also known as the Marine Parkway Bridge, lies Riis Landing, where the American Princess waited to be boarded. At around noon, we headed out of Rockaway Inlet and into Lower New York Bay.

Shimmering circles on the water where it looked as if rain was falling on small areas of the surface indicated schools of menhaden, also known as bunker. In recent years the numbers of these small, oily fish has increased with the result that whales have been drawn back to these waters to feed. Would we get to see a

whale take the bait? Thar she blows! A humpback whale lunged up through the surface from beneath a school of bunker. Our 90 percent chance of seeing whales today had just become a one hundred percent certainty. We saw five other humpbacks that day -- blowing, lunge feeding, breaching, fluke diving, and one even gave us a pectoral wave. A sunfish, also known by its scientific name Mola Mola, a thresher shark, and a pod of Atlantic bottlenose dolphins were also spied. We experienced all of this with the New York City skyline as a backdrop. Not too long ago, this would have been but a dream.

The Clean Water Act of the 1970s, together with other laws and regulations designed to curb pollution and protect vulnerable species, appeared to have made a real, observable difference. After centuries of whaling and the dumping of raw sewage and toxic chemicals into the area's waterways, these measures have reversed a dire situation and levels of coliform bacteria are down and oxygen levels are up. Algae and plankton can grow again, small fish can feed, and bigger species can feed upon them. The ecosystem is bouncing back.

Lest we sit back and prematurely declare this a success story, be reminded that there is pressure to roll back some of the protections of the



Lisa Carrano aboard the American Princess holds baleen from a humpback whale



Clean Water Act and other legislation and pressure to develop oil and gas in the waters off of our shores.

After heavy rains, sewage treatment plants are overwhelmed and raw sewage is released into area waterways with residents advised to avoid swimming, boating and fishing during and following rainfall. Just one day after our adventure in the bay, the glow of our excitement was turned ashen – a passenger on the American Princess reported that a large factory purse seine net ship was taking huge numbers of menhaden in full view of those who had come to experience the return of the whales. Will the New York State Assembly act to ban these state-of-the-art menhaden killing machines from New York waters? The struggle continues.

PLEASE DON'T HURT THE SHARKS!

By *Ida Sanoff*

We recently heard troubling reports about sharks being abused and left to die on the sands of Coney Island.

In the misguided belief that they are somehow protecting humanity, people have been pulling small sharks out of the shallows and either playing with them till they die or beating them to death. Not only is there no need for this cruel practice, but on the outside chance that it is one of the several species of shark that are federally protected, the perpetrator may face sig-



nificant fines.

Most people start hearing the music to *Jaws* when they think of sharks. But some species are small, timid and found near shore. Many of these sharks are called “dogfish” because they sometimes swim in packs, like dogs. But you are probably more likely to get bitten by a dog than by a dogfish shark. They tend to be small, perhaps two to four feet long and frequently swim close to shore. And if you do see one, all you have to do is stay still and leave it alone until it passes.

The New York Aquarium in Coney Island recently opened a whole new exhibit called “Ocean Wonders: Sharks!” which sheds light on these misunderstood creatures. Yes, sharks have a lot of teeth, some can get very big and swimmers can get bitten by the big ones. While fish can move oxygen rich water over their gills by moving their gill covers, sharks only have a row of gill slits. For most sharks, the only way that they can move water over their gills is to move constantly. If they can't move forward, they die from a lack of oxygen. There are a few species of sharks, such as nurse sharks, which have movable gill covers. These creatures have the luxury of being able to stay still and rest.

Worldwide, shark populations are declining rapidly. In some countries, shark fin soup is a delicacy and it is made from the fin on the shark's back, its dorsal fin. Sharks are pulled from the water; the fin is cut off and the shark is tossed back into the water. But because it cannot move without a dorsal fin, the shark quickly dies. Others are killed by all of the plastic pollutants that clog our

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!

waterways.

Sharks are really interesting because they use electricity to detect their prey. They have small organs on their snouts called Ampullae of Lorenzini. There are small pores on their skin that connect to narrow canals which are filled with a gel that conducts electric currents. Specialized nerve cells detect tiny changes in electrical currents that originate from prey that may be half a mile from the shark. All muscles contract by a complex series of chemical reactions that generate tiny electrical currents. So, when a fish moves, its muscles are moving and generating the current. Salt water is an excellent conductor of electricity and the shark can detect the tiny electrical current as it moves through the water. The fish that produced the current is quickly located and it's dinner time for the shark! Some skates have this ability too.

You may be familiar with proposals to conduct wind farms in local waterways. One of the problems with the wind farms is that the cable that connects them to each other and to the shoreline will create tiny electrical currents on the sea bottom. Since sharks will be in those areas too, it remains to be seen if these currents will interfere with the shark's ability to detect food.

We hope that people will learn more about these fascinating creatures and appreciate how special they are.

ARMY CORPS INVITES COMMENTS ON FLOOD BARRIERS PLAN

By *Jim Scarcella*

The Army Corps of Engineers is seeking comments on coastal flooding and ways to protect people and property from damage during hurricanes and severe storms. Public Law 71, enacted after damaging hurricanes in 1954, authorizes government agencies to protect states and

**Please join or renew
your NRPA membership
TODAY See page 8**

municipalities from “coastal flooding.” Specifically, ACOE and partners like NYS DEC, NYC DEP and NYC EDC are required to study the events leading up to loss of life and property damage from hurricanes and tropical depressions.

If more shorelines and tidal, freshwater wetlands were saved as parks, it would be easier to protect lives and property.

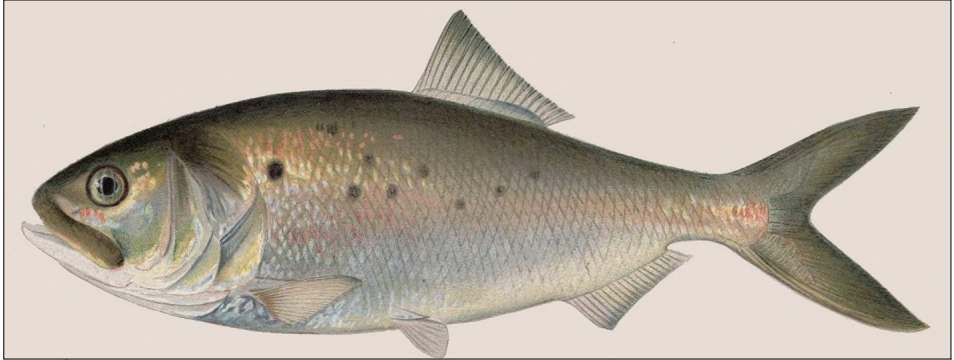
The agency is authorized to study breakwaters, dams, jetties, dikes, seawalls and warning devices to assist with flood control. Of course, this would be a lot easier if there wasn't a real or imagined need to place condos or unwanted retail centers in salt marshes or freshwater wetland forest.

Despite scarcity of public notice, more than 80 people attended the scoping meeting held on the second week of July 2018 at Borough of Manhattan Community College. Coalition for Wetlands and Forests Clean Air Campaign, Baykeeper and NRPA attended.

The Corps said there is an opportunity to restore natural areas to better manage flood risk, and make improvements to navigation and port resilience. But options under consideration include a five mile long barrier wall from Sandy Hook to Breezy Point or smaller flood gates at the Kill Van Kull, Arthur Kill, Coney Island Creek and several other areas. There is a great deal of controversy about whether peripheral measures such as raising shorelines and sea walls, such as the one that is to be constructed from Ft. Wadsworth to Oakwood Beach in 2019-2020, are preferable to flood gates.

The Army Corps proposal can be found at the link below. We urge you to submit comments, which are due by September 20, 2018.

<http://www.nan.usace.army.mil/Portals/37/docs/civilworks/projects/nj/coast/NYNJHATS/NJHatPres.pdf?ver=2017-10-16-141621-747>



Atlantic Menhaden: The most important fish in the sea

MENHADEN SHIPS: IF YOU SEE SOMETHING, DO SOMETHING!

By Ida Sanoff

Menhaden have been called the most important fish in the sea. These oily and boney creatures are members of the herring family, but they are not a dinner item for humans. However, they are a vitally important food source for fish like Striped Bass and Bluefish and a key food source for whales and dolphins. Fish eating birds like Eagles and Ospreys depend on them too. Anglers call them “bunker” or “peanut bunker” and know that if they are around, other fish are sure to follow. They are sometimes just referred to as “herring” a term which may derive from an old German word that means “many” or “multitude”. That’s because they travel in such huge schools.

They are used to produce fish oil and fish meal, components of fertilizer, animal feed, fish oil capsules and more. They are commercially harvested by ships that haul them in by surrounding the entire school with a net, a process called purse seine netting. If the Menhaden in an area are removed, the other creatures that depend on them for food are forced further out to sea or just starve. Whales and dolphins can get trapped in the nets, because they follow the Menhaden schools.

For many years, Menhaden were taken primarily from Chesapeake Bay. But the ships occasionally venture into our area and that’s where the problems begin. There have been allegations that sometimes the ships engage in activities that are problematic and/or prohibited.

We recently learned that a Menhaden ship was in a New Hampshire area that was loaded with whales. One was ensnared in the net and started thrashing about. A whale watching ship was right there too and documented the whole thing. It was outrageous that the Menhaden ship was even working in that location, because so many whales were clearly visible. Luckily the whale was freed. The video can be found here:

<http://www.seacoastonline.com/news/20180831/humpback-whale-snares-in-fishing-net>

If you observe Menhaden ships in NYS waters, we urge you to call NYS Dept. of Environmental Conservation (DEC) Environmental Conservation Officers (ECOs) and ask them to investigate. DEC will decide whether or not the ship’s activities are allowed in that area and are within guidelines. For Region 1 (Nassau & Suffolk counties) call 631-444-0250. For Region 2 (the five boroughs of NYC) call 718-482-4885.

DECOMPOSITION RATES FOR COMMON TYPES OF MARINE DEBRIS

| | |
|-----------------------|-------------|
| Paper Towel | 2-4 weeks* |
| Orange or Banana Peel | 2-5 weeks |
| Newspaper | 6 weeks |
| Cloth | 1-5 months |
| Apple Core | 2 months* |
| Cardboard Box | 2 months |
| Cotton Shirt | 2-5 months |
| Wax Carton | 3 months* |
| Plywood | 1-3 years |
| Cigarette Butt | 1-5 years |
| Wool Socks | 1-5 years |
| Plastic Bag | 10-20 years |
| Styrofoam | 50 years* |
| Tin Can | 50 years* |

| | | | | | |
|-------------------------|-----------------|-------------------------------|----------------|----------------------|------------------------|
| Aluminum Can | 80-200 years | Paper | 2-5 months | Plastic Bag | up to 500 years |
| Plastic 6 Pack Ring | 400 years | Rope | 3-14 months | Disposable Diapers | 500-600 years |
| Disposable Diaper | 450 years | Wool Clothing | 1-5 years | Fishing Line | 800 years |
| Plastic Beverage Bottle | 450 years | Milk Cartons (plastic coated) | 5 years | Sanitary Pads | 500-800 years |
| Monofilament Line | 600 years | Plastic Coated Paper | 5 years | Plastic Soda Bottles | 400-1,000 years |
| Glass Bottle | 1 million years | Cigarette Butt | up to 10 years | Styrofoam | More than 5,000 years |
| | | Lumber | 10-15 years | Glass Bottle | 1 Million years |
| | | Painted Wooden Stake | 13 years | Tin Foil | It does not biodegrade |
| | | Plastic Film Container | 20-30 years | | |
| | | Nylon Fabric | 30-40 years | | |
| | | Leather | up to 50 years | | |
| | | Rubber Boot sole | 50-80 years | | |
| | | Tin Cans | 50-100 years | | |
| | | Batteries | 100 years | | |
| | | Aluminum Can | 200-500 years | | |
| | | Plastic 6 pack cover | 450 years | | |

*Indicates decomposition in saltwater. Freshwater degradation would take longer.

DECOMPOSITION RATES FOR COMMON TYPES OF GARBAGE ON LAND

| | |
|---------------|------------|
| Orange Peel | 2-5 weeks |
| Cardboard Box | 4 weeks |
| Cotton Rag | 1-5 months |

**Monthly meetings
held at the
Nature Center in
Blue Heron Park**

Upcoming Events:

- **Saturday, September 15, 2018** NRPA beach cleanup at Lemon Creek Park, Sharrott Avenue Fishing Pier from 9:00 AM - 12:00 PM
- **Saturday, September 29, 2018** - NRPA beach cleanup with NYC H2O at Lemon Creek Park, at Seguin Point from 9:00 to 12:00 PM
- **Tuesday, October 2, 2018** NRPA monthly meeting at the Blue Heron Nature Center at 7:30 PM
- **Saturday, October 6, 2018** - NRPA beach cleanup at Conference House Park, Page Avenue from 9:00 to 12:00 PM
- **Saturday, October 13, 2018** - NRPA park cleanup at Faber Park from 9:00 AM - 12:00 PM
- **Saturday, October 20, 2018** - NRPA beach cleanup at Oakwood Beach, Tarlton Avenue from 9:00 AM - 12:00 PM
- **Thursday, October 25, 2018** – NRPA event - Staten Island Student Summit.
- **Saturday, October 27, 2018** - NRPA beach cleanup at New Dorp Beach from 9:00 AM - 12:00 PM
- **Tuesday, November 6, 2018** **No meeting in November due to Election Day**
- **Tuesday, December 4, 2018** NRPA Holiday Party at the Blue Heron Nature Center at 7:30 PM
- **Tuesday, January 8, 2019** NRPA monthly meeting at the Blue Heron Nature Center at 7:30 PM

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 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 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