



Outer Cape Environmental Awareness Newsletter

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A word from OCEAN's Editor:

GORDON PEABODY

Editor's Comments: **OCEAN 60** is published for you, our readers, curious about innovative problem solving and interested in the environmental issues we share. Healthy communities need healthy resources, especially coastal towns. Right here on Cape Cod we are about to begin an extraordinary estuary restoration (See Tess Holland's article on the Herring River). Abigail Eilar writes about a troubling (for me anyway), mysterious and a bit spooky, dolls washing onto Gulf Coast beaches. I am reachable for your comments at gordonpeabody@gmail.com. Advertising-free **OCEAN** is the environmental education publication of Safe Harbor Environmental, a small inter-disciplinary consulting group in Wellfleet on Cape Cod. Please feel free to share this issue with friends and colleagues. Thank you to our readers for your continuing support.

Recycled Sports

THANK YOU TO **OCEAN**
RESEARCHER LINDSEY STANTON

The benefits of using and reusing goods have been known for some time, not just on a basis of sustainability but also affordability. These benefits can be in the form of taking one completely unrelated product and turning it into something new, or simply passing along an item that is no longer used onto someone who will use it. Recently, there has been a boom in recycled goods, and a large part of this has been in the sporting industry with the use of reused and repurposed products. There are various strategies to hone in on this market that are both profitable and sustainable. One method is by reusing and reselling lightly used items; Play It Again Sports is one example that has capitalized on this market. With this model individuals are able to get quality items at a cheaper cost while preventing additional, unnecessary sporting goods from being produced.

Another newer method is using recycled materials to make a completely new product. Some companies have used plastics that have been recycled to make artificial turf, gym mats and other gym equipment. One company that has taken the idea of repurposing plastics and run with it is Tongaboards, a business that sells longboards made from recycled plastic. Their goal is to reduce the amount of plastic waste present in the oceans, each board made removes 2.5lbs of plastic waste from the ocean. These boards start at \$50 and are significant in the fight against waste in our oceans. Any opportunity to limit and lessen waste, especially ocean plastic waste, is a good thing, and reusing items is a great place to start.

Further information:

- <https://www.ironcompany.com/recycled-material-fitness-equipment>
- <https://www.facebook.com/TongaBoards-104330631664816/photos/a.107228544708358/108614811236398>
- https://tongaboards.com/?utm_source=facebook&utm_medium=cpc&utm_campaign=0.49+-+Testing+-

Image source:

<https://tongaboards.com/>



Grass Bans

THANK YOU TO **OCEAN**
RESEARCHER LINDSEY STANTON

As climate change rears its ugly head, as we have started to see dramatically this year, people and states are starting to take climate change related issues more seriously. In particular states that are coming to the realization that unlimited water consumption may not be sustainable after all. These issues in the United States have primarily been seen in Nevada and California where people are drawn to the area due to the nice weather and the artificially maintained greenery. Las Vegas has recently taken action to solve the growing crisis of a dwindling water supply by enacting a grass ban on “non-functional turf,” or grass that is used primarily for aesthetic purposes. The goal of these laws is to conserve water due to the drought in the area that has been persistent since 2000. It has reached the point where the water level at Lake Mead, the reservoir where Southern Nevada gets most of its water from, became so low a new water intake valve had to be installed.

Other areas are starting to implement temporary water conservation laws, though not to the extent of Las Vegas. Often these laws take the form of voluntary limits on water consumption, or small fines for noncompliance. If the droughts and the lack of water conservation in these areas continue, it wouldn't be surprising if other states start passing stricter laws.

Further Information:

- <https://www.nytimes.com/2022/05/03/climate/las-vegas-lawn-grass-ban.html>.
- <https://www.pbs.org/newshour/nation/drought-stricken-nevada-enacts-ban-on-non-functional-grass>.
- https://www.mvtimes.com/2022/01/19/tisbury-establishes-denitrification-regulations/?fbclid=IwAR01wJvKkCoxwXg_gga8NljM4Jhbiv9PbUAT8HB4ArAbQfyDQSNSqOHWF_Y

Image Source: Ian
Walton/Getty Images



Washed Up Dolls

THANK YOU TO **OCEAN**
RESEARCHER ABIGAIL EILAR

If asked what items of trash or pollutants you would be most likely to see at the beach or on the coast, what would those items be? NOAA mentions one of the most common ocean litter items as cigarette butts among other commonly found items such as food wrappers, broken bottles, and even plastic toys. The last category of plastic toys may seem are fetched, but that is exactly what researchers with Mission-Aransas Reserve at the University of Texas marine Institute are seeing. In the 40-mile stretch of beach from North Padre Island to Matagorda Island researchers are commonly find old, damaged dolls washed up often covered in things like algae and barnacles.

Due to a loop current that extends from the Yucatan Peninsula to Florida, debris are pushed toward the Texas Gulf resulting in around 10 times the amount of trash than other Gulf of Mexico beaches. Researchers time spent surveying the coasts looking for sea life, has additionally emphasized the issue of ocean pollution and the importance of efforts to reduce waste that ends up in our oceans. These washed-up doll photos have gained media attention and on their Facebook page researchers can even be seen wearing shirts with “#creepydollcrew” on them. The director of the Mission-Aransas Reserve, Jace Tunnel, has utilized the creepy dolls as an opportunity by hosting an annual auction selling the dolls. The first doll he collected in January 2021 was sold for \$35 and proceeds benefited a sea turtle rescue program. Programs like this will continue to benefit the environment while also bringing attention to the public on issues their local beaches may be facing.



Further Information:

- <https://www.1079thefox.com/2022/04/29/texas-researchers-find-dozens-of-creepy-dolls-on-gulf-coast-beaches/>
- <https://www.usatoday.com/story/news/nation/2022/05/04/creepy-dolls-texas-beaches/9645327002/>
- <https://oceanservice.noaa.gov/facts/most-common-ocean-litter.html#:~:text=Broken%20bottles%2C%20plastic%20toys%2C%20food,toxic%20form%20of%20marine%20debris.>

Image Source:

<https://www.facebook.com/manerr/posts/pfbid0z6MMS23LGb5gZ5m8ejkPXYbLvMSGF4JJnfPETWPDQRA6H2dAxSZkbXb73R9Io2AVI>

Foam in Polluted Waters

THANK YOU TO **OCEAN**
RESEARCHER ABIGAIