



OUTER CAPE ENVIRONMENTAL AWARENESS NEWSLETTER



OCEAN 35 shares some intriguing environmental concepts: People in Maine are starting to eat invasive crabs; NYC is experimenting with old toilets to grow oysters; someone developed a thermal powered piston for controlling greenhouse ventilation and why has it taken so long to come up with edible six pack rings? You will also find breaking updates on previous articles: Bees; Hand Sanitizers and Plastic Microbeads. And we also took a closer look at the 1,000 year rainfall event in Louisiana. **OCEAN** is the environmental education publication of Safe Harbor Environmental Services. This newsletter is intended for you, our readers and you have our permission to share it wherever you feel it may be useful.

Gordon Peabody, Editor of **OCEAN**

December 2016 Issue No. 35

EDIBLE SIX-PACK RINGS

In this day and age it seems as though there is one thing you cannot live without, and that is plastic. It has become so ingrained within consumer products that there is virtually nowhere you can go without encountering this material. Going to the grocery store means multiple single use plastic bags, going out to dinner means single use plastic straws even buying a six pack of beer could mean plastic beer rings. Unfortunately, these plastic 6 pack rings often end up in the worlds oceans, where they become death promises for sea birds. Every year 8 millions tons of plastic is dumped into the ocean; which is the equivalent of five grocery bags for every foot of coastline around the globe (Parker, 2015). Many of the animals surrounding the ocean pay the price through plastic ingestion, entanglement or even death.

Luckily new technology is emerging, which will reduce the amount of plastic found in the ocean; and in turn reduce the number animal injuries and fatalities. One such innovation has emerged from a small brewing company in Delray Florida called Saltwater Brewery. They have created *biodegradable and compostable six-pack rings for beer bottles and cans*. *This product is made from barley and wheat ribbons, which are by-products from the brewing process* making them edible for wildlife (Froelich, 2016). This new design for environmentally friendly beer rings is just as resistant and efficient as standard packaging; the only drawback is in regard to price. The company seems confident in its product stating that, "For brands to be successful today, it is no longer about being the best IN the world. But rather, being the best FOR the world and take a real stance" (Froelich, 2016). Ideas like these are especially important because they help to pave the way for a more environmentally word that is good for both people and animals.

More information in the links below:

<http://news.nationalgeographic.com/news/2015/02/150212-ocean-debris-plastic-garbage-patches-science>, http://www.biologicaldiversity.org/campaigns/ocean_plastics, https://www.craftbeer.com/brewers_banter/saltwater-brewery-creates-edible-six-pack-rings

Thank you to **OCEAN** Researcher Lindsey Stanton



IF YOU CAN'T BEAT 'EM, EAT 'EM

Fishermen in Georgetown, Maine, are trying to make lemonade from lemons by creating a new fishery on the invasive species Green Crab, *Carcinus maenas*. Green crabs are an introduced species along the North Atlantic coast of the United States and Canada. They are native to the western coast of Europe in the Atlantic and arrived here in the ballast water of ships. They were first reported in Massachusetts in 1871 and have since spread north and south, affecting many other fisheries. The crabs themselves eat many types of young shellfish and invade coastal habitats, thus creating a need to eradicate the species.



However, there is an opportunity to eat our way out of the problem of invasive green crabs was inspired by a visit to Venice by a Maine man named Taggart. He saw the Venetians harvest Moleche, the Italian Green Crab (same genus as Green crabs, but a different species). In Italy, the crabs are cooked, battered, and served over pasta. The practice of fishing Moleche is a dying art because of the difficulty to harvest the crabs at the right moment in time. The crabs can only be harvested just before they molt. In both types of crabs, the ability to tell when they are about to shed is difficult. The body becomes slightly

soft and a fine line begins to show on the belly of the crab. Realizing the need to pass on the skill of fishing for Moleche, a Venetian fisherman came to Maine to teach researchers how to harvest the crabs. Easily attracted to bait, Green Crabs can be caught using nets and traps. Currently, the researchers in Maine are checking the abundance, size, and gender of the crabs for data collection. Most of the molting takes place in the spring and fall. When they set their traps out, the crabs that are ready to be harvested are taken and the crabs that are close to molting are kept in floating cages until harvest (Overton, 2016).

