Salt Ponds Coalition

The Tidal Page

News of the Rhode Island Salt Ponds

www.saltpondscoalition.org Official Watershed Council for the Salt Ponds Spring 2009

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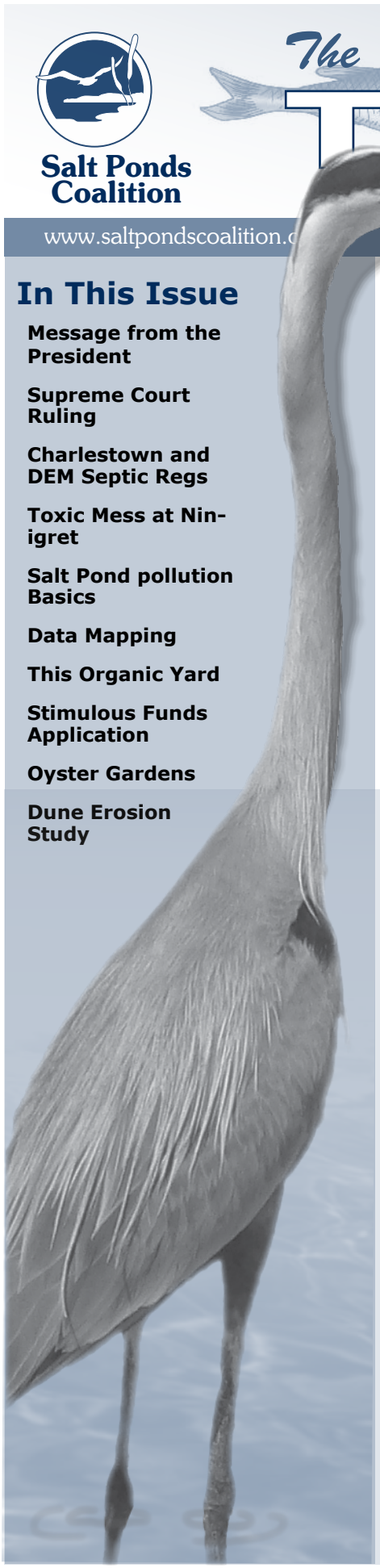

U.S. Supreme Court Rules in Favor of State and Town in Indian Trust Case

Not so long ago it seemed a long shot that the US Supreme Court would even hear the case between the Narragansett Tribe and the State of Rhode Island/Town of Charlestown. But at the urging of twenty-one States Attorneys General, they took on the case, known as Carcieri vs. Kempthorne, and then Carcieri vs. Salazar (after Ken Salazar became Secretary of the Interior).

On February 24th, the US Supreme Court ruled in favor of Rhode Island and Charlestown and thus, for now anyway, blocked the possibility of a Narragansett casino in Rhode Island.

The State's position, which was argued by Theodore Olson, was that the Narragansett Tribe was not eligible to take land into federal trust because they were not a federally recognized tribe when the Indian Reorganization Act of 1934 was signed. That law defined the word Indian as "members of any recognized tribe now under Federal jurisdiction." In 1934 the Narragansett were under state jurisdiction. The attorney for the tribe argued that the word "now"

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Doubts on New Septic Regulations Fuel Challenges to Denitrifying Systems

On January 1, 2008, new on-site wastewater regulations went into effect to regulate systems within the salt ponds watershed. We wrote about these regulations in some detail in the spring 2008 issue, but to quickly review, they require the use of advanced treatment systems for repair and replacement situations, and lay out a plan to eventually replace all existing systems in the watershed.

The regulations include trigger points that require replacement of the existing system with a new denitrifying (de-nite) system. These trigger points include replacement of a cesspool, failure of septic leach fields, addition of a bedroom and certain other renovations.

Recently, two governing boards within the town of Charlestown have voiced strong opposition to the regulations. The Charlestown Wastewater Commission and the Charlestown Town Council believe the requirement to install de-nite systems will be too expensive and slow to produce results, and with the economy and home prices in flux, and the credit markets locked up, they maintain that the $30,000 to $35,000 price tag on these systems will cause financial ruin to many residents.

With that in mind, they recently modified the town's cesspool replacement ordinance to allow more time for town residents to replace existing cesspools. "The concern is that two things have dramatically changed since our cesspool ordinance was passed", says Pete Ogle of the wastewater commission. "The new DEM rules require a system that can be much more expensive than a conventional system, and the economy has gone bad". With the extension on the ordinance, the town hopes to give residents more breathing room to work out a solution.

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Message From Our President

Dear Members,

Spring is now upon us and we are ramping up for an incredibly busy season. This year will be the twenty-fourth consecutive year of water quality monitoring of the salt ponds. Dr. Ted Callender, Jack Frost and Sarah Lim will be coordinating the program. Our sampling plus that done in cooperation with Save The Bay on the Pawcatuck River, covers forty stations.

The Salt Ponds Coalition will continue to work with our partners in a second quahaug planting operation to be done in May. We are currently working with The Nature Conservancy, Save the Bay and the Coastal Resources Management Council on a proposal for a NOAA grant to double the amount of shellfish to be planted. If we receive this grant, our shellfish project in May will be expanded to five actual transplants. We will need lots of volunteers to help.

This year has been an incredible growth year for us both in terms of programs and support. I would like to thank the Lattner Foundation, Rhode Island Foundation, NOAA, Atlantic Philanthropy, Towns of Narragansett, Charlestown & South Kingstown, State of R.I., The Nature Conservancy, Save the Bay, Rhode Island Rivers Council, The Wood – Pawcatuck Watershed Association and our generous donors for their financial support. Special thanks to Linda Green and Elizabeth Herron at U.R.I. Watershed Watch for their support with our water testing analysis. We also wish to thank Rhode Island Statewide Coalition and The Weekapaug Foundation for their continued support.

You will see in this edition that we continue to spread the word about water quality issues that threaten the ponds. Removal of excessive nutrients from salt ponds waters is a major focus, which requires cooperation of the towns and their citizens.

We look forward to several outdoor activities including two educational kayak trips, a pontoon boat excursion/fundraiser to help with the acquisition costs of Bill's Island, our annual wine tasting event, seaside safaris and the "social event of the season" the pizza party at the Hill's. Keep abreast of the times and dates posted on our website www.saltpondscoalition.org .

Thank you for your support and we look forward to seeing you at our events

Art Ganz

PS. We recently received a letter from URI informing us that due to losses in the endowment, the Abby Aukerman scholarship will not award a grant in the coming year. The Aukerman scholarship awards funds to an underclassman in marine-related studies at URI. For 2008, the scholarship awarded $1,032 to a junior in marine biology. If you are able, please help us rebuild the endowmentl by sending a donation using the form on the outside cover of this newsletter.

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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Toxic Mess at Historic Fort Ninigret

Pam Lyons, a volunteer with the Charlestown Historical Society, has spent two years trying to get the Rhode Island Department of Environmental Management to clean up the lead paint at historic Fort Ninigret - a property owned by RI Parks (a division of DEM). She has made numerous calls to DEM officials and has been given the run-around by most. She was even told to fill out a thirty-page grant proposal and to get quotes on doing the work. She dutifully did both, but the application was turned down.

A section of the historic iron fence with badly peeling lead paint. The fence surrounds the old site and is over 800 feet long

Pam came to see us recently and asked if we could help find a solution. We visited the site and indeed found a horrible environmental situation just yards from the pond and in a state-owned park no less, where families visit and kids play. The old fort site is surrounded by 800+ feet of iron fence that was installed in 1883, when the state took possession of the land from the Narragansett Tribe. Pam had the badly peeling paint on the fence tested and it is indeed lead paint. Kids climb on the fence rails, and below the fence, all around its parameter, chips of lead paint lay in the grass like confetti.

This mess needs to be cleaned up, and our view is that the state owns it and should be responsible for maintaining it and making sure it is safe for visitors, safe for the neighborhood and safe for the environment. If Fort Ninigret were privately owned, the owners would be fined & required to restore by DEM.

Our plan is to have conversations with the park managers and officials at DEM to see if we can get action. If that doesn't work we will escalate to higher political offices and from there, if necessary, publicize the problem through the environmental community and look for partners who can help bring about action. If all else fails, SPC will help organize legal action to force the state to clean up a dangerous situation.

Make it an outing

Fort Ninigret is a neat site to visit - as long as you avoid the lead. According to Pam, it is one of the oldest sites in New England and was a trading post dating back to the 1500s. Dutch and Portuguese ships sailed into the pond, which in those times had open access to the sea and many significant artifacts have been recovered there over the years. There is not a lot to see now, but history buffs will have fun stopping by and imagining the centuries of activity that took place on this very site.

The site is just west of Cross Mills in Charlestown, off of Route 1A at the end of Fort Ninigret Road.

Court *Continued from front page*

meant whenever an application came along. The state's position was that "now" was as of when the law was written (1934). In the end, the high court agreed with the state.

The Narragansett have long maintained that their longing for federal trust status is so that they can enjoy the fulfillment of self determination. Many outside the tribe feared that federal trust status would remove the land from state jurisdiction and pave the way for the tribe to build a casino. The tribe denies that allegation, but past efforts and statements by Narragansett officials continue to raise many doubts.

The case was seen as an important precedent setter and so it attracted attention form quite a number of states who wrote amicus (or friend of the court) briefs in support of Rhode Island. The biggest fear was that a win for the Narragansett, with land they purchased fairly recently, would set the stage for tribes all across the country to file for federal trust and then take whatever land they purchase into trust and out of state jurisdiction and taxation.

So is that the end of it? Not likely. The Narragansett tribe is now on a mission to have the law amended. SPC hopes that doesn't happen for fear that a local casino would be a severe blow to clean water and the salt ponds.

Doubts on Regs

Continued from front page

These policy makers are looking for alternatives to address water quality issues with less strain to local residents. They seem to accept the need for de-nite systems in close proximity to the ponds and in high-density areas where nitrates are a concern for drinking water as well as salt pond health, but feel that in many cases the systems are overkill and that the money could be better spent.

There has been quite a bit of confusion around this whole issue, so starting on page four, we have an article looking at basic unbiased facts relating to this issue. SPC will strive to help keep good science front and center in this debate.

The Basics on Pollution in the Salt Ponds

Mark Bullinger

There are two main types of pollution in the salt ponds – 1) bacteria, which can close shellfish beds and beaches, and 2) nitrates, which fuel algae growth and create unhealthy ecosystems. These two issues are often confused, so please pay close attention to the following descriptions.

Bacteria. Bacteria do not generally damage the ecosystem, but can make people sick when they eat tainted seafood, or swim in contaminated water. They are also a marker to identify the possible presence of other pathogens that come from the same fecal sources. Cesspools do not do an adequate job of treating bacteria. Functioning traditional septic systems (often called ISDS for individual sewage disposal systems) are effective at treating bacteria. High bacteria counts are why shellfish beds and/or beaches are closed. Bacteria in the ponds come from human wastewater and domestic and wild animal waste. The majority of bacteria appear to be conveyed to the ponds via stormwater, although ground water is significant, too, particularly during wet weather.

Nutrients. Excessive nutrients can cause great harm to the ponds, and if left unchecked can effectively kill a pond. Nitrates in particular promote algae growth in salt water. Algae can be thick floating mats, fuzzy growth on aquatic plants and rocks, or suspended in the water creating a turbid green hue.

As the short-lived algae dies, oxygen is depleted from the water during the process of decomposition. The resulting low-oxygen conditions can kill fish and shellfish, as well as critical habitat vegetation such as eelgrass, and can fundamentally alter the makeup of bottom sediments. Waters that were previously vibrant can become a barren shadow of their former state. This process is called eutrophication.

Nitrogen enters the ponds through groundwater and surface water. In Green Hill and eastern Ninigret Ponds, groundwater sources represent approximately 75% of the total load to the ponds, according to the peer-reviewed watershed management plan recently completed by the Horsley Witten Group and funded by the U.S. EPA. According to the same study, septics and cesspools within the watershed are the greatest contributor of nitrogen to groundwater (approximately 74% of the load provided through groundwater and 60% of the total load to Green Hill Pond).

It is important to note that conventional septic systems adequately treat bacteria, but do little to treat nitrates. The denitrifying septic systems (also known as OWTS for on-site wastewater treatment systems) now required by DEM in many areas, are intended to reduce nitrates. Nitrates in ground water do not break down quickly and can travel miles. There are no hard and fast rules governing how ground water moves towards the ponds. The glacial till is varied - in some areas groundwater moves quickly and in some areas it moves very slowly. In some areas it remains close to the surface and in other areas it drops deeper into the ground. The United States Geologic Survey has done some work on modeling groundwater movements in this area, but the data remain sketchy. Claims that groundwater drops a certain number of inches per yard traveled and therefore water originating beyond a certain distance from the ponds passes underneath the ponds, are totally unsubstantiated.

Basic information to help understand the problem and potential solutions

Current Status. **Green Hill Pond:** Several studies generally agree that Green Hill Pond requires a 60% + reduction in nitrates to arrive at good, sustainable water quality, in which the marine ecosystems function well and water remains relatively clear. Additionally, Green Hill Pond has been over the bacteria limits since the early 90s and is closed to shellfishing. Ground water from local high-density neighborhoods contributes to the problems and two brooks – Teal Brook and Factory Pond Brook collect surface water from additional neighborhoods and streets, and feed it into the pond. These two brooks consistently test very high for bacteria. Compounding the problem, Green Hill Pond is connected to the ocean by a shoaled up narrow passage under a bridge, which is fed off of a constricted corner of Ninigret Pond - an area that has its own pollution problems.

Ninigret Pond: Nitrates are less of a problem in Ninigret as a whole, but it can't afford to get worse. Bacteria are a problem in the eastern pond, which is adjacent to many older neighborhoods. The Charlestown breachway, which feeds Ninigret Pond, was partially dredged in recent years, but two large storms quickly brought much of the sand back, which again has restricted the rate of water turnover.

Quonnie Pond: is in relatively good shape, although the western end of the pond away from the breachway gets murky in the summer. The breachway is heavily silted and sand is extending far across the pond.

Winnapaug Pond: Winnapaug Pond has lost most of its habitat value. It is heavily silted and a new stormwater pumping station, which empties into the western end of the pond, threatens to increase the problem as storm water from dense neighborhoods is injected into the pond.

Point Judith Pond: Point Judith Pond

suffers bacteria and nutrient contamination in its northern end and back bays. Adding sewer service to high density areas would be very beneficial.

What Can Be Done? Replace cesspools and under-performing septic systems. Replacing cesspools and under-performing septics in the watershed area is a good place to start. Cesspools are simply way past their useful lifespan and represent a public health hazard - it is time for them to go and the sooner the better. Replacing these systems with conventional septic systems would help with bacteria, but not nutrients. Replacing them with de-nite systems would help with both.

Manage storm water flows. Managing storm water is important for reducing bacteria and nutrients. Whether coming off town streets or private yards, surface water should be prevented from flowing directly into the ponds or streams that feed the ponds. Diverting water into constructed wetlands, where it is filtered through a combination of aggregate and vegetation before it flows down to the ponds, can treat larger sources of storm water such as town roads. In private yards, vegetated buffers, rain gardens, groundwater recharge basins, and vegetated swales help control and treat surface water.

Reduce the use of fertilizer and yard chemicals: The compounds that help make grass green also make algae grow, and herbicides and pesticides can be detrimental to beneficial aquatic plants and some shellfish. Good storm water management techniques can help reduce the impact of these chemicals, but it would be much better if fertilizers and lawn chemicals were not used in areas close to the ponds or where storm water runs into pond tributaries. Often times applications of lime is all that's needed to have decent grass.

Managing animals. Controlling domestic and wild animals around the ponds is important, too. Dogs produce a lot of waste and so do birds such as geese. Picking up dog waste and disposing of it in the trash is one way to help reduce nutrient and bacteria levels in storm water. Creating conditions that discourage geese from congregating is also important. Geese like open grassy areas and planting low native shrubs and vegetated borders on yards that reach to the ponds can make conditions much less appealing.

Improve flushing of the ponds. All of the tidal ponds are suffering from siltation in their breachways. This siltation reduces the exchange of water with the ocean and exacerbates the problems with both nutrient and bacteria pollution. Dredging the breachways and then maintaining them over time can improve circulation in the ponds. The challenge here is that the breachways tend to fill in again – sometimes quite quickly if there is a big storm. Green Hill Pond might benefit from three or four seasonal breachings per year, in which a temporary channel is opened to let the pond drain and refill. This practice is employed on the cape and islands and from time to time by the US Fish and Wildlife service on Trustom and Card Ponds. There is concern about the legality of doing this and some environmental/habitat advocates oppose the idea. Some people have even raised the idea of installing solar or wind powered circulator pumps in Green Hill Pond that would pump water in or out of the ocean at the end of the pond away from the inlet, while the existing channel ebbs and flows.

Install municipal sewers. Town sewer service could be the best solution in some areas such as Great Island and Harbor Island in Narragansett. These two locations have a high density of housing and are in relatively close proximity to existing sewer lines. The appeal of this approach is it takes the effluent away from the ponds for treatment in a professionally monitored plant. Sewers would probably be too expensive in lower density areas, but there are conceptual designs for neighborhood – sized systems around Green Hill Pond, where effluent from several blocks close to the pond could be treated in common systems a bit further away. Many people have traditionally opposed sewers, fearing they would open the pond-side areas to new construction. The sad fact is DEM has recently been approving plans for previously "unbuildable" lots based on plans using new de-nite systems or even composting toilets. The practice of relying on septic approval to regulate building density is going away and zoning regulations will have to be revised if density is to be contained.

Wood chip trenches. A simple trench filled with wood chips has proven to be very effective at treating nutrients in groundwater. The chips play host to beneficial bacteria that consume nitrogen. As the water filters through the chips and bacteria, the nutrients are taken up. These trenches are relatively inexpensive to install provided you don't find boulders (which are common in this area) and you have a clear right of way. The chips need to be replenished every five years or so. One of the unique benefits of the trenches is they start to reduce nitrates very quickly, since they are installed at the end of the water's journey to the pond. Some of the issues that complicate the trenches include boulders, property lines, trees and other obstacles, as well as unknowns about groundwater depth. The trenches are only effective at treating water that passes through them. Water that passes under is not treated at all.

Oysters. Oysters are natural filters and one adult oyster can remove nutrients from up to fifty gallons of water per day. For a demo of oysters in action, check out the short video at http://www.youtube.

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com/watch?v=1Zm-yMpHsaQ. The ponds used to be full of them, but oyster disease wiped out most of the native stock. Researchers have recently developed hybrid strains, which are disease-resistant and could be re-introduced to the ponds. There is limited data on how well these creatures would do long-term in the wild however, Green Hill Pond retained oysters longer than the other ponds, suggesting it is good habitat for them. A large population of introduced hybrid oysters in Green Hill Pond could go a long way towards cleaning up nutrient pollution. Unfortunately, current RI Dept. of Health regulations will not allow transfer of shellfish into areas closed to shellfishing. The two ways to advance this possible solution would be to 1) work to have the law changed, or 2) make a major effort to clean up the bacteria problem, so the shellfishing moratorium could be lifted. This second point would have the added benefit that you could then eat the oysters, too!

Harvesting of Macro Algae. One member of the Charlestown wastewater commission is a supporter of harvesting macro algae in June and July. The theory is the algae takes up a great volume of nutrients and by harvesting various forms of algae at the peak of algae growth and removing them from the ponds, you effectively reduce nutrient levels. You also reduce hypoxic (starvation of dissolved oxygen) threats because decomposing algae is a major cause of oxygen depletion. SPC knows very little about the merits of this technique.

DEM Rule 39.

On January 1, 2008, DEM implemented rule 39, which requires residents within the salt ponds critical resource area to install a de-nite system when replacing a cesspool or septic system. The rule lays out a number of trigger points that require the installation of these new systems.

Cesspools near water resources will have to be replaced by 2013 under state law, and sooner in some cases under local ordinance. Cesspools being replaced in the Critical Resource Area (CRA) will need to be replaced with a de-nite system.

Residents will not be forced to replace a functioning septic system unless they undertake certain types of alterations to their house. For systems installed with state approval on or after April 9, 1968, the existing system is suitable and no application to the DEM is necessary for any building construction, renovation or change in use that does not result in an increase in the number of bedrooms in a residential structure beyond the number in the original state approval. However, an increase in wastewater flow to levels greater than the approved design flow, or the encroachment of the building footprint on required setbacks from the existing system, could result in the need to install a new de-nite. If your system was installed before April 9, 1968, or did not have state approval, modest construction on your home could trigger the need to file for DEM review of your system. Additionally, failure in the septic leach fields would likely result in the requirement that the old system be removed and a new de-nite system be installed.

DEM's philosophy is to usher in a new generation of treatment systems that will eventually replace current traditional septic systems. It views the rule as a proactive long-range program that will deliver results twenty plus years down the road, and will help prevent nutrient problems from getting worse. DEM believes that treating nutrients at the source is more effective than trying to treat them at the end of the pipe – both for groundwater and surface water borne contaminants.

DEM does not view de-nite systems as the sole solution to the problem, but as a piece of the plan. Estimates in various watershed studies suggest a 60% plus reduction in nutrients in Green Hill Pond is necessary to achieve and maintain healthy status. With all cesspools and conventional septic systems in the CRA converted to de-nites, an estimated 27% reduction is forecasted. That would not be a full fix, but it would be a big piece of the pie.

There is a growing concern within the Charlestown Town Council and Wastewater Commission that the de-nite rule is unjust, unworkable, and overly expensive, and won't produce results. They also feel that with the economic crash and a decline in home equity, many families are not able to afford the added expense and would be ruined should they be forced to install a de-nite system. Their belief is that for the amount of money that would be spent, there must be more effective and faster-acting ways to achieve results. They are quick to point out that it will take decades to update all the systems and then years more for the polluted water in the pipeline to work through the ground. By then, they say, the ponds will be dead. They do not have any suggestions at this time on where large amounts of public funding would come from to replace the gradual private investment of homeowners installing de-nites.

As a result of Rule 39 and the economic conditions we face, Charlestown just amended its cesspool replacement act to allow people more time to replace cesspools. Their hope is Rule 39 will be overturned and people will be able to replace cesspools with regular septic systems. In the meantime, cesspool phase out in Charlestown has been delayed.

The economic burden of Rule 39 to homeowners is significant, although often overstated. It is common to hear opponents of the de-nite systems compare the cost of a traditional septic and a de-nite at $10,000 and $35,000 respectively. Reality is probably closer to $20,000 for a conventional system and $30,000 - $35,000 for a de-nite. That is still a $10 ,000 - $15,000 difference, but not the $25,000 that is often implied. It is also common to hear opponents estimate the full cost of the Rule 39 initiative by mul-

tiplying the entire cost of a de-nite system by the number of systems eventually to be installed. This produces a skewed number, because most systems replaced by de-nites would have to be replaced by a new conventional system anyway. Therefore, the more accurate way to calculate the expense is by multiplying the cost difference between the two types of systems by the number of units.

Regardless, it's still a lot of money and with incomes and home equity down, some percentage of the population would be hard-pressed to comply with the rule.

SPC Comments

1. Cesspools near the salt ponds are a disaster and at this late stage in their lifetime are undoubtedly failing regularly. Moving quickly to get rid of cesspools within 200 feet of the ponds is essential.
2. Cesspools further inland are likely near inland waters, which have their own important roles in Charlestown ecosystems. Some of these wetlands flow into creeks and then into the salt ponds. Cesspools have been obsolete for forty years and they should all be replaced sooner rather than later.
3. Use of fertilizer and lawn chemicals should be restricted in the coastal communities.
4. Green Hill Pond should be filled with millions of oysters.
5. Storm water management techniques, such as those suggested in the Horsley Witten report, should be utilized to reduce and treat surface water around Green Hill Pond. This would help reduce both bacteria and nutrients. One top priority should be treatment of stormwater running into Factory and Teal Brooks, since they are both clearly major contributors to contamination in Green Hill Pond.
6. Efforts should be made to discourage geese from congregating around the ponds. Vegetated buffers along the shoreline planted with low shrubs, such as blueberry, work well.
7. Wastewater systems in the vicinity of Green Hill Pond and eastern Ninigret Pond should be vigorously inspected and maintained to control the bacteria problem.
8. Southern Rhode Island should have its own dredging rig that regularly maintains the breachways within the region
9. SPC feels de-nite systems are an important tool to control nutrient pollution in areas where ground water has a profound impact on the ponds.
10. Note: The Critical Resource Area delineation traces the ridge line from which surface water drains towards the salt ponds. In some areas that line is quite far from the ponds and it is unknown to us whether treating water at those locations will benefit the ponds. DEM chose this line in an attempt to define a zone boundary that is not completely arbitrary.
11. SPC is concerned about the need for maintenance with the de-nite systems, the fact that many houses near the ponds are seasonal and/or rentals, and the risk that common household cleaners might diminish the systems effectiveness
12. Small regional sewer systems offer the benefit of directing sewage to a facility that is professionally monitored and maintained.
13. The specification of de-nite systems has recently resulted in the approval by DEM of several building proposals on very small pond-side lots that previously had been unbuildable. This is a troubling development, which carries many of the same risks of increased development that go with sewer systems.

Salt Ponds Coalition is ready and eager to provide non-biased information regarding pollution in the ponds and to help make contact with people and organizations who can offer insight to the issues at hand. Please feel free to call us with questions or comments at 401-322-3068.

Lattner Grant Funds Joint Data Mapping Project

SPC will be working this coming year with the Wood Pawcatuck Watershed Association (WPWA) and Save the Bay to develop an interactive map of southern Rhode Island waters, including all of the salt ponds, Little Narragansett Bay, and the whole Wood Pawcatuck river system. Water quality testing stations will be marked by a symbol on the map, which users will be able to click in order to see water quality testing data.

The project will be funded by a grant from the Forrest and Francis Lattner Foundation, which was applied for by Chris Fox, executive director of WPWA.

Elise Torello, board member at SPC and Master's candidate in computer science will process data from all three groups and create the map. Elise has been busy working on logistics of the project and will get to work in earnest now that she has defended her thesis.

Elise Torello

THIS ORGANIC YARD

Susan Letendre - Southern Rhode Island Conservation District

(First published in Stormwater Currents by the Town of Narragansett.)

You can help protect the health of your family and the environment, and still have a lovely lawn, by going organic. It's easier than most people think. This article provides easy steps, and resources for exploring further.

Soil is not simply a plant medium but a living, breathing organism. Beneath our feet, this ecosystem converts complex organic compounds into plant food and improves the structure and health of the soil itself. Healthy soil means healthy plants, less susceptibility to disease and pests, and less maintenance for you!

When the Town of Narragansett decided to drastically reduce its use of chemicals, their lawns and playing fields were already established. its organic inputs and practices have increased the health and durability of both lawns and playing fields. The Parks & Recreation Department uses very few chemical inputs: fertilizer only in spot application on areas that get hard, constant wear, and virtually no herbicides or insecticides.

Mycorrhizal fungi thrive in organically-fed soil. These fungi have a heroic capacity to turn nutrients into plant food. Organic treatments increase soil's ability to hold water and air, so roots can drink heartily yet not drown. Organic nutrients leach from soil more slowly than synthetics, so are better at protecting our waterways.

