

Low water levels at Coonamessett Pond Photo by Andy Jones

President's Message *By Cheryl Holdren*

As 2017 begins, Falmouth Water Stewards wishes to thank you for your support, commitment, and encouragement over the past year. Your membership, donations, and volunteer time are crucial. As described below, our mission to protect, preserve, and restore the quality of Falmouth's waters is ongoing, more important than ever, and expanding in scope.

Over the past year, we continued to develop the Water Watchers Program, a citizen-science initiative, to complement Pond Watch, which has collected and reported data on water quality in Falmouth for more than a decade.

The Water Watchers Program expands our monitoring to include freshwater bodies. We are working to secure funding so that volunteers in both programs can begin to collect nutrient (nitrogen and phosphorous) samples to be maintained and analyzed in a laboratory in Woods Hole.

Our goal for Water Watchers, as for Pond Watch, is to create a data set

that shows trends in the status and health of our water bodies over time.

Our Skip the Straw Campaign (StS) continues to expand as we work with Sea Education Association (SEA) to develop effective means of encouraging



The Skip the Straw girls continue their advocacy program to educate the community about plastics

people and institutions to understand the impacts of single-use plastics (SUP) pollution on our waters (and land) and to commit to reducing use of them.

This past year

Falmouth Water Stewards received funding for Skip the Straw from the Cape Cod 5 Foundation, the Cape Cod Foundation and, jointly with the Sea Education Association, from NOAA, to support our work with schools, businesses, and the public. We thank each of them for their support!

In the coming year, we will continue to work with the Town and regional authorities to be a voice for clean waters, organize and sponsor talks and other relevant events, produce our newsletter, participate in regional planning activities, and keep you in-

IN THIS ISSUE

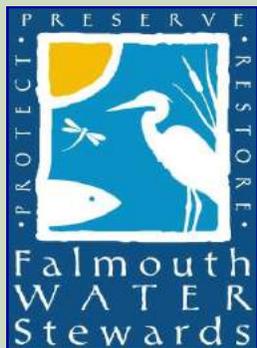
President's Message	1
Skip the Straw	2
Water Watcher Profile	3
Pond Watch Update	4
Solution for Storm Runoff	5
Recycle Plastic Film	6
2016 Drought Effects	7

formed of important news through our website and other social media sites.

Our federal government may reduce environmental funding in the coming years, but that means that states, towns, and little non-profits with big ambitions, like Falmouth Water Stewards, need to play an increasingly large role in working for a healthy planet. We hope you will join us.



Images from Cape Cod Friendly Lawns and Gardens. FWS / WBNERR publication 2016



PO BOX 156
FALMOUTH, MA 02541

info@falmouthwaters.org
www.falmouthwaters.org

Mission

Falmouth Water Stewards' mission is to educate and inspire citizens to preserve, protect, and restore Falmouth's bays, salt ponds, estuaries, and fresh waters through education, advocacy and citizen science.

Board of Directors

Cheryl Holdren, *President*
Doug Brown, *Vice-President*
Ted Schmuhl, *Treasurer*
Brenda Olson, *Secretary*
Wendi Buesseler
Martha Hauff
Andy Jones
Danie Kinkade
Sierra Pope Muñoz
Chris Neill
Laura Reckford
Deborah Siegal
Kama Thieler
S. Jeffress Williams

The FWS Newsletter is published twice a year and is available in PDF format on our website. Sign up for electronic delivery: info@falmouthwaters.org.

FWS is a 501(c)(3) organization. All dues and donations are tax deductible.

'Skip The Straw' Project Makes Strides *By Sierra Muñoz*



Three of the founding members of the Skip the Straw campaign (from left: Petra Brienza, Sadie Leveque, and Meredith Kinkade) record trash collected at the Racing Beach cleanup. Photo: S. Muñoz, FWS

On a sunny Sunday morning this fall, community members of all ages gathered on Racing Beach on Buzzards Bay, grabbed buckets and gloves, and went to work making Falmouth's waters safer and cleaner for all.

They were there for the first of several Community Beach Clean-Ups that will be taking place in Falmouth over the next two years, part of a coalition effort to reduce marine debris and improve the health of our local waterways.

