Oyster Restoration Projects on Ninigret Pond

by Art Ganz & Claire Hodson

In conversations about conservation awareness, coral reefs are often highlighted as the at-risk ecosystem. However, shellfish reefs, not coral reefs are the most imperiled marine habitat on earth. Historically, shellfish have been managed only for harvesting and, as a result, 85% of shellfish reefs worldwide have been lost. Since the late 1970’s, local resource managers have been concerned about the decline in shellfish populations; primarily quahogs, steamer clams, oysters and bay scallops. Unfortunately, until very recently oyster restoration has been met with little success.

For decades, reduced harvesting regulations in the ponds have been in place with limited success due to the lack of natural productivity. In response, spawner sanctuaries, where all harvesting is prohibited, were established in the late 1970’s and stocked with shellfish. The intent was to increase shellfish density in a localized area to improve chances of increased fertilization rates after spawning. This, in addition to later shellfish restocking efforts led by the Salt Ponds Coalition, Save the Bay and The Nature Conservancy, was successful in increasing the quahog population density in Quonnie, Ninigret and Winnapaug Ponds. However, how to increase scallop and oyster stocks remained a mystery. Stocking scallop seed from the state hatchery and from the Westport River provided a short-term recovery of the

SPC awarded grant from R.I. Rivers Council

SPC was re-designated last year as the official watershed council for the R.I. coastal ponds region. State designation of a local watershed council by the Rhode Island Rivers Council allows us to represent the interests of the ponds before state and local government bodies. This designation also makes us eligible to apply for grants from the Rivers Council with funds annually provided by the R.I. General Assembly. This year we were awarded a $1,900 grant for our water quality monitoring program during the 2016 season. This will help fund 10 sites for about two months of testing. We want to thank the Rivers Council for this award. Each station costs $600 in lab fees alone every season, and station sponsors are always needed!

Seahorses, Pufferfish, and Butterfly Fish, oh my!

This summer and fall, SPC found a few interesting fish including some tropical strays that had made their way up here by accident via the Gulf Stream. These fish include (from top to bottom): a seahorse, a puffer fish, and a spotfin butterfly fish.

We will be featuring these fish on our Facebook page. Please follow the Salt Ponds Coalition on Facebook, and “like” and “share” our photos with your friends so they can see some of the incredible creatures that live in our ponds too.

Also, if you have come across some cool creatures, please send us the pictures! We would love to show them off to our followers. Send any pictures to Alicia at saltpondscoalition@gmail.com, and include your name and where you found the animal.
Message From Our President

Dear Members,

As we approach the completion of our thirtieth year we have a lot to celebrate -- the dedication of our many volunteers and certainly SPC’s growth over all these years. We have our on-going database which chronicles the changes of the water quality in our ponds. This data enables researchers and decision makers to understand the ecological processes at work in the ponds, and to make educated decisions on matters which affect the salt pond watershed.

We have completed many projects that we are proud of. Certainly, first is our continued progress in breachway dredging and restoration projects, our accomplishment in negotiating the purchase of Bill’s Island with the Weekapaug Foundation, our valuable input into the redevelopment of the Weekapaug Inn (and reducing pollution in Mud Cove), shellfish restoration, and being an informational conduit to our community on issues affecting the ponds and barrier beaches. We have done our best to attempt a compromise between the historical pond uses and the expanding aquaculture industry, and to invoke modifications to development projects to lessen the negative impact on our ponds and watersheds. But we have a lot more to do to preserve and protect our treasured coastal resources.

Alicia and our intern Claire continue to build our educational base for children in order to engage the next generation to appreciate and protect our natural resources. As I look back (a million years ago) to my studies and career, I had high hopes to save our bay and salt ponds. Having these two wonderful young colleagues continuing this quest makes me grateful and so optimistic that our younger generation will continue to complete this mission.

We had our annual “thank you” cook out for our Pond Watchers, with about sixty attending. It was a nice evening; gathering our faithful volunteers together to exchange “war stories” and get to know their counterparts in the other ponds.

In closing, I continue to thank our active volunteers, Board Members, Alicia and Claire - without their help we wouldn’t be running so well. We still could use a few more folks to serve on committees, particularly Environment and Fundraising. As we approach the year’s end, please remember Salt Ponds Coalition in your year-end giving. Thanks!

Art Ganz

Salt Ponds Coalition

The Salt Ponds Coalition stands up for the health and sustainable use of the southern Rhode Island salt ponds. SPC is the only organization whose sole charter is to monitor and protect these unique resources.

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Rhode Island Rivers Council and the Rhode Island Water Resources Board are sponsors of SPC’s water quality monitoring program.
Oyster Restoration, continued.

resource, but was not sustained. Research showed scallops reproduced normally, but mortality occurred before maturity, maybe due to predation or other factors. Similarly, oyster restoration by planting seed oysters from spat collectors in Green Hill Pond and Foster Cove resulted in only a short-term recovery.

While scallop restoration continues to elude scientists, recent discussions on oyster restoration have focused not on reproduction, but rather, the habitat suitability for oyster setting. This has led to efforts to introduce better oyster setting conditions. The following is an explanation of the current efforts and the ecological role of the oyster habitat.

This year, the Rhode Island Department of Environmental Management (RIDEM), in cooperation with the Coastal Resources Management Council (CRMC), the Natural Resources Conservation Service (NRCS) and The Nature Conservancy (TNC), has proposed two restoration projects to combat these losses. While shellfish are a staple of the Rhode Island food scene, they are the “ecosystem engineers” of bays and estuaries, providing important ecologic and economic services. Thus, the loss of shellfish reefs, and the restoration of such habitats, has a much more far-reaching effect than the food on one’s plate.

In most bays around the world, natural shellfish reefs are at less than 10% of their original abundance. Presently, only 10 ecoregions in the world report wild capture rates above 1,000 tons per year, compared to 50-100 years ago when millions of tons were reported in some 40 ecoregions. Oyster reefs are formed when oyster larvae drifting in currents and riding the tide attach themselves to a hard surface like other oyster shells, where they transform into tiny oysters called spat and bond with others to form a reef. As oyster reefs decline, there is a reduced chance of spat finding a suitable surface to attach themselves. Like most of the world’s environmental crises, humans are the culprits in wiping out this ecosystem. Destructive fishing practices such as dredging and overharvesting, the introduction of non-native shellfish species and consequential parasites and diseases, habitat loss from coastal development, and water pollution have all contributed to the dramatic decrease in shellfish populations. Water pollution is especially detrimental in the ponds, where high nutrient concentrations have resulted in increased plant growth and the once clean reef foundation is slimed over with layers of algae, limiting the oyster larvae habitat. Despite evidence of such loss and clear indications of the causes, these destructive practices still persist, even in those reefs that only support 10% of their original abundance. As a result, chances of a natural reef rebound are slim.

Oyster reef construction in Rhode Island’s salt ponds aims to give a foundation for reef restoration. Currently, two projects are underway in the Spawner Sanctuary within the Ninigret Pond Shellfish Management area in the western basin of the pond. This sanctuary is closed to shellfishing and serves as a protected area for oyster propagation and growth. Both projects focus on reef construction and monitoring, but the project objectives differ significantly. The RIDEM and CRMC project in cooperation with the NRCS is solely a restoration project, building approximately eight small oyster reefs over a 4-year period and monitoring the effectiveness of their restoration technique. Meanwhile, the project with TNC proposes reef construction to assess if creating oyster reefs enhances fish habitat and increases the growth and survival of important sport fish populations.

The NRCS Environmental Quality Incentives Program (EQIP) is a voluntary conservation program that provides financial assistance to farmers, in this case, aquaculturists, to help implement conservation practices. As part of its oyster restoration project, NCRS has teamed up with local oyster farmers to obtain cultch (weathered oyster or surf clam shell) and cultch seeded with juvenile oysters. There are two types of restoration work in this project. First, placing 20 cubic yards of only cultch in six to eight 0.1-acre plots in the northern end of the Spawner Sanctuary will enhance substrate for oyster recruitment. Second, participants will seed these plots with 20 cubic yards of juvenile oysters on shell (seeded cultch) to create the first layer of live oyster reef. After reef construction, site characteristics including the post-construction footprint and the height of the reef created will be assessed. To determine the health of the reef and the effectiveness of reef construction techniques, each reef will be monitored using criteria established by the Rhode Island Shellfish Technical Working Group. These criteria include (1) reef area dimension, (2) reef height, (3) reef density, and (4) oyster size-frequency distribution. Through construction and post-construction long-term monitoring, NRCS hopes to build and maintain a healthy oyster reef ecosystem and determine a successful approach to future projects.

While TNC also hopes to restore Ninigret Pond’s oyster reef habitat, their project focuses on the positive effects that this restoration may have on finfish populations. 70% of Rhode Island’s recreationally and commercially important finfish spend part of their lives in coastal waters. The shallow oyster reefs of our salt ponds provide excellent foraging and feeding areas as well as protection from larger open water predators. While it is widely accepted that habitat restoration and enhancement improves coastal ecosystems, it is unclear if oyster reef restoration in R.I. would benefit the survival and growth of finfish to the same degree that has been observed in Mid-Atlantic studies. The goal of the project is to determine if oyster reef construction improves the growth and survival of juvenile sport fish such as black seabass, tautog, scup, summer flounder, and winter flounder. Additionally, this study hopes to determine the most successful method of reef establishment by evaluating two experimental reef designs post-construction. There are four study plots in the
Spawner Sanctuary - two in the northern end and two in the southern end. Each plot will have two experimental reefs and one control site that will remain untouched. Of the two experimental reefs, one will be seeded with juvenile oyster-on-shell and the other will comprised only of unseeded cultch, entirely dependent on natural recruitment. Monitoring of the fish habitat and fish productivity will be conducted pre and post-reef construction at both experimental sites and the control sites. Monitoring of the effectiveness of reef construction techniques will occur only at experimental sites.

The growing acknowledgement of the ecological importance of oyster reefs has caused an increase in restoration and reef construction efforts. The Ninigret Pond restoration projects highlight the importance of oyster reefs for fish and shellfish, but the benefits of restoration far surpass these populations. According to Tim Kroeger, an environmental economist with TNC, “studies estimate that an investment in oyster reef restoration will have a several-fold return on investment in terms of recreational and commercial fisheries, protection of private property and resilience of public infrastructure.” Ninigret Pond, once known for its abundant native oysters, may once again support a recreational fishery – a fall tradition for many years.

MyCoast App introduced for use in Rhode Island

by Claire Hodson

“Snap the shore, see the future.” MyCoast, a project sponsored by the Coastal Resources Management Council (CRMC), the University of Rhode Island’s Coastal Resources Center (URI CRC), and Save the Bay gives beachgoers, photography aficionados, and concerned homeowners a way to become involved in Rhode Island’s climate change initiatives. The program asks citizens to take pictures during King Tide and storm events, and then upload them to MyCoast.org or the MyCoast mobile app. These reports are then added to the MyCoast database. It provides information to state and coastal resource managers and municipal officials. In a very connected day and age, anyone can make a difference.

CRMC is leading the Rhode Island King Tides initiative to document the effects of extreme tidal events on beaches and coastal waterways including our salt ponds, private property, and public infrastructure. The term “King Tide” refers to the highest seasonal tides that occur each year when a spring tide (normal lunar increase in tidal range) coincides with a perigee, a 28-day orbit in which the moon is at its closest to the earth. These extreme high tides, which normally occur in September and October, are approximately 1.5 times higher than a normal high tide. According to CRMC, “these extreme high tides provide a glimpse of what the state can expect as sea level rise is accelerated with climate change, where this could be our daily high tide by mid-century.” As the MyCoast call to action alludes to, each picture taken is documenting what our future coastlines may look like and where we might see the most significant effects. By “see[ing] the future” state decision-makers can better direct their approach to climate change.