Basic Practices:

Get your soil tested. It's easy and inexpensive. Find out how at: http://www.uri.edu/ce/factsheets/sheets/soiltest.html. The results come with recommendations for soil amendments to balance nutrients and pH (acidity level).

Put those grass clippings to work. The best organic fertilizer for grass is, you guessed it, grass! Cut off only 1/3rd of the blade at a time, don't mow when it's wet, and you can leave the clippings on the lawn even without a mulching lawn mower. As with any lawn input, keep it on the grass, and out of storm drains and waterways.

Mow high. Barry Fontaine, Director of Parks & Recreation, reports that they mow grass to 2.5 inches, but increase to 3 to 3.5 inches during dry weather or water bans. Longer blades shade themselves so less moisture evaporates, and they need less water. Grass tends to grow deeper roots if the blades are taller, which means that plants can reach down for water when the top soil layers are dry.

Reduce thatch. If your thatch is over 1" thick, NOFA (Northeast Organic Farming Association) suggests mechanically de-thatching using a vertical slicing machine, which can be rented inexpensively. Cover the lawn twice, with the second pass at right angles to the first, to avoid missed areas. More NOFA tips are at: http://www.organiclandcare.net/files/NOFA%20Standards.pdf.

Barry Fontaine shares a successful technique they have used for reducing thatch and increasing soil health: night crawlers. "The use of the night crawlers has been an eye-opener for me," he says, "allowing us to free up staff time that would have been used for mechanically aerating and de-thatching." Barry's crew puts down night crawlers in the evening. The worms aerate and fertilize as they process soil through their bodies. After a rain, birds come in to feast on the worms that have come to the surface. The birds' pecking further aerates the soil, reduces thatch, and helps control pests in the soil.

Water smart. Deep but infrequent watering encourages roots to penetrate more deeply. Water in the mornings, to reduce evaporation. Watering in the evening encourages fungal disease that you then have to control. You'll only need an inch of any kind of water per week on an established lawn.

Tolerate diversity - as the Europeans do. If it's pretty and blends in, leave it. Sometimes a patch of "wildings" adds interest. The author left a patch of bird-seeded sedum that grew into a beautiful chartreuse swatch, perfectly framing a perennial border. Free landscaping!

If you're not sold on the European approach mow high to shade out weeds and weed seeds. Corn gluten meal (see below) controls weeds before they emerge, and vinegar can be used directly after they do. Find more info on vinegar's effectiveness at: http://www.ars.usda.gov/is/pr/2002/020515.htm. The Master Gardeners are a great resource for information on whatever is living in your yard, wanted or not (http://www.urimga.org/, or 1-800-448-1011). Make a game of weeding with your kids by helping them identify their finds and their origin, whether local or distant lands. The University of Illinois has a neat interactive weed identifier: http://weedid.aces.uiuc.edu/ , as does Michigan State University: http://www.msuturfweeds.net/. The only danger is that your kids begin to like the weeds they learn so much about. After all, a "weed" is only a plant in the wrong place!

Keep pests within limits. A healthy, lush lawn with lots of organic activity beneath it tends to keep pests in balance. As the University of New Hampshire's website states, "pest management programs that rely [mainly] on pesticides…are unstable and susceptible to any amount of pest pressure." Integrated Pest Management (IPM), on the other hand, uses understanding of the life cycles of pests and their interaction with the environment to craft a more effective and environmentally sensitive approach.

IPM uses pesticides, in a targeted way, only when other approaches fail.

The University of California offers useful IPM information at: http://www.ipm.ucdavis.edu/PMG/menu.homegarden.html. Or, take free, online short-courses such as "Pest Identification-Weeds" and "Turfgrass IPM" from the University of Connecticut. Current offerings are at: http://www.hort.uconn.edu/ipm/.

Control grubs. Grubs are usually the white crescent-shaped larval stage of Japanese and some other kinds of beetles. Healthy grass can tolerate up to 10 grubs beneath each square inch. But. if your grub population is out of control, big, irregular patches of your lawn can die, or feel spongy underfoot. Fescues tend to have less of these pesky larvae than Kentucky bluegrass or ryegrass. As with all pests, proper identification is essential before you treat. Master Gardeners can help you with this. An effective treatment is milky disease, also called milky spore. Apply it in the spring around forsythia time, again in the fall, and then once the following spring. As each infected grub dies, the beneficial disease is released into the soil. Though it can take 3 to 5 years in our cool climate for complete control, this treatment is reported to last at least a decade, and affects only grubs.

If you fertilize, use organics. (approximate %s of nitrogen, phosphorus, potassium)

Corn gluten meal (10-0-0): This provides slow release nitrogen to continually feed your lawn. CGM also contains natural substances that inhibit a seed's tiny feeder roots so they can't get established. It only inhibits sprouting seeds, so use the meal on established plants, such as your lawn. This natural herbicide is harmless to beneficial insects, soil organisms, pond/ stream life, pets, and your children.

Bone meal (1-11-0): Its phosphorus aids cell and seed formation, cell division, and root growth.

Fish emulsion (5-1-1): A partially decomposed blend of finely pulverized fish with a high nitrogen content and several trace elements. It may have a strong odor for a day or two. Deodorized brands are now on the market.

Seaweed Extracts (9-2-7): An especially good source of trace elements. Less odiferous than fish emulsion, but more expensive.

Manures: Nutrient concentrations vary widely with the source animal. Although concentrations are lower than in manufactured fertilizers, manures improve soil structure and increase its water holding capacity. Use composted manure only. Blend with soil for initial preparation, as it adds organic matter. For topdressing, spread it around with a shovel using no more than1 cubic yard for 1,000 square feet of lawn, (_" to 1/3" deep). Sweep it off the grass blades and down into the turf with a push broom. Water lightly (heavy watering can sheet it right off your lawn. Not good.)

Invite your lawn to tea. Fill a large barrel 2/3rds full of rainwater, shovel in a few scoops of composted manure, and let it sit, stirring a couple of times, for a week or more. Dunk a watering can in and use the "tea" on the lawn. (If you use a sprayer, use a filter so it doesn't clog.) Add a new scoop of manure every month or so, and work the dregs into your garden in the fall. Either solid or liquefied manure will increase plant growth, provide valuable nutrients and beneficial organisms, and help suppress diseases.

Your own compost: Your yard will literally eat it up, and your garbage will turn from waste to resource. RI Resource Recovery Corporation sells bins for $40 each. They're inexpensive, unobtrusive, and the right size for a household. Email David Bordieri David@rirrc.org or call 942-1430 x256 for information on how to get one. And check the Master Gardeners website for fun courses on composting.

Vermicompost: The Worm Ladies of Charlestown (www.angoraandworms.com) can help you set up a worm composting bin. A small bin sits right in your kitchen, and does not smell a bit while those worms digest your kitchen scraps. The resulting worm castings will be small in amount, but huge in nutrient value for plants.

*Organic compos*t: You can buy organic compost by the yard, and even have it delivered. Find sources by web-searching for: organic compost RI.

Fertilize only the lawn. Any kind of fertilizer can have adverse effects on waterways. RI Rivers Council says, "Even a modest increase in phosphorous can trigger accelerated plant growth, algal blooms, low dissolved oxygen, and create unlivable conditions for certain fish, invertebrates, and other creatures." So, please, sweep it up and put it back on the lawn. Also, more is not better when it comes to fertilizers or other inputs. Use only the recommended amount, at needed times.

What about cost? Organic lawn care is generally less expensive than conventional in the long run. As the soil gets healthier, it will feed your grass itself. Healthy soil and healthy plants tend to have less pests, so you'll need less herbicide and insecticide. Cost in time can also be reduced. Compost top-dressing needs to be done very infrequently, and grass clippings are not only free, they're easier to leave than to rake up. Organic inputs can often be purchased at farm/ feed stores in bulk, for a lesser price.

Going organic is getting to know and care for the "nature" of your lawn, which can be a pleasurable adventure. As your yard's health increases, it will need less "healthcare", from you and from the store. Enjoy!

Will Stimulous Funds be at Work on the Ponds?

Salt Ponds Coalition has partnered in an application for funds under the American Recovery and Reinvestment Act, to expand the restoration work already underway in Quonnie and Ninigret Ponds. The application was spearheaded by TNC and will go through CRMC and NOAA.

The goal of the proposal is to expand the shellfish restoration project to 2,300,000 hard clams or aprox. five times the size of the original project. A separate component of the proposal calls for 4,000,000 seed oysters split between the two ponds. The environmental portion of the plan is patterned after a Nature Conservancy project in the Great South Bay on Long Island, where ongoing clam transplants raised the breeding stock to a critical mass. This past year massive reproductive success was detected. A similar outcome in our ponds would result in cleaner water and more plentiful clams, a situation that would benefit commercial diggers as well as recreational clammers.

In the short term, the project would provide work for a number of Rhode Islanders to harvest the stock, transport it, and to monitor the project throughout the season.

In addition to consuming nutrients in the water column, clams, oysters and other filter feeders make the water clearer, which in turn greatly benefits desirable aquatic vegetation - namely eelgrass. With proper levels of eelgrass, the ponds function as a nursery for many varieties of important forage fish as well as table fair such as flounder and blackfish.

The Weekapaug Foundation for Conservation has also applied for funds to dredge the Quonnie breachway, which is badly shoaled with ocean sand. The foundation has invested large sums on their own to advance the permitting process, and the result is a project that is close to approval, and which could be "shovel ready" soon. SPC has written a letter supporting the dredging of the ocean breachway, because we believe the fresh, cool ocean water would help improve water quality in general, and would also contribute to success with the clam and eelgrass restoration project that we have started and hope to expand.

Word is CRMC is also exploring the possibility of additional dredging in the Ninigret breachway, which was dredged recently, but quickly filled back in after two heavy storms.

The salt ponds are a critical component of the South County economy, both through recreation and wild and farmed shellfish production. Tapping federal funds to protect these gems will benefit many and create jobs in Rhode Island.

Oyster Gardens on the Ponds

Kallie Jurgens

Oyster growing is coming alive in the South County Salt Ponds, thanks to a program being administered by Roger Williams University (RWU) in its Center for Economic and Environmental Development. It is called the OGRE program, which stands for Oyster Gardening for Restoration and Enhancement. The three year old program relies on volunteer gardeners, who help with the shellfish restoration efforts.

Volunteers get an oyster float that can be tied to their dock or mooring. Each float contains between 1,000 to 1,500 young oysters. The floats provide a protected nursery site for the oysters to grow and the gardeners need only do simple procedures, such as flipping and flushing them. The oysters are then planted at protected restoration sites where they can grow and produce larvae to promote larger oyster populations.

The program is gaining traction; in 2006, 50,000 oysters were produced, by 2008, that number had jumped to 750,000.

