



## Can Dredge Materials be Beneficial to Marshes?

by Lenore Tedesco, Executive Director

Recently, there has been a lot of talk about opportunities to utilize dredge materials for environmental benefit, especially to help restore wetlands. Scientists at the Institute have been working to understand how rising sea level and climate change is affecting our local marshes and the wildlife that depend on them. We are also working on teams to understand how dredge materials can be used to restore degraded marshes or provide nesting habitat for marsh dependent species as habitat becomes lost.



Ring Island wildlife habitat creation

Sea level is rising and has been for quite some time. If you drive across the causeways, you have probably noticed how frequently the marsh is now flooded. In our area, sea level has risen more than 6" since 1980 and an important question that we are studying is how this rise in sea level may be impacting the health

and sustainability of our marshes. Marsh grasses grow well over a very narrow range of water depth and during times of slowly rising sea level, can do quite well and "keep up" with rising water levels by building dense root structures and trapping storm transported mud and sand. If sea level rises too fast though, marshes can begin to drown and shift to open water areas or mudflats.

In areas where marshes are falling behind rising sea level, a technique called thin-layer placement (TLP) may be a suitable marsh restoration technique. TLP works under the presumption that clean dredge material can be spread on the marsh in a layer thin enough to allow marsh grasses to regrow, while raising the marsh elevation to offset elevation losses due to rising sea level. This sounds promising, but is actually quite difficult and challenging to accomplish, and great care must be taken to not damage the marsh more than help it. For these reasons, it's important the TLP be applied only as a marsh restoration technique – and not as a way to dispose of dredge material.

A second type of beneficial reuse for dredge material involves the creation of wildlife habitat. This habitat creation

involves the loss of the original habitat and may involve conversion of wetland to sandy upland or bay bottom to intertidal areas. There are pros and cons to all of these approaches.

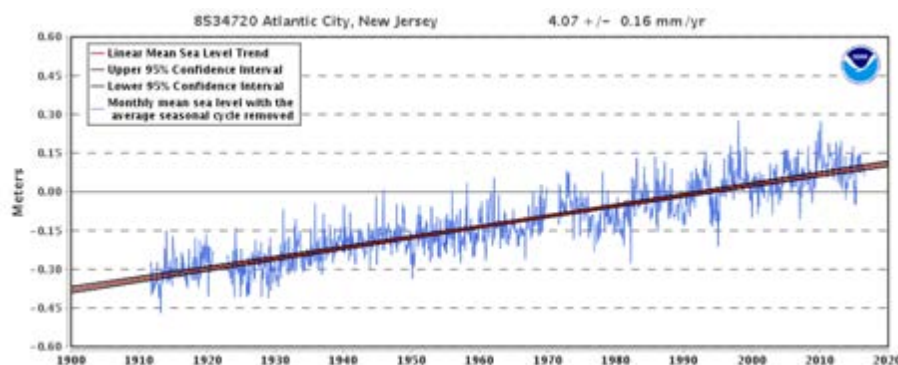


American Oystercatcher chick on Ring Island

Our area has been a focus of pilot projects for beneficial reuse with two project areas in "our backyard". Working with the Army Corp of Engineers, New Jersey Department of Environmental Protection, Nature Conservancy, and others, an area of Ring Island was treated with a thin-layer placement and also a habitat creation area in August, 2015. This winter, a larger area of thin-layer placement was tested behind Avalon. Scientists are learning the best practices, documenting the unforeseen challenges, and working to understand how and where these techniques can be applied to benefit the marshes. There is a lot to learn before this technique can be effectively utilized so as stewards of the wetlands, our staff are working to learn as much as we can and provide guidance to decision-makers about how marshes can benefit from these new techniques.



Avalon thin layer placement area



Measured sea level from tide station in Atlantic City (1900 - present) from NOAA

A non-profit organization studying, preserving and protecting wetlands and coastal ecosystems. Founded in 1969 by Herbert Mills, Executive Director of the World Wildlife Fund.

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## Visit Us

**New Hours:** October 13 - May 21 - Open Saturday & Sunday 9:30 to 4:30.  
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Check our website for Holiday Hours

**General Admission:** Members: Free.  
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*Views From the Tower is the quarterly newsletter of The Wetlands Institute and can also be found on our website.*

# Marsh Musings

by Dr. Lenore Tedesco, Executive Director

## Taking the Pulse of the Marsh

Wetlands and coastal ecosystems are incredibly dynamic with change being a constant characteristic. Superimposed on their rhythmic changes are intensified pressures related to climate change, sea level rise, and intense human use. As the intensity of coastal storms increases and coastal communities become more vulnerable, calls for fortification of our coasts are increasing. Whether it is expanding bulkheads, artificial filling of beaches, or raising marsh elevations with dredge material, building coastal resilience will undoubtedly impact natural areas and the plants and animals that contribute to their function. Our understanding of these ecosystems and the wildlife that are dependent upon them may ultimately be the difference in the success of coastal resilience measures.



Last year, we expanded our work to study changes that are occurring and what they mean to the wildlife here. Our office is our laboratory and work done here in these marshes and coastal systems is significant and relevant to systems along the entire east coast of the United States. The richness of the fabric of these systems is remarkable. This is a special place at the center of one of the great migrations on planet Earth. The marshes and beaches of Cape May County are critical for a wide range of birds and other wildlife. Whether they are passing through on northbound or southbound flights to breeding grounds

and wintering areas, arriving here to nest, wintering here, or are part of our year-round resident populations, the importance of these ecosystems cannot be underestimated. The vast marsh complexes that make this area so rich are also the key to coastal resilience in a complex web where disturbance, human or otherwise, can have a cascading effect.



To become the eyes and ears of the marsh, last year, we installed marsh elevation monitoring stations at the Institute with the support of the Davenport Family Foundation. This year, with their continued support, we will expand the program to include monitoring of key species and their role and relationship to the ecosystem. Information on how these species are influencing ecosystem dynamics and how their roles are changing will be instrumental in guiding engineering decisions that are being made to fortify our coasts. The understanding obtained through analysis of key marsh and coastal indicator species will help guide decisions that will impact the future of these marshes and the coastal communities that surround them.

We couldn't undertake these projects without the support of our donors, members, and friends. As we come into the season of giving, I hope you will consider how your support can help fuel this crucial work.



# Giving Back

by Jeff and Lee Alderton



Jeff and Lee Alderton with Lenore Tedesco.  
Photo courtesy of Seven Mile Publishing

When we first visited The Wetlands Institute many years ago with our two small children, we knew it was a treasure. The wildlife exhibits and programs were both interesting and entertaining... there was a lot to learn. Move the clock forward and what we see today is nothing short of amazing! Outwardly, the Institute has remained virtually the same, but the amount of programming has grown exponentially and along with it, the deep knowledge of all who work there.

Recently, it has been clear to us that the Institute was now "on the map", and a global map at that. The amount of networking to broaden its impact with similar organizations with common goals had risen dramatically. The contribution of studies and trials has resulted in connections benefitting many wildlife initiatives, and also all of us.

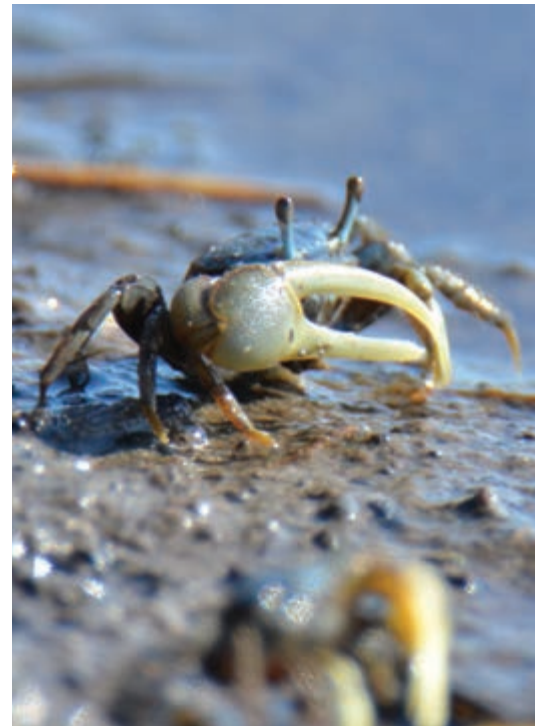
It takes time, talent and dollars to grow ... and we decided it was our turn to give back to the Wetlands. The spirit of giving has been well placed for us as a family. We drive by the Institute all the time, and are proud of the contributions by many, so that all who come can enjoy a terrific experience.

## Fascinating Fiddler Crabs, by Samantha Sorbello

When you walk through the marsh, you have probably noticed small, round holes in the mud that are home to the fiddler crab. Three species of fiddler crabs, *Uca pugilator*, *U. pugnax*, and *U. minax* are found in marshes and estuaries along the Atlantic Coast from Cape Cod to northern Florida. *Uca pugnax*, the marsh or mud fiddler crab, is the most abundant in New Jersey. Typically found in large groups, fiddler crabs play an important role in the marsh ecosystem. Their burrowing stimulates the turnover and mineralization of nitrogen. However, very high densities of fiddler crabs can undermine the marsh banks with their burrowing. Fiddler crab numbers are kept under control by a variety of predators including terrapins, wading birds, and raccoons.

Males and females can be easily identified by their claws. Males have a greatly enlarged claw, while females do not. These large claws are used in contests for breeding burrows and to attract females. When a mating claw is lost, it is replaced with a small, feeding claw while the remaining claw expands into a new mating claw. The feeding claw brings detritus to the crab's mouth where detritus is separated from the mud by pumping in water from the gills. Brush-like appendages then harvest the organic material and remaining sediment is deposited on the marsh as pellets.

Next time you visit the marsh, take time to find these crabs and even try to catch some. They are a fascinating member of the marsh ecosystem – and an important one!



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# Research & Conservation



## Protecting the Beaches for Birds: Shorebird Stewarding at The Wetlands Institute, by Allison Anholt

Coastal birds such as piping plovers, American oystercatchers, terns, skimmers, and many migratory species of shorebirds use our local beaches in order to roost, forage, and raise young. Disturbance by beach-goers can affect birds by causing them to expend energy that they should be using to feed, rest, incubate eggs, raise young, or defend against predators. In order to protect these birds, many beaches have restricted access during nesting and migration. This summer The Wetlands Institute organized shorebird stewards to help protect shorebirds at Stone Harbor Point and the Two Mile Beach Unit of Cape May National Wildlife Refuge. Stewards perform an important job. They watch over the birds, prevent disturbance by beach-goers, and talk to the public about the importance of beach habitats. Stewards also record instances of disturbance in order to understand how our actions impact birds. This program has been positive for stewards and the public alike, and has greatly contributed to our understanding of issues facing coastal birds in our area.

## Changing Times for Terrapins, by Brian Williamson

After many years of being legally harvested in New Jersey, we are very happy to announce that a bill has been passed to officially remove diamondback terrapins from the game species list. The bill was originally proposed in response to recent large scale legal and illegal harvest in New Jersey. The bill, sponsored by NJ Senator Jeff Van Drew, and Assemblymen Bob Andrzejczak, and Bruce Land, was signed by Governor Christie on July 15th. Now that terrapins are considered a non-game species in the state, their harvest is illegal.

Assessments of their status in New Jersey by the New Jersey Department of Environmental Protection will be needed to determine whether further state-level protection is required.



The Wetlands Institute is doing its part to help increase understanding and protection of statewide terrapin populations through our long-term research of the local population. In 2016, we reestablished a study of terrapins in two local creeks by replicating surveys last conducted eight years

ago. This past summer we captured, documented, then released 69 terrapins in these creeks, including one not seen since 2007. Through this work we aim to learn details about the population structure and to compare changes in the population over time. In addition, we have developed a database for our population research and are delving into 26 years of data to estimate local terrapin population characteristics, including survival rates and population size. By continuing our long-term population studies, we hope to gain a better understanding of the local terrapin population's status that can help guide future management decisions.





# Environmental Education



Monarch Ambassadors Julie McNulty and Lynn Matthews tag a Monarch butterfly and record data before they release her in the Institute's gardens

## Monarch Ambassadors: Helping to Answer the Questions, *by Sue Slotterback*

For several years the headlines have touted the Monarch population is in decline from a series of devastating events and practices. And that's true for most of the Midwest; however, the news isn't as dire here on the East Coast according to the Monarch Monitoring Project (MMP) in Cape May. For over 25 years, MMP has been tagging thousands of Monarchs, educating hundreds of people through public tagging demonstrations, and conducting a census of Monarchs three times a day from September 1 to October 31. When asked about the population: the word is 'steady'. MMP points to the lack of factory farms, the increase in backyard habitats, and the public's enthusiasm to plant milkweeds, to provide nectar plants, and to learn more about these amazing insects as major contributors to their population status.