This is also being adapted elsewhere. Legal Seafood, in Massachusetts, is trying to become more sustainable by using the invasive species in their menu. The, “executive chef Rich Vellante plans to test green crab stock in three dishes at Legal Seafood in Boston’s Seaport District” (Warner, 2015).

If we are able to harvest and consume Green Crabs, their numbers will begin to fall and other shellfish and their habitat will be able to recover from the green crab invasion. As Marissa McMahon, a marine biologist from Northeastern University said about the Green Crab harvest, “when taken together with other methods, it can help slow down the population growth of the invasive species, and maybe, over time, give us a new market for Maine fishermen to diversify the industry” (Overton, 2016). Harvesting Green Crab presents itself with a very hearty and plentiful market. If the taste of Green Crab meat becomes part of consumer demand, this could become another fishery both in Maine and the rest of the American Atlantic coast.

More information in the links below:

<http://www.bostonglobe.com/magazine/2015/02/12/the-green-crab-problem-shall-eat-enemy/>

Ahtg6L87Gpxs0RMKntYAoN/story.html, <http://www.pressherald.com/2016/08/14/invasive-green-crabs-are-scuttling-from-dilemma-to-delicacy/>

www.pressherald.com/2016/08/14/invasive-green-crabs-are-scuttling-from-dilemma-to-delicacy/

Thank you to **OCEAN** Researcher Will Santora



MICROBEAD UPDATE

Microbeads are getting more publicity about being bad for the environment. As mentioned in a previous **OCEAN** 25 article about microbeads, the USA has already passed a law to prohibit the use of microbeads. Other countries are continuing this trend. The UK government announced plans to ban microbeads in cosmetics and cleaning products by 2017 (BBC 2016). These products can range from toothpaste, facial scrubs and other household products.

Just like in the USA some countries are making voluntary changes to phase out the use of microbeads despite the plans by the government. In efforts to aid in the decreased usage of microbeads, some organizations and websites are educating the public about which products contain or do not contain microbeads, such as Beat the Microbead. Large companies like Johnson & Johnson and Proctor and Gamble, which own Crest toothpaste, Gillette and Olay, are committing to phasing out microbeads by next year. (BBC 2016).

(continued on next page) 2

MICROBEAD UPDATE (continued)

The reasoning behind this plan is for environmental purposes. It was revealed that a single shower can result in 100,000 plastic particles entering the ocean (BBC 2016). These particles can be detrimental for ocean life, especially animals that are filter feeders like oysters. After an animal like an oyster ingests microbeads, they can transfer up the food chain. Eventually, they could end up being consumed by humans. There is little evidence about the potential human health impacts, but further research is clearly needed (BBC 2016).

Along with the UK and the USA, Canada has also planned to ban microbeads (Hong 2015). This is an important environmental issue and hopefully banning microbeads will catch on to other countries.

More information in the link below:

<http://www.bbc.com/news/uk-37263087>

Thank you to **OCEAN** Researcher Erich Dietterle



ONLY IN NEW YORK (2016 **OCEAN** Environmental Innovation Award)

Oysters are far more than just tasty mollusks. Oysters play important roles in ecosystems: acting as bio-filters; buffering shores from storm surges; and providing food and habitat for other marine organisms. In order for oysters to proliferate and thrive a few environmental factors have to be in order: water variables (temperature, salinity, acidity), food, and substrate. As reported in **OCEAN** 30, some oyster fisheries are having issues dealing with massive die offs due to increased ocean acidification. The temperature and acidity problems have been fixed by raising fragile oyster spat in tanks before returning them to the ocean. But in places where these aren't issues yet, like in New York City waters, the only thing that currently needs to be addressed is planting oyster beds to areas that lack proper substrate. How did they resolve this? By recycling old toilet bowls.