Similarly, because storm events are predicted to become stronger and more frequent, MyCoast is reporting the damages and coastal changes occurring as a result of hurricanes and more minor storms. The program asks citizens to take pictures during or after a storm event of any “causality” they may happen upon (CRMC stresses safety first). This ranges from the loss of dunes in front of one’s home, to displaced buoys and coastal flooding. Once the photo is uploaded and the location confirmed, users will be asked a series of questions to assess the damages displayed in the picture. CRMC will evaluate this information for its long-term analysis of coastal vulnerability and planning initiatives with municipalities.

MyCoast is a tool to expand the CRMC database and provide valuable information to decision-makers and stakeholders. However, this program also fosters citizen participation in Rhode Island’s fight against climate change. While it might be easy to ignore the potential impacts of abstract future climate change issues, it is difficult to overlook tangible depictions of what our future may look like. Through MyCoast, we have the knowledge to start doing something about it. Visit MyCoast.org or download the app for tips on how to take effective pictures and to start uploading!
The Tidal Page Winter 2015

Common Birds of the Salt Ponds
by Mark Bullinger

The salt ponds are many things to many different users, but to the birds that flock to the ponds throughout the seasons, they are survival. The salt ponds support bird populations with abundant food, habitat for nesting and protective cover, and shelter against harsh ocean conditions.

The species of birds found around the salt ponds changes throughout the year. In the summer, the ponds serve as the northern range and support nesting activity, while in winter, they are the southern range for many species that nest much farther north in the summer.

There are many different ways to group birds. For this article I will group them by summer and winter and then according to how they feed.

**Common Birds of the Salt Ponds**

**Great Egret**

The Great Egret is somewhat smaller than a Great Blue, but still rather tall and statuesque. In addition to their size, they can be distinguished from Snowies by their yellow beak and black feet. The much smaller Snowy has yellow feet and a black beak.

**Other long-legged waders** - listed in order of prevalence - include Willets, Yellowlegs (Greater and Lesser), Glossy Ibis and Whimbrels.

**Wintertime Birds**

Our winter birds are dominated by various ducks and loons, but also include raptors, such as the Northern Harrier, whose low, slow and buoyant flight pattern along the dunes is as characteristic as the white patch on its rump. Pelagic species, such as Razorbills, are occasionally spotted, as are Arctic visitors including the Tundra Swan and Snowy Owl.

Most people think of Loons as a hallmark species of northern New England lake country; and, in fact, that is their breeding range. But in winter, those lakes and streams freeze and loons head en masse to the open water of the coastline where we see them in the ponds and just off the beaches.

This is the same with many of our winter ducks. The most common ducks include the Mallard and the American Black Duck, both of which are dabblers and tip their tails skyward to feed on aquatic vegetation. Diving ducks swim underwater to chase down food and have a more carnivorous diet. Regular sightings in this group include Buffleheads, Mergansers, Eiders, Sooters, and Scaups, along with less common Canvas Backs, Redheads, Ring-Necked, Common Goldeneyes and Ruddy Ducks.

In addition to those described here, many other birds grace our ponds throughout the year. I have attempted to introduce some of the more common ones and hope that this page, and the following graphical spread, will provide insight into the wonderful world of our native waterfowl.
Typical Summer Birds of the Salt Ponds

The salt ponds and adjacent barrier beaches host a wide range of bird life throughout the year, but in the summer the diversity is especially impressive. The birds on this page represent a cross section of what we see. Notable in absence from this page are gulls and cormorants, which are pictured on the previous page. Many - in fact most - of the salt-pond species are drawn by the wide variety of food that is available. Small fish, krill, worms, crabs and so much more thrive in the warm marshy waters of the salt ponds. Without healthy salt-pond habitats, many of our prized bird species would be compromised.

Smaller Waders and Foragers

The five birds pictured here represent the smaller birds we see along the back side of the barrier beaches and in the marshes. There are many more, including a variety of sandpipers, but these are noteworthy. Clockwise from left: Yellowlegs (Lesser and Greater both have long yellow legs), Piping Plover, Sanderling, Dunlin, and American Oystercatcher (their legs and bill are bright orange).

Larger Summer Waders

Left: Some of the most popular birds are the big waders. These include (clockwise from far left) Great Blue Heron, Snowy Egret, Yellow-crowned Night-Heron, the smaller Green Heron, Black-crowned Night-Heron and the Great Egret. All of these birds are patient hunters who stand in shallow water at the water’s edge and wait for their prey to come a little too close. With the speed of a cobra, they strike out and grab their quarry and then swallow them whole.

Right: The Willet is a medium-sized wading bird that is quite common in the marsh grasses of summer.

The Osprey is a favorite of many coastal bird watchers. Also known as Fish Hawks, they hunt from high in the air, searching for fish with their keen eyesight. Once a fish is spotted, they streak downwards in a power dive and impact the water with a splash. If successful they rise with a fish in their talons. Osprey build large stick nests on purpose-built wooden platforms and utility poles/towers.

Terns are common over the coastal waters and salt ponds. The Belted Kingfisher (top) hovers over the water and then plunges in headfirst when a fish is spotted.
Typical Winter Birds of the Salt Ponds

In the winter, the salt ponds’ bird population is dominated by ducks and loons along with geese. For most of the ducks, as well as the loons, our open waters represent the southern end of their range. Their breeding waters are well north of us and freeze solid, necessitating migration to the coast. The winter goose population is dominated by the omnipresent Canada Goose, but is supplemented with the lovely Brandt and an occasional Snow Goose. The Northern Harrier makes for a terrific sighting as it soars just over the marsh, on the hunt for rodents. And perhaps our rarest and most exciting winter visitor is the Snowy Owl. Uncommon and otherworldly, it is a sight to behold.

Birds of Prey

Left: the Northern Harrier and the uncommon, but not rare, Snowy Owl are two birds of prey that utilize the winter beach and marshes. The Harrier hunts rodents, while the Snowy is known to take some of the smaller sea ducks shown below.

Geese

Top right: the Canada Goose is all too well known around populated areas. The once migratory species now includes birds that stay year-round. Center right: the Brandt is a lovely smaller goose that resides on the ponds and open ocean during the winter. The Snow Goose, bottom right, is an occasional visitor.

Winter Ducks

(Note, all birds pictured here, other than the loon, are ducks) Clockwise from top right: Common Loon, Greater Scaup, Northern Pintail Duck, Red-breasted Merganser, Mallard, American Black Duck, Ruddy Duck, Common Goldeneye, Common Eider, Bufflehead, Hooded Merganser.
Tale of Two Ponds: Winnapaug and Quonochontaug Ponds

Now that all of our water quality monitoring data collected from 2014 has been received, analyzed, and put on the website, it is time to continue our “Tale of Two Ponds” series. It is here that we will keep you up to date on our water quality monitoring results two ponds at a time; this year we will be going from western Rhode Island and working our way east. In this installment, we will have a look at Winnapaug and Quonochontaug Ponds.

Water quality results are presented as Aquatic Health Indices (AHI). The AHI scores water quality results on a scale of 0 to 100, like a school report card. For AHIs, a score of less than 35 is poor and a score of greater than 65 is good. AHIs are calculated and summarized at three levels: for each testing parameter dissolved oxygen (DO), chlorophyll-a, dissolved inorganic nitrogen (DIN), total organic nitrogen (TON), and Secchi depth (a measure of water clarity), for each site, and for each pond (Figure 1). We produce a one-page report for each pond showing a table of AHI values and a map with symbols for each AHI score (Figure 2). These reports are available on our web site: www.saltpondscoalition.org. There you will also find more detailed data reports for each sampling site and parameter.