To better answer questions about Cape May's specific role in the East Coast migration of Monarchs, in 2015, MMP trained a group of Monarch Ambassadors in East Point and Stone Harbor. Happy to join in partnership with MMP to monitor Stone Harbor, The Wetlands Institute (TWI) has Monarch Ambassadors with ears to the ground waiting to hear what the butterflies are doing, fielding questions on their life cycle and migration, and awaiting news of them streaming through the area. While wandering local roosting areas, tagging butterflies with colored tags, Ambassadors are available to answer questions about the Monarchs. TWI Monarch Ambassadors have currently tagged 45 Monarchs, but with a goal of 300 Monarch tagged, we are still looking for a few good taggers to join our corps of Monarch Ambassadors in 2017. If interested, please contact Sue Slotterback at [sslotterback@wetlandsinstitute.org](mailto:sslotterback@wetlandsinstitute.org).

If you would like to help Monarchs by planting milkweed and nectar plants, keep an eye out for the Institutes native plant sale next May.

## A Special Thank You, *by Brooke Knapick*

As a Wetlands Institute Summer Docent, every Wednesday morning from May to September, Stuart Friedman, can be found leading the Avalon Dune and Beach walks at 48th Street and Dune Drive. During these walks, Stu is informative, passionate and committed to educating the public about the diversity of plants and animals on the barrier island, while instilling in them the need for environmental stewardship and conservation.

From the moment you meet Stu, you recognize that, for him, volunteering is a true joy. In his own voice: "Words cannot adequately convey the pleasure I receive when for ten weeks each summer I lead children and adults through the dunes and along the beach. I have learned something new about the dunes and the beach on each walk, as well as the interests of visitors and residents alike who in many cases return year after year to take the walk with me."

This past summer was Stu's last summer leading interpretive walks in Avalon. He is a humble, reliable and generous man, and so it is with bittersweet feelings that we thank him for his commitment to The Wetlands Institute and wish him all the best in his next adventure!



At a recent Volunteer Appreciation event, Stuart Friedman presented Lenore Tedesco with a stunning photo he took of storm clouds over the marsh.

Our 2016  
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# Winter Happenings and Events

Even though it might be cold outside, it is always warm inside at The Wetlands Institute! Please join us for activities on the marsh every Saturday and Sunday. The Institute will be open on Fridays only for special programs. Unless otherwise stated, all activities are free with general admission and occur onsite at The Wetlands Institute. Questions? Call us at 609-368-1211.



## Seasonal Science Activities and Crafts

10am to 4pm Saturday and Sunday

Each week we will offer a new self-guided science activity related to seasonal changes in nature. We provide the supplies and you create the learning!



## Aquarium Teaching and Touch Tank

11pm Sunday

Learn about local creatures found in the salty waters of the ocean or back-bay! Join an Institute educator for a unique, interactive learning experience as they teach about whelk, sea urchins, sea stars, mud snails, and more!



## Aquarium Feeding

11am Saturday

Help us feed the local marine life! We will open up feeding each week so you can see the terrapins eating fiddler crabs and the horseshoe crab gobbling shrimp.



## Creature Feature and Craft

2pm Saturday

During this live animal presentation, get up close with turtles, fish, crabs, sea stars and urchins, mollusks, horseshoe crabs, or the popular animals of Finding Nemo. After the presentation, create your very own take-home craft!



## Science Feature

2pm Sunday

Each Sunday we will focus on a different conservation issue including Marine Debris, Osprey Conservation, Renewable Energy, Sustainable Seafood, Horseshoe Crab Conservation, Terrapin Conservation and the world of Plankton.

## WETLAND WONDERLAND

SATURDAY, NOVEMBER 26 - 9:30AM-3PM

Whether through hibernation, dormancy, migration or 'toughing it out', animals on the marsh have unique strategies for surviving the colder winter temperatures. Join us as we explore these animal adaptations and celebrate the seasonal change!

Throughout the day, we will have family fun activities including a special live animal presentation *Who's Who at the Zoo* by the Philadelphia Zoo, an aquarium feeding, extended teaching and touch tank demonstrations, a special appearance by Scute, winter activities, crafts, games and more!

**MEMBER: \$8 Adult, \$6 Child, \$25 Family Pack of 4**

**NON-MEMBER: \$10 Adult, \$8 Child, \$30 Family Pack of 4**

[wetlandsinstitute.org/events/wetland-wonderland](http://wetlandsinstitute.org/events/wetland-wonderland)

## WINTER LECTURE SERIES



**Fridays, January-March – Save the Dates!**

### Lunch and Learn

Join us for a weekly exploration of topics important to our coastal and wetland ecosystems. Bring your lunch and The Wetlands Institute will provide coffee and dessert. Each week we will feature a different speaker and topic of discussion! Please check our website for complete details.

**Program Fee:** \$3 for members and \$5 for non-members

Friday, 11:45am

January 6 - March 24 except on dates of Covered Dish Dinners (January 27 and February 24)

### Covered Dish Dinners

Nothing could be better than an evening filled with meeting new people, eating great food and engaging in scientific discussion! Join us the last Friday of each month, January - March, as we bring in guest speakers from around the region to share their knowledge of important issues in the field of environmental science and biology. In the spirit of covered dish dinners, please bring an appetizer, entrée, salad or dessert to share with at least eight people. Please check our website for complete details.

**Program Fee:** \$7 for members and \$12 for non-members, plus a covered dish to share. RSVP requested.

Friday, 6:00pm

January 27, February 24, and March 31

# Around the Marsh

## Give the Gift of Membership!

Our members are the foundation of The Wetlands Institute and make it possible for us to continue contributing leading-edge advances in the environmental arena. When you give the gift of Membership to The Wetlands Institute, you not only support our mission but you also allow us to advance our impactful research, conservation and education work. Annual memberships start at \$25 (a description of membership levels can be found on our website) and provide free admission to the Institute, a 10% discount at our Tidepool Shop, and discounted rates on most special events and programs. You can purchase memberships on our website, by phone at 609-368-1211 or at The Wetlands Institute.



## Adoptions Make Great Gifts!

### *Adopt-A-Terrapin or Horseshoe Crab*

Our Adoption programs allow YOU to contribute directly to the conservation of Diamondback Terrapins and Horseshoe Crabs. Adoption benefits and levels are listed on our website at [wetlandsinstitute.org/conservation](http://wetlandsinstitute.org/conservation).

## Tidepool Shop

Our book and gift shop is open every weekend from 9:30am to 4:30pm. Can't visit us? Call and purchase by phone. We will ship your purchase anywhere in the United States. Looking for a meaningful gift that also supports our mission? Find it at the Tidepool Shop. Not sure what to get? We also have gift cards!



### AdventurePak

Take the AdventurePak along as you explore the great outdoors! The package includes everything you need for a great adventure including a "Carry-All" pouch case with strap. Appropriate for ages 7 to Adult.

### Locally-Made Products

We have been adding to our selection of locally made products! We now carry Cape May Salt, Busy Bees and Jalma Farms products. And why not pickup a bee or butterfly puppet for the young nature enthusiast!



### TWI Sweatshirt

Stay warm while you proudly show you support The Wetlands Institute in this ultra soft navy colored sweatshirt. Available in adult unisex sizes small to X-Large.

find us on







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## Views from the Tower



### You Make it Possible!

In keeping with our life-enhancing mission, over the past several years The Wetlands Institute has developed a bold plan of rebirth and renewal to ensure that we continue to have relevant impact in the environmental arena.

- We are taking the pulse of the marsh with leading-edge monitoring programs to understand the scale of the changes that are occurring and their impact on sensitive species.
- Our environmental education programs are exposing thousands of students and individuals of all ages to otherwise inaccessible ecosystems, building connections between people and the natural world.
- We are working to engage communities to plan for future changes and to help them plan for resiliency in the face of natural changes that are affecting our marshes and coasts.

Please join with us to ensure these marshes are here for generations to come. Your gift – no matter the size – will help us to continue to work to safeguard the well-being of our fragile ecosystems.



### **Yes! I want to support The Wetlands Institute!**

☐ \$500 ☐ \$250 ☐ \$100 ☐ \$50 ☐ Other \_\_\_\_\_

#### **3 Simple Ways to Give:**

- Call 609.368.1211 to donate by phone,
- Complete and mail to: The Wetlands Institute, c/o: Christina Faulk, 1075 Stone Harbor Blvd, Stone Harbor, NJ 08247, or
- Donate online at **[wetlandsinstitute.org/donate](http://wetlandsinstitute.org/donate)**

- ☐ My check payable to **The Wetlands Institute** is enclosed.
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