In this case the saying “one man’s trash is another man’s treasure” is fitting. The city plans to recycle pieces of porcelain from 5,000 public school toilets (free from a citywide water conservation program) to facilitate the breeding of upwards of 50,000 oysters in Jamaica Bay. Jamaica Bay is 31-square-mile part of New York Harbor south of Long Island and in proximity to the JFK airport. Historically oysters were a staple in this watershed and were so prolific that they were used as sustenance and currency (wampum) to Native Americans of the region. It has even been said that half of the world’s oysters were harvested in New York Harbor at one point. Oysters were abundant in this lower Hudson estuary until the 1927, when unfortunately overharvesting, anthropogenic pollution, and dredging caused the fishery to be functionally extinct.

The Billion Oyster Project, in conjunction with the City of New York’s Department of Environment Protection, devised the restoration plan after pilot studies demonstrated that oysters could survive and reproduce in this area again. It is the single largest installation of breeding oysters and the hope is to contribute to a productive New York Harbor. The project is a two-for-one benefit for the local environment. One it reduces waste by repurposing these broken porcelain receptacles and two the success of the oysters will improve water quality (each oyster can filter up to 40 gallons of water per day), provide habitat for other marine life, and protect the coast from storm surges by absorbing the shock from waves.

They will not be farmed for food sale and the program began depositing floating cages in September 2016. The water quality and evidence of spat will be monitored over the next two years and the hope is that New York City will have a self-sustaining oyster population once again and be a successful restoration to be replicated in other places.

More information in the links below:

<http://www.billionoysterproject.org/>, <http://www.necn.com/news/weird/New-York-City-Oyster-Toilets-Jamaica-Bay-NYC-Porcelain-NY--392472011.html>, <https://www.washingtonpost.com/news/morning-mix/wp/2016/09/07/new-york-citys-newest-oyster-bed-is-50000-mollusks-and-5000-old-public-school-toilets/>

Thank you to **OCEAN** Researcher Brigid McKenna

CARBON DIOXIDE SURPASSES MILESTONE

The Earth is constantly producing carbon dioxide through natural processes like respiration and decomposition. These natural levels are managed and balanced by the Earth. Humans contribute to CO₂ levels by actions like burning fossil fuels (combining Oxygen with Carbon to produce energy). The contribution from humans is beyond what nature can handle.

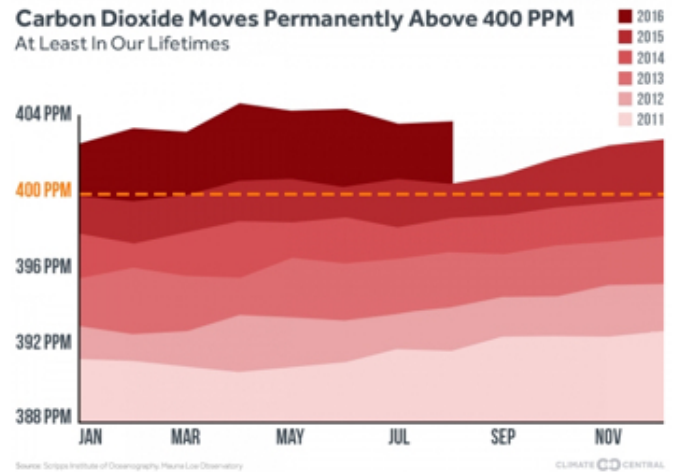
September, 2016 marked a milestone in CO₂ levels, 400 parts per million (Kahn 2016). Even though this is an arbitrary milestone (NOAA 2016), this still shows how much humans may be contributing to CO₂ levels. September is significant when it comes to this reading because typically September is the month when CO₂ levels are at their lowest in the Northern hemisphere (NOAA 2016). This is due to the growing season just ending and plants consuming the most CO₂ of the year.

To put this in perspective, the last time CO₂ levels were this high was in the mid-Pliocene, about three million years ago. To go along with the high level of CO₂, the rate of CO₂ increase is more than 100 times faster than observations in the ice core record going back 800,000 years. This will continue as long as fossil fuel consumption remains at its current high level worldwide. (NOAA 2016).

More information in the link below:

<http://www.noaa.gov/stories/carbon-dioxide-levels-race-past-troubling-milestone>, <http://www.climatecentral.org/news/world-passes-400-ppm-threshold-permanently-20738>

Thank you to **OCEAN** Researcher Erich Dietterle



UNWANTED ATTENTION



On September 3, 2016, Oklahoma (where they never had Earthquakes), experienced an Earthquake so strong it was felt from Texas to Nebraska. Quake activity has been linked to the use of “Fracking” to extract oil and gas. Fracking is the common term for the extraction of underground natural gas and oil using high-pressure water mixtures that are pumped underground. Headlines in social media posts about other effects of fracking are becoming well known and the backlash from concern citizens is growing. Due to the recent development of fracking, the short-term and particularly the long-term affects on nature and our environment are not fully understood. This practice has increased in North America over the last 15 years due to the increase in plentiful, cheap domestic energy and despite substantial environmental concerns. **OCEAN** 31 touched upon some of the recent issues revolving around fracking with the article, “What’s Shaking in Oklahoma?”.

Recently, parts of Oklahoma have become tied with Northern California as the most earthquake prone areas in United States of America. A 5.6 magnitude earthquake occurred in the early morning of September 3rd in north-central Oklahoma with five aftershocks, ranging from 3.6 to 2.7 in the resulting hour. Due to the increase in such events as well as the possibly catastrophic aftereffects, the Oklahoma Corporation Commission began asking wastewater-well owners to decrease disposal since 2013 in an attempt to remedy the possibly causational effects of wastewater injections on seismic activity. The results of fracking can be seen throughout Oklahoma and Kansas and drastic action is needed to regulate fracking and decrease its effects.

More information in the links below:

<http://www.necn.com/news/national-international/Earthquake-Shakes-Swath-of-Midwest-from-Missouri-to-Oklahoma-392239401.html>, <https://img.rt.com/files/news/2a/29/80/00/oklahoma-earthquake-weekend-fracking.jpg>

Thank you to **OCEAN** Researcher Jessica Hillman

Greener Greenhouses

Recently evolved greenhouse technology is making it much easier for growers to maintain constant temperatures in their greenhouses. A simple cylinder, filled with fluid that thermally expands, hydraulically forces the windows of the greenhouse open, and similarly, when temperatures drop the fluid in the cylinder compresses, allowing the windows of the greenhouse to close.

The fluid that fills these cylinders varies. Some product specifications report oil, some wax, and some gas. However, regardless of the fluid used in the cylinder, most descriptions of this new technology report that at a temperature of 86 degrees Fahrenheit windows are fully opened, and at 55 degrees Fahrenheit windows are fully closed.

Before this technology evolved, growers were forced to monitor temperature in greenhouses with thermometers, and to manually open and shut greenhouse windows according to fluctuations in temperature. Or use expensive electric systems with thermostats. This made it difficult to maintain a constant temperature. With these new window openers, temperature can be regulated automatically, allowing for better growing conditions without the use of any electricity.

The Danish company J. Orbesen Teknik ApS, was the first commercial distributor of these window openers but production has expanded and they are currently distributed in the United States as well. The technology is simple and affordable, they retail for between \$35 and \$60. Furthermore, these window openers are easy to install and are used widely. Customers report satisfaction, whether as commercial growers or as recreational gardeners. However, according to consumer reviews, some models of these window openers do not stand up to high wind speeds well. Some consumers also report that it is best to remove the openers during cold winters to keep the hydraulic pump from freezing up.

Overall, the technology is effective, affordable, and satisfactory to consumers. The elegant solution makes for easy temperature monitoring in the greenhouse, while simultaneously keeping electricity use down. With more research and product development, perhaps this type of passive temperature control can be extended to other types of buildings in the future. The extension of the innovative technology into homes, businesses and other buildings would allow for major reductions in electricity and gas use in residential and commercial buildings.

More information in the links below:

<https://www.amazon.com/Univent-Automatic-Vent-Opener-Standard/dp/B0036EJ9HW>, <http://www.groworganic.com/automatic-vent-opener.html>, <http://orbesenteknik.com/produkt/univent/>

Thank you to **OCEAN** Researcher Rae Taylor-Burns



TRICLOSAN UPDATE

In September of this year the Food and Drug Administration (FDA) issued a final rule on antibacterial soaps' effectiveness and safety, thereby barring 19 chemical compounds from over-the-counter antibacterial soaps. The basis for the ruling is that these ingredients, including triclosan, could not be demonstrated to be safe for long-term daily use nor could be proved to be more effective than generic soap and water to prevent the spreading of germs. In fact, some data suggest that over the long-term they are possibly hazardous.

Safe Harbor has been following research regarding triclosan and has reported the updates in recent **OCEAN** editions 22 & 27. Triclosan is a broad-spectrum antimicrobial agent commonly found in household antibacterial hygiene products. It inhibits bacterial growth by interacting and inhibiting a necessary enzyme required for proliferation. However, some studies have shown potential for serious negative side effects from prolonged exposure, including antibiotic resistance, *disrupted hormone levels*, heightened allergies, and muscle weakness. The risk is all the more concerning because *triclosan can be absorbed through the skin and mucous membranes*.

It should be noted that the FDA ruling only affects wash items that require water and not hand sanitizers or wipes. Manufacturers have one year to comply by either removing these products from the market or removing the antibacterial active ingredients, and many companies have already begun reformulating in preparation of this ruling. Safe Harbor will continue to update readers on this topic, as new information is available.

More information in the link below:

<http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm517478.htm>, <http://www.npr.org/sections/health-shots/2016/09/02/492394717/fda-bans-19-chemicals-used-in-antibacterial-soaps>

Thank you to **OCEAN** Researcher Brigid McKenna

LOUISIANA'S 1000 YEAR FLOOD

*Editor's Choice

In the summer of 2016, Louisiana was subjected to what some scientists called a 1000-year rainfall flood. *The massive amount of rainfall that fell during this nameless and mostly unreported storm, had a 0.1 percent chance of occurring in a given year, making this storm a 1000-year storm.* Focused in the southeastern part of the state, particularly in Baton Rouge, historic flooding forced 20,000 people to be rescued from their homes. The storm system rainfall and river flooding records. The Amite river gauge exceeded its historic high by five feet.



The extreme flood event was caused by the unusual synergy of a low pressure tropical air mass, fed by high sea surface temperatures and record humidity, which hung over the Gulf of Mexico without moving. Sea surface temperatures in the Gulf reached 90° F, which is a full 5° warmer than usual for that time of year. Warm air has greater capacity to hold moisture, and thus the warm air temperatures in the Gulf allowed the storm system to hold and precipitate huge amounts of water, down on Louisiana.

The reason the storm stayed for so long over the Baton Rouge area, causing so much damage, was a high-pressure system parked over the Northeast blocking movement of the storm. Climate scientists report that the slower the movement of

a tropical cyclone, the more rainfall that storm can release. The combination of a very warm, wet, and slow storm system meant that extreme precipitation was inevitable. As a result, *parts of southeastern Louisiana saw more rainfall over the course of two days than Los Angeles has seen since the start of 2012.*

Additionally, southeastern Louisiana is part of a flat and low-lying delta, centered at the mouth of the Mississippi. The land is subsiding under the weight of the sediment that makes up the delta, which is why some places like New Orleans are below sea level. Even in Baton Rouge, which is about 100 miles from the coast, the elevation is only 57 feet above sea level. This means the region is extremely flat, and that the rivers around Baton Rouge, such as the Amite River, meander and slow as they wander through intricate marshes. This means that water added is slow to exit the system. For this reason, once the Amite River surged, its tributaries also surged, and floodwaters stayed high for a period of several days.

The reason people were not ready for the flood is simple, even those who had lived through the area's last major flood in 1983 (when it rained for 50 hours straight) were unprepared to see flood records be broken by five feet. What was considered "high ground" before the flood proved to be not quite high enough, leaving people unprepared. Additionally, *because this storm was not officially a tropical depression or a cyclone, the storm went unnamed and warnings were not issued* by the National Hurricane Center. In the midst of the Olympics and the election, the Gulf coast of the country was inundated with the most damaging natural event in the USA since Hurricane Sandy, and news sources didn't cover it.