These oysters are a hybrid variety of native (Green Hill) and disease resistant stocks developed by scientists at RWU and other cooperating laboratories. Since two oyster diseases MSX and Dermo were responsible for the demise of our native stocks, it is hoped that these hatchery reared hybrids will survive to multiply.

Oysters are spawned and set on cultch (an artificial substrate for the young oysters to cling to) in the hatchery at RWU. The volunteer gardeners care for the juvenile oysters until they are of sufficient age & size for grow-out to adulthood. Oyster from the gardeners, as well as cooperating commercial aquaculturists, are being planted into DEM designated Spawner Sanctuaries, which are closed to harvesting to protect this brood stock in Ninigret & Quonochontaug Ponds. A similar project is underway as a continuation of the "North Cape" restoration begun years ago in Point Judith Pond.

This project, and hopefully, expansion of this project is supported by a partnership of RWU, the Natural Resources Conservation Service, The Nature Conservancy, RI-DEM, Salt Ponds Coalition, Save The Bay, and the Ocean State Aquaculture Association.

Studying Changes to the Dune-Beach System: Fire Island, New York

Erika Lentz, URI Department of Geosciences and URI Coastal Institute IGERT Alum

The dynamic nature of coastal regions is appreciated by anyone who lives near the coast. Storms can have dramatic impacts on beaches and dunes in a matter of days, hours, or sometimes even minutes. Storms that never make landfall can still affect beaches when storm surge reaches the coast and carries sediment out to sea. Yet even a few days after a storm has removed large volumes of material from a beach, the system begins a gradual recovery; weeks and months later, it is difficult to remember where the greatest damage occurred. As more people migrate to the coast, human development around coastal regions makes it necessary to better understand erosion and accretion of coastal features: what regions are most vulnerable, what cycles are observable, and what areas, due to limited sediment supply, might not be expected to naturally recover to the same degree as others. Research currently being conducted on Fire Island, New York, a barrier island that lies along the heavily developed southern shore of Long Island, seeks to answer these questions.

Erika at work in the field close to the Fire Island light house, along the south facing shore of Fire Island, NY.

In many ways, the barrier systems of Rhode Island and New York are quite similar. Both coastal regions are characterized by a system of barriers and headland bluffs. Headland bluffs are glacially formed features largely composed of glacial till, sand, and gravel. Constant wave action gradually erodes headland bluffs, which in turn provide some of the source material for barriers; sediments eroded from the bluff are carried down coast to form barrier spits. As spits grow longer they may connect with other headlands to create coastal logoons and/or may eventually be breached to form barrier islands.

Unlike much of the barrier island system along the U.S. east coast that is oriented north to south, the barriers on the southern shore of Long Island and Rhode Island align in a northeast-southwest direction. On Long Island, coastal bluffs at Montauk Point feed a coastal system to the west composed of headlands, coastal lagoons, and barrier spits and islands. Both the Rhode Island and Long Island coasts share a westerly longshore transport direction, though they differ in the amount of sediment available to them: Rhode Island barriers are largely sediment-starved, whereas Long Island barriers have an abundant sediment supply available delivered from a combination of nearshore sediment and eroding material from beaches further upcoast.

As barriers and their surrounding areas have become increasingly developed, research is focusing on how barrier features change through time, and how human modifications affect the natural response and recovery of the system. Changes to the dune-beach system, the first natural line of defense in the face of storms, are an important indicator of how severely a storm might affect an area and where vulnerabilities may exist.

At Fire Island, historical aerial photography is being used to derive topography for the island, which can be compared against more modern elevation surfaces. Once generated, the historical topography will be compared with modern topography of the dunes and beaches to determine changes to the system on the order of decades to half-centuries. Modern elevation surveys are conducted using several methods. Light detection and ranging (lidar) surveys use airplanes, which fly along the coast and bounce laser pulses off the ground to calculate elevations. More accurate but cumbersome surveys are conducted using real time kinematic (RTK) GPS systems, which require the user to gather individual data points on foot or via vehicle using a roving receiver. Once data from the modern surveys are collected, they are imported in to the geographic information system (GIS) that is used to construct elevation surfaces with decimeter scale accuracy.

Modern survey results spanning storm-events, seasons, and years are studied in combination with historical topography to determine changes over a variety of timescales. As more surfaces are compared, patterns start to emerge to show areas more vulnerable to erosion through time. Several communities on Fire Island are experiencing severe erosion of their dunes and beaches. Erosion "hotspots" are determined using statistical calculations; an important component of this work will be to try to determine where hotspots exist, and whether identified hotspots are migrating or remain stationary through time.

Human modifications to the shoreline must be accounted for when studying the coast. The impact of development, such as the construction of homes, can have negative impacts on barriers. Barriers respond to sea level rise through a process called "roll-over migration"; as sea level rises, storms overwash barriers, transporting sediment from the beachfront and dunes to the back of the barrier where sediment accumulates. Permanent structures on barriers require that sediment remains in place; however, the dynamic nature of barriers undermines these structures. Moreover, permanent structures can diminish or block sediment transport, increasing erosion in the area around them.

The enhancement of natural features is one way people try to protect property in close proximity to the shore. Beach scraping, or the transport of dry sand via pick-up loader and bulldozer to the back of the beach to either enhance an existing dune or create an artificial dune, is currently allowed on Fire Island through the National Park Service. Beach replenishment, or the pumping of material dredged from nearshore locations has also been permitted on Fire Island in a number of instances. When studying changes to the dune-beach system, such alterations to the natural system must also be considered among temporal changes being researched.

A better understanding of how the system changes, either in response to natural or human induced events, helps managers, planners, property-owners, and developers more effectively make decisions regarding the coast.

Salt Ponds Coalition
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