Together, the group of Falmouth Water Stewards members, Sea Education Association (SEA) students and teachers, Skip the Straw students, and individuals from the local community gathered **over 60 pounds of garbage from the beach in under two hours.**

The Skip the Straw Campaign, in cooperation with the Falmouth Water Stewards, has teamed up with SEA on an exciting initiative funded by the National Oceanographic and Atmospheric Association's Marine Debris Program.

The NOAA grant will allow SEA to use its

shipboard education program to involve students in marine debris research and in a localized marine debris outreach campaign — the FWS Skip the Straw Program.

Begun by a group of concerned Falmouth middle school students, the Skip the Straw effort aims to educate people about the significant problem of plastics pollution on our beaches and oceans and encourage behavior change.

Faced with the stark and disheartening facts about the impacts of plastic pollution on marine animals and habitats (see p.4 for important facts and figures), the students turned to action and outreach for a solution.

Skip the Straw focuses on a simple way people can reduce marine plastic pollution: skipping the straw. Skipping plastic straws is a first step towards personal, commercial, and institutional reduction of our reliance on single-use plastics.

Each day, millions of plastic straws are used once for just minutes, then thrown

Cont. on page 3

Skip the Straw *cont. from p. 2*

away; many of them go into landfills and some of them make their way into our environment, polluting waterways, forests, marshes, beaches, and eventually our oceans.

The Skip the Straw Campaign has been gathering signatures on an individual pledge to 'skip the straw,' publicized through Falmouth Water Stewards, outreach at farmers markets and other events, and a feature in the Falmouth Enterprise.

The group has also been connecting with local businesses and organizations to encourage them to switch to a no plastic straws or a straw only upon request policy, and with area schools to educate students on the dangers of plastics pollution and the simple changes each person can make to mitigate the problem.



Volunteers at Racing Beach collected 66 pounds of garbage in less than 2 hours. Photo: S. Muñoz, FWS

The partnership with SEA presents a fantastic opportunity to involve college students and researchers to broaden the scope of these efforts, including limited funds for a part-time campaign coordinator to organize outreach efforts, beach clean-up gear and printed educational materials, and more.

The campaign will be hosting Community Beach Clean-Ups quarterly, publicized through the Falmouth Water Stewards website and social media,

and all are welcome to attend. If you have questions or would like to help out with any of our efforts, drop us a line at info@falmouthwaters.org.

We'll include an update on educational and community engagement efforts in the Summer newsletter – stay tuned and thank you for pledging to Skip the Straw!

Water Watcher Profile: Joyce Bock *By Kama Thieler*

The Water Watchers Program, a relatively new initiative of the Falmouth Water Stewards, engages residents to "adopt" and observe a water body in their neighborhoods. This program is another citizen science effort to complement the FWS Pond Watch program, in which volunteers monitor water quality indicators in Falmouth's salt ponds and estuaries.

Since 1980, Joyce Bock has lived at the edge of Cedar Lake in North Falmouth, where she and her family have enjoyed watching the pond in all seasons. She recently retired as a high school math teacher after teaching at Falmouth High School for 16 years.

Joyce and her family have been swimming, fishing, canoeing, kayaking, skating, skiing, and even ice boating on the pond. They have watched sunrises and reflected sunsets and full



Bob & Joyce Bock at their home in North Falmouth, overlooking Cedar Lake. Photo: Kama Thieler.

moons in every season for 36 years. They also eat their meals pondside any opportunity they get.

Joyce has been a dedicated and diligent Water Watcher since her first observation on January 1, 2016. Reflecting on her experience so far, she stated, "It will be a year in January that I started writing down my obser-

ventions of Cedar Lake. It has been interesting to formalize something I did every day anyway. It has made me even more appreciative of where I live specifically and of Falmouth and Cape Cod more generally. It has made me realize some of the changes that have happened over my 36 years of living here: more growth of water lilies and algae, fewer frogs, fewer migrating ducks. Being part of an effort to document some these changes will hopefully pay off with further efforts to maintain the quality of our ponds and lakes. They are so important to the health of our environment. I have also been made more aware of how often people use Cedar Lake for recreation, kayaking, canoeing, fishing, ice fishing. We certainly don't want to lose this."

Joyce's observations have included following the progress of a swan's nest, counting her-

Cont. on page 6

Just the Facts: Plastic Pollution in our Waterways *By Sierra Munoz*

- ◆ Every week in the United States we use several hundred million plastic straws and then after a just few minutes of use we throw them away.
- ◆ Scientists estimate that the amount of plastic garbage in the ocean will double by 2025 if we keep using and throwing it away at our current rate. Plastic does not biodegrade — at least not for many hundreds of or perhaps even a thousand years.
- ◆ Plastic straws and stirrers are consistently among the top ten items found in coastal cleanups. An estimated 90% of seabirds and 50% of sea turtles have plastic in their guts — that means they are eating plastic instead of food.
- ◆ The effects of the toxic chemicals contained in many plastics that leach out into ocean water and into the organisms that consume them are unknown but are a cause for worry.
- ◆ Straws and other plastic garbage pose serious hazards to animals, who can choke on them, consume them instead of food, and become entangled in them.



What You Can Do *By The Skip the Straw Team*

The next time you're at a restaurant or cafe and order a drink, even water, tell your server you want to skip the straw and drink directly from the cup. And then, if there's time, tell him or her *why* you want to skip the straw — to make less trash and keep our waters and our beaches clean and our landfills free of extra garbage.

It's not only straws that matter. Plastic cups, bottles, bags, lids, balloons and stirrers all are used for a very short time and then thrown away — becoming trash that goes to a landfill or makes its way to beaches, estuaries, and the ocean, where it can harm and kill marine life and pollute the waters and lands we all depend on.

Each of us can make a difference by choosing to consume less plastic, especially one-time-use plastic. [Join us in pledging to skip the straw — and carry this commitment to the next level and reduce your use of all other one-time-use plastics.](#)

Pond Watch Update *By Ted Schmuhl*

FWS initiated the Pond Watch Program in 2006 to stimulate interest in protecting estuaries and salt ponds by making information about their health available to the public. In addition to increasing public awareness, Pond Watch monitoring provides important information to the scientific community on changes in water quality over time.

For the first eight years of the Program, the sampling was done each week on a year-round basis, and a summary of the measurements was published weekly in the *Falmouth Enterprise*.

Some time ago the *Enterprise* asked us to develop a more engaging presentation and the weekly publishing was dis-



continued. Our work to develop a more varied and exciting way to present the information is still in the works. In the meantime, program data can be found on our website in the PondWatch section.

Another recent change to the program is a move to a bi-weekly winter season sampling regimen given that indicators do not tend to change rapidly in the winter.

We continue to work closely with our partners at Waquoit Bay National Estuarine Research Reserve (WBNERR), who provide a base for our sampling operations, host our turbidity analysis equipment,

Cont. on page 5

Phytoremediation: The Key to Stormwater Management *By Brenda Olson*

The field of stormwater management is all abuzz about phytoremediation – using plants to purge contaminated water and soil.

Kate Kennen, landscape architect at Offshoots, Inc., and Brian Kuchar, landscape architect and engineer at the Horsley Witten Group, recently led an APCC-sponsored stormwater workshop attended by some of our directors.

For years, Falmouth Water Stewards' "Keep It Blue" campaign has emphasized stormwater's contribution to pollution of ponds, rivers, estuaries and bays and ways to reduce it.

Stormwater contains nitrogen and phosphorus from roadways, fertilizers and pet waste, and pesticides, metals, pathogens and particulates that collect as water flows over surfaces.

Historically, communities have used catch basins and settling tanks to remove debris and sediment from stormwater before it is released into natural waters.

These are still the backbone of many projects, but adding plants can trap inorganic compounds and degrade organic molecules as they move water from their roots to their leaves and transpire nitrogen gas and clean water.

Because the first flush of stormwater runoff includes 50% of the particulates, bound with phosphorus and metals,

sediment traps are a good way to get rid of them. On small-scale projects, the sediment trap can be just a shallow basin at the entry point of the runoff.

One industrial sediment trap design uses a tank to settle out particles and a solar pump to irrigate nearby plants that remove more nitrogen. Sediment traps must be cleaned or dry particulates will remobilize.



Phytoremediation designs include specific plants for the job at hand. Many plants preferentially extract and harbor certain minerals, as we know from nutritional information. There are also hyper-accumulator plants (they accumulate up to 100X more than average) used in mining and industrial site clean-up that store arsenic, nickel or cadmium.

More diverse plantings remove more types of contaminants. When these plants are harvested and safely discarded, the pollutants are removed from the environment.

Some prairie grasses can metabolize hydrocarbons. Lead can be trapped in the root zone, a process known as phytostabilization.

Trees with deep taproots are especially effective in filtering a lot of water and releasing excess nitrogen into the air.

Root systems and the organisms that live in them, especially fungi and bacteria, sequester and degrade pollutants. Plants' roots stir the soil (allowing distribution of water and oxygen) and produce exudates that feed the organisms. These pathways are particularly useful in dealing with drugs and poisons that are difficult for plants to degrade.

Phytoremediation is already used locally. Brownfields, soils contaminated by industry, aren't all Superfund sites; small brownfields, such as former dry cleaners or gas stations, are found in business and residential neighborhoods. Typical contaminants include hydrocarbons, solvents, pesticides, heavy metals and asbestos.

You may see some phytoremediation developments along Route 6 on Cape Cod next summer. MA Department of Transportation has begun a program to upgrade stormwater cleaning on our highways, especially those which drain into impacted water bodies. Route 6 is scheduled for repaving and stormwater management improvements will be included in the project.

Pond Watch *cont. from page 4*

and maintain our YSI sampling meters. We appreciate their cooperation and support.

The biggest challenge we currently face is one of funding. Our sampling meters are more than ten years old and are operating increasingly erratically. We must replace them soon. As the replacement units cost upwards of \$2,000 each, we have a significant challenge to fund their purchase.

In addition, we would like to add routine nutrient analysis to our protocol. Scientists increasingly view the monitoring of nitrogen compounds in the winter months as essential to understanding water quality. Since we have a process and volunteer teams in place to perform year-round monitoring, this would be a natural extension and great enhancement of Pond Watch. In order to add nutrient monitoring, though, we must secure additional funding.

Water Watcher Profile: Joyce Bock *cont. from p. 3*

ring in the near-by run that feeds into the pond and documenting the many uses by people over the course of the year.

Cedar Lake is located in the Megansett area of North Falmouth, bordered by County Road, Chester Street and Bay Road. The surrounding lots are residential and also include the North Falmouth Library and Nye Park.

An active herring run connects to Rands Canal's forested



Photo by Charles Olson

buffer. This fresh water pond is home to numerous and varied waterfowl and is an ideal small pond for bird watching, kayaking, and canoeing.

We are looking for new Water Watchers!

All kinds of observations are important. You can choose to report on water level, algae blooms, wildlife, human activity, trash, stormwater or all of the above.

Watchers enter observations on a simple on-line form, accessible by a smart phone in the field, or note observations on paper and send to FWS.

We'd like to expand the program to cover additional ponds. Many of you probably already keep an eye on a water body in your neighborhood. If you do, consider joining us and contributing your observations to our online database. To learn more, contact us at watchers@falmouthwaters.org.

Beyond Plastic Bags: Recycling Plastic Film *By Brenda Olson*

Falmouth's ban on single use plastic shopping bags, effective since August 2016, seems to be working well. But have you noticed that the boxes for recycling the plastic bags are still in grocery stores? The reason is that there is still a lot of plastic film to be recycled.

Most people know not to put plastic film in their curbside recycling bins. Like most other recycling suppliers, Falmouth's contractor cannot process it; thin sheets of plastic get stuck in the machinery. Plastic film needs to be recycled in a facility designed to handle it, so it's not surprising that the collection of the material is separate, also. Falmouth Shaw's, Stop & Shop and Wal-Mart all have boxes for drop off.

Recyclable plastic film is labelled #2 (HDPE) or #4 (LDPE) plastic. #5 plastic is not included at this time. Biodegradable bags are not acceptable for recycling. The products made from the recycled plastic may not be reliable.

Common recyclable items include:

- ◆ Newspaper sleeves
- ◆ Wrapping on packs of paper towels and toilet paper
- ◆ Carrot & celery bags, bread wrappers, etc. (clean & dry)
- ◆ Covers of mailed pamphlets and magazines
- ◆ Bags that clothing and other items ordered online come in
- ◆ (Remember to cut out the paper stickers.)
- ◆ Dry Cleaning bags



Film must be clean and dry and free of paper. If you aren't sure about a plastic item, throw it in the trash. Often, bags that appear

recyclable are not marked with the recycle label. To be safe, only put labelled items in the recycling box. Urge more suppliers to add labels to their recyclable plastic film.

And best of all, reduce your use of single-use plastics!

See www.plasticfilmrecycling.org or how2recycle for more information.

Widespread Effects of Drought in 2016 *By Andrew Jones*

For those of us in Massachusetts, 2016 was an exceptionally dry year. While most people are likely aware of this, the extent of the drought is truly surprising. This was the first time since drought monitoring began that regions of the state were classified as experiencing extreme drought (D3) -- conditions that are expected to occur every 20-50 years.

Through the summer and into the fall as much as 90% of the state could be classified as experiencing extreme drought, according to the US Drought Data Portal. The drought was most severe in the eastern and central parts of the state but it also extended to the Cape. These conditions are thought to result from an extremely dry year following a series of abnormally dry years.

Currently, rainfall deficits across the state are estimated to be between 6" and 12" for 2016 alone, and when combined with the deficits of 2015, are likely to be closer to 10" to 20".

The negative ecological effects of these dry conditions were truly pervasive. In Falmouth and across the state, rivers were sluggish and stagnant. This impeded the passage of migratory fishes like juvenile American eel returning from the Sargasso Sea and juvenile river herring headed from lakes to the estuaries and coastal waters. Local ponds were also impacted. Dry conditions led to low water levels and nuisance algae blooms. This Additionally, climate projections for the region suggest that changes to global climate (the result of our increased use of

fossil fuels such as coal oil and natural gas), may lead to an increased incidence of drought in the region.

The dry conditions have also had a number of adverse effects on agriculture and recreation across the state. Regionally important crops like cranberries, which utilize large volumes of water for their harvest, and for which water availability influences the size and quality of the fruit, have seen measurable negative impacts. These

effects have been so dramatic that many agricultural entities in the state are currently eligible for federal disaster relief, and the state recently enacted a novel microloan program to help hard-hit farms.

In Falmouth, water restrictions were not enacted this year; however, voluntary water saving measures were promoted in nearby towns like Bourne and Barnstable. Given recent events, and the prospect of a future where these conditions are less predictable, now is the time to think about how we can work

to conserve and protect our valuable sources of freshwater. There are a number of things residents can do voluntarily to conserve water and to learn about the systems and organisms most vulnerable to drought conditions. For concrete suggestions on how to reduce your water footprint please see the link below and visit our website.

MassDEP <http://www.mass.gov/eea/agencies/massdep/water/watersheds/water-conservation.html>



Coonamessett River choked with aquatic vegetation at very low level of flow. Also see photo on page 1. Photo by Andy Jones

Stormwater Management at Home

Street, driveway, and roof runoff all contain contaminants. Swales — shallow trenches dug along land contours — can reduce pollutants, guide water away from buildings, efficiently save water for irrigation, and minimize erosion.

You don't need much contour to use a swale; just dig a mild slope into the trench in the direction of the runoff

and mound the soil into a berm on the downhill side.

To handle larger volumes of stormwater, use the swale to direct the runoff into a rain garden. Plant the mound or rain garden with perennials. Visit our stormwater pages on our website for a list of recommended plants and for instructions for making rain gardens.

GET INVOLVED

- Renew membership
- Monitor a water body
- Help with events
- Help with fundraising
- Help with website
- Help with Quickbooks
- Work with schools
- Help with mail-outs
- Help with oral history
- Donate

Interested? Contact us at info@falmouthwaters.org to offer your expertise or find out more about ways you can help restore and protect Falmouth's precious fresh and coastal waters.

All creatures great and small depend on healthy waters.

Keep our waters blue.

Join Falmouth Water Stewards, renew your membership, or donate today.



www.falmouthwaters.org
info@falmouthwaters.org