Though climate change models do not predict storms like this becoming normal, climate scientists acknowledge that heavy rainfall events have become more frequent and more intense over the past several decades. Tropical storms require warm sea surface temperatures and warm humid air to get started, so it is logical that an era of climate change may make storms like the unnamed Baton Rouge flood event more common. will necessarily do the same.

Research is sparse on the effect of climate change on extreme flood events, but 2016 marked the year in which Louisiana had two 24-inch floods. Flood events across the globe are occurring with greater frequency, and "each decade, [the number of flood events] has been higher than the previous decade, for about the last 30 to 40 years" according to Kenneth Kunkel of NOAA. More research is necessary to make a definitive statement about whether or not climate change will cause these 1000 year flood events to occur more frequently than 1000 years, but for now, be sure to watch the weather report.

More information in the links below:

www.scientificamerican.com/article/why-the-deadly-louisiana-flood-occurred, <https://weather.com/storms/severe/news/louisiana-flooding-why-it-happened-things-to-know>, http://www.huffingtonpost.com/2014/08/28/louisiana-sea-level-rise_n_5731916.html

Thank you to **OCEAN** Researcher Rae Taylor-Burns



UPDATE ON BEE-KIND

The use of neonicotinoid insecticides has increased globally, escalating the discussion concerning their effects on non-target insects, such as honeybees. Neonicotinoids are a globally used systemic insecticide that binds and blocks the target (or non-target) organism's brain nerve receptors, causing fatal paralysis. Neonicotinoid insecticides are used for numerous purposes, ranging from veterinary medicine to widespread crop protection. Immediately after their commercial release in the 1990s, neonicotinoids popularity increased, thanks to their reputation as a "safer" pesticide. People believed they were relatively harmless to vertebrates. Studies now indicate neonicotinoids are hurting the honeybee populations, reminding us that sometimes, new products are not necessarily better.

Neonicotinoids are believed to have adverse side-effects, such as disorientation and memory loss, leading to Colony Collapse Disorder (CCD). CCD is defined by the United States Department of Agriculture (USDA)'s Agricultural Research Service as "a dead colony with no adult bees or dead bee bodies but with a live queen and usually honey and immature bees still present" (<https://www.ars.usda.gov/oc/br/ccd/index/>). This is alarming not only for the future of the honeybee species, but also the loss of pollinators for our U.S. agricultural industry.

[OCEAN 23](#)'s article, "The Effects Neonicotinoids have on Pollinators" by researchers Kristyna Smith and Nicole Kirkton, outlined Bayer chemical company's neonicotinoid usage and the E.U.'s neonicotinoid ban. [OCEAN 27](#) reassessed the situation in "Pollinator Mystery Update" by Brigid McKenna, which noted the EPA allocated 8 million dollars to aid honeybees, yet not banning neonicotinoids, despite all indicators associating neonicotinoid usage to CCD.

Neonicotinoids are not the only pesticide of concern. Recently, the Food and Drug Administration (FDA) began testing U.S. food samples for unsafe pesticides. Another alarming chemical of concern is Glyphosate, the common herbicide, Roundup. Glyphosate has been detected in many samples of honey. In 2015, the World Health Organization (WHO) announced that glyphosate is a probable carcinogen for humans. Some of the honey samples that the FDA recently tested contained glyphosate residues levels that were more than double the acceptable limit approved by the E.U.

With fear of mosquito vector viruses, such as the Zika virus spreading to North America, we are at risk for increased pesticide exposure. In September 2016 millions of honeybees were reportedly killed in South Carolina by pesticide application. The mosquito control spraying was a result of fear of the Zika virus. These sprayings came without warning to beekeepers or residents. This pesticide was selected as a broad-spectrum insecticide in order to ensure there would be no outbreak of Zika, however the ideal spray in this situation would be narrow spectrum, biodegradable pesticide that would not impact non-target insects. The fervor to protect against Zika at all costs could have long-term consequences.