Figure 3 is a plot of average AHI values for Winnapaug Pond, where SPC is currently monitoring two sites: Southwest Corner and East Basin. The overall AHI score for Winnapaug Pond was 53.95 or Fair+. The score for the Southwest Corner site declined from 2013; from AHI score of 63 in 2013 to 41.2 in 2014. The score for the East Basin site decreased from its 2013 scores – an AHI score of 78 in 2013 to 66.7 in 2014. At the Southwest Corner site, the overall trend in water quality shows no increase or decrease, as indicated by the trendline (weak fit to the data, r² = 0.11). The AHI scores at East Basin site were too variable from year to year to determine trends, and it has only been sampled for the past five years so it is still a relatively young site.

At both sites the Chlorophyll-a scores changed in comparison to 2013. In 2013, the AHI scores for Chlorophyll-a were poor in the Southwest Corner and the East Basin had dropped to Fair+. In 2014, the scores for Chlorophyll-a have declined further and remain Poor in the Southwest Corner, but the East Basin has increased to Good. However, the DIN scores at both sites declined dramatically from 2013 from Good at both sites to Fair- at the Southwest Corner site and Poor at the East Basin site. TON also saw a decline in Good to Fair+ at the Southwest Corner site, but remained
Figure 4 is a plot of average AHI values for Quonochontaug Pond, where SPC is currently monitoring four sites: Harmonic Cove Buoy, Harmonic Cove Channel, Judge’s Rock, and North of Bill’s Island. The overall AHI score for Quonochontaug Pond was 51.75, or Fair+. At all of the sites there was a decline in AHI score. At all the sites except for Harmonic Cove Channel, the overall trend in water quality shows no increase or decrease (r² indicated a weak fit to the trend line at all these sites). At the Harmonic Cove Channel, the trend is showing a slight decline in water quality at this site (weak fit to the data, r² = 0.33).

The Chlorophyll-a scores were either Fair- (Harmonic Cove Buoy and Harmonic Cove Channel) or Fair+ (Judge’s Rock and North of Bill’s Island) in 2014, this is a decline in scores from last year. DIN scores at all sites declined dramatically to Poor this year. However, this year TON scores were Good at every station in the pond, an improvement for every site.

Our “Tale of Two Ponds” articles paint a “big-picture” view of water quality in the ponds. Please see our Status and Trends report and individual one-page reports for each site and parameter, all available on our website, for a more detailed picture of pond health. In the next newsletter, the 2014 water quality monitoring results from Ninigret and Green Hill Ponds will be presented.

**Remembering Dr. Jon Boothroyd**

*by Art Ganz*

Irreplaceable is a term seldom used to describe an individual, but Dr. Jon Boothroyd fits this category. Jon was a long-time friend and colleague. He was an advisor to the entire Rhode Island coastal community, as well as to Salt Ponds Coalition. Jon was a large man, in stature, in heart, and in wisdom.

Jon’s accomplishments are too many to list, but it is safe to say that he was one of greatest coastal geologists of this time. Before anyone else noticed, he began watching for changes in sea level. He started beach profiling thirty years ago, and has documented changes in our south coast. Jon has always been the “brains” behind the breachway work in the ponds over the past thirty years. His wisdom of what can work to correct or at least maintain the breachways made the projects successful.

I worked with Jon on many projects during my working days and beyond. He was a joy to work with to say the least. His wisdom and wit always kept things lively. I would always try to sit close to him during presentations to receive his clever commentary. He was such a diplomat. When someone was way off base, Jon would correct them, but always with a smile and respect.

He was the consummate teacher, even beyond the classroom. He loved to speak to and teach non-geologists about his field. We were lucky to have him come and speak at our SPC annual meeting back in 2012. Jon was known for his field trips, taking students all over the region to learn and experience things first-hand. He loved his students and educated many of the great geologists and scientists of this time, and they continued come back to Jon for guidance. The best scientists are those who are hands-on, and Jon prided himself as a field researcher. After his broken hip, he was less able to get around, but he still kept doing what he loved.