Meanwhile, the E.U. has increased their research and regulation of pesticides. This August it was announced that an 18-year study on the affects of neonicotinoids found they had long-term negative impacts on wild honeybees. Scientists in England studied honeybees that forage on rapeseed oil plants treated with neonicotinoids, finding that at least half of the total decline in honeybees is due to these chemicals interference. The E.U. implemented a ban of neonicotinoids due to their link to honeybee deaths in 2013 and this ban is still in place due to the controversial scientific findings.

Although there may be multiple factors contributing to CCD, further research particularly in the U.S. on the effects of neonicotinoids on honeybees is necessary. Further, it has been proven wise to observe the precautionary principle, particularly when using chemicals that are not fully understood. The regulation of these substances, at least until they are studied and proven safe for our environment and the bees, is essential. The value of honeybees to our agricultural system is immense and as such requires further protection. Therefore, following the precautionary principle and increasing regulations of these chemical substances is highly recommended at least until complete toxicity and ecosystem cycling is compiled and the consequences of high usage is fully understood.

More information in the links below:

https://www.sciencenews.org/sites/default/files/main/articles/sm_honeybeemain_free.jpg, <http://www.bbc.com/news/world-us-canada-37269745>, <https://www.ars.usda.gov/oc/br/ccd/index>

Thank you to [OCEAN](#) Researcher Jessica Hillman



BRING YOUR OWN PLATES

France has recently become the first nation in the world to ban disposable plastic plates and cups. This new legislation requires that all disposable tableware is made from 50% biologically sourced material so that it can be composted from home by 2020, and that number will increase to 60% by 2025 (Eastaugh, 2016). This progression follows shortly after France banned plastic bags, and made it illegal for supermarkets to waste food. Though all of these environmentally friendly steps are something to celebrate it is important to look closely at why and how this legislation came to pass.

This reform was not passed simply for the sake of the environment, but rather as a form of damage control. It all began as one of French president Francois Hollande's election campaign promises, many of which he was unable to follow through with. As a result his approval ratings were extremely low, and with reelections coming up in 2017 he began looking for ways to improve his chances of winning. He did so by appealing to French national pride, entering the United Nations Climate Conference in 2015 to appeal to numerous environmental groups. In an attempt to stage France as the leader of the conference, the Energy Transition for Green Growth Act was released a month before the conference; which initially went largely unnoticed (Grant, N/A).

During the Conference, due to the recent attacks there was a looming sense of urgency allowing a historic agreement between 195 nations promising to reduce emissions and ultimately reduce human impact on the world. Following the Conference, France continued its trend of environmental legislation including the recent ban on disposable plastics (Grant, n.d.).



More information in the links below:

<http://www.cnn.com/2016/09/19/europe/france-bans-plastic-cups-plates>, <http://www.mensjournal.com/health-fitness/articles/the-story-behind-frances-new-ban-on-plastic-dishware-w441879>

Thank you to **OCEAN** Researcher Lindsey Stanton

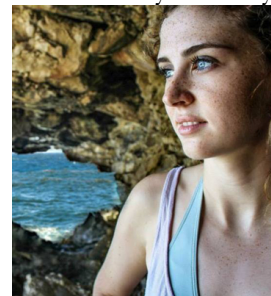


Coastal Communities and healthy Natural Resources will protect each other. **OCEAN** supports a healthier Herring River.

Follow restoration updates: <http://herringriver.org/> (Image FOHR: "A healthy River will not kill it's fish").



OCEAN wishes to direct some very special Holiday thanks to Samantha for her hard work creating this very full issue for publication. She is a full time student, with family and friends and a very friendly dog, so we don't ask how she finds time to continue being our Associate Editor but we are very grateful. Thank you Samantha!



Jessica Hillman is probably the only one among us who may actually know where any of our **OCEAN** researchers actually are. Thank you Jess, for working as our Research Coordinator!

Check out our website for other free publications: <http://safeharborenv.com/free-publications/>

Thank you for your support!