Jon loved his home state of New Hampshire and alma mater University of New Hampshire. Before his accident he was an avid skier and made weekend trips to ski with his family. He lived in Middlebridge and served on the board of the Narrow River Preservation Association since its beginning.

Jon was a great man, and his contribution to the community is immeasurable. He will be greatly missed.
SPC Kids’ Corner

This section will highlight some of the amazing aspects of our ponds in a way that will be fun and easy to read by kids! Please share this section with your child, grandchild, niece or nephew, etc. Children really are the future stewards of the environment, so we want to start looking for ways to get them engaged now!

Creature Spotlight: Horseshoe Crab

Horseshoe crabs have remained relatively unchanged in appearance for over 350 million years. They are often called “living fossils” because the species has been around so long that it pre-dates dinosaurs! The horseshoe crab is not a true crab, but rather a part of an ancient group of arthropods, which makes it more closely related to scorpions or spiders.

- Horseshoe crabs can be found in North America on the Atlantic Coast from Maine to the Yucatan Peninsula. Because they look for areas with little wave action to spawn, places like the Rhode Island salt ponds are a great place to find them in the late spring and early summer.
- Females are larger in size than the males.
- The horseshoe crab’s tail is called a telson. It is not dangerous or venomous in any way, and is not used as a weapon by the crab. In fact, it helps the crab to flip itself over if waves on the beach turn it over on its back.
- Horseshoe crabs have “book gills” to get oxygen from the water. If they remain moist, these primitive gills allow the horseshoe crabs to remain out of the water for up to four days. If a crab gets stranded on the beach, it can bury itself or fold itself in half to conserve water until the tide rises high enough again for it to get back in the water.
- Horseshoe crabs are incredibly important to modern medicine. Their blood clots quickly in the presence of toxins, so medical researchers use it to test medicines and vaccines to make sure that it is free of bacterial contamination.

THE ATLANTIC FLYWAY: Horseshoe crab eggs that are exposed on the beach by waves will dry out, but are the primary food source for migrating shorebirds making their journey from South America to the Arctic along the Atlantic Flyway. These eggs are vital to the ecosystem – each bird can double its weight in less than two weeks by eating thousands of horseshoe crab eggs. Loggerhead sea turtles also rely on horseshoe crab eggs as a food source during their migration. It’s a good thing that horseshoe crabs lay a lot of eggs. Female horseshoe crabs can spawn repeatedly over a few nights, and may lay 100,000 or more eggs in that time.

CONSERVATION FACT: Atlantic horseshoe crab populations have been declining since the 1990s. This is a result of many things including habitat loss, destruction of breeding grounds, and their use as commercial bait.

Sources:

Puzzle: Name that fossil!

Dinosaurs might be the most famous, but they aren’t the only creatures to leave fossils behind. In fact, there are a lot of marine fossils as well. Can you identify these fossils? (Match the number to the letter.)

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Name Box:
- (a) Eocene Perch, a bony fish
- (b) Crinoid, a sea lily
- (c) Ichthyosaur, a marine reptile with paddle flippers
- (d) Trilobite, a marine arthropod
- (e) Plesiosaur, a marine reptile with a long neck
- (f) Horseshoe Crab

Answers: (a) 4, (b) 3, (c) 2, (d) 6, (e) 5, (f) 1
Love Green Hill Pond, Follow Green Hill Rocks  by Claire Hodson

Green Hill Pond has been a focus of SPC’s recent awareness efforts. For Ann Manion, a digital marketer and mother, this area holds a similar importance. When asked about her passion for Green Hill she said, “[m]y happiest memories are of watching my three boys plunder Rhode Island’s rocky shores. For more than a decade, Green Hill has been the beach where I’ve enjoyed life by the sea. It’s a very special place.” This summer, Ann decided to share this passion with the Green Hill community. Using her skills and resources, Ann launched GreenHillRocks.com. It’s a website designed to “serve the needs, sensibilities, and values of the Green Hill community,” as well as create a conduit for information regarding Green Hill Pond’s environmental concerns. For example, Ann posted SPC’s Green Hill Pond: Below the Surface video on her website. Through her direct connection to the community as a whole, SPC’s message reached beyond our own members. Not only does GreenHillRocks.com serve as a platform for environmental awareness, but it touches on all aspects of life on the hill through short video reports that “bring the beach to you,” local business spotlights, and pieces on cooking, gardening and cottage décor. To join the conversation visit GreenHillRocks.com, follow Green Hill Rocks on social media, and subscribe to their newsletter!

Great Items for the Holiday Season

For those of you looking for some uniquely Rhode Island gifts for the holiday season, we have some great items to choose from!

We have copies of our children’s book “Salt Pond Sleuths” available for $10, or $12.50 if mailed. It is a great story set on our own salt ponds, filled with science facts and a conservation message.

We also have 2.5’ x 4’ map banners of the salt pond region for sale for $20 each. Lastly, if you know any wine lovers, our SPC logo wine glasses make a great gift. They could easily be added to wine gift baskets! The glasses cost $10 each, six glasses for $50 or a dozen for $100.

Please contact us at (401) 322-3068 or saltpondscoalition@gmail.com if you would like to purchase any of these items. They can be picked up at the Kettle Pond Visitor Center. This is a great way to finish all of that holiday shopping and support SPC at the same time!

Thank you for all of your support

This is the time of year where we are reminded of friends, family, and everything we have to be thankful for. At SPC, we are thankful for a wonderful Board of Directors, great volunteers and Pond Watchers, and our members.

SPC would not be able to complete its work without all of you. As you reflect on your year, please consider including SPC in any end-of-year giving you may do. On the back of this newsletter is a year-end donation form. Every penny helps.

Thanks to your support, we can continue advocating for our ponds on the state and local levels, add more years of valuable water quality monitoring data to our 29-year database, take dozens of children on fun and educational Salt Pond Safaris, lead kayak trips, and reach out to the public to educate them about how to be a good pond neighbor.

This past year, we had another successful monitoring season. We have been able to expand the educational programs that we offer to schools, and will hopefully be expanding this into our public programming this upcoming summer. And we have been working on an outreach campaign focused on Green Hill Pond, and so much more.

Keep a lookout for SPC membership renewal cards. They will be mailed out in early January. We can’t thank you enough for your previous support, and ask you to please consider renewing again. The vast majority of our income truly are the lifeblood of our organization. Remember that with your renewal of $250 or more, you can choose a SPC hat: khaki (regular or long-bill), red (regular or long-bill), green, coral, pink, or white. Thank you!

Have a wonderful Holiday Season, and a Happy New Year from all of us here at SPC!
Please Help Us to Help the Ponds
Please use this form or the enclosed envelope to make a year-end donation... and please ask your friends and neighbors to become members, too.

I want to support Salt Ponds Coalition with a tax-deductible year-end donation of:

☐ $25   ☐ $50   ☐ $100   ☐ $250   ☐ $500   ☐ $1000   ☐ Other $_____

Name(s)__________________________________________________________

Address__________________________________________________________

City_________________________________________ State_____________________

Zip______________________ Phone______________________________

Email_________________________________________

Please make check payable to Salt Ponds Coalition, or donate online at www.saltpondscoalition.org.
We gratefully accept gifts of stock—contact us for details at saltpondscoalition@gmail.com or 401-322-3068.
Memberships run January 1 - December 31; 2015 renewal notices will be mailed after the New Year.

Abby Aukerman Scholarship Fund
Please help fund this worthwhile scholarship, which helps support a deserving undergraduate student in marine studies at URI. If you would like to make a contribution to the scholarship fund, please use the form above and fill in the amount of your gift at left.

$_________ Donation to the Aukerman Scholarship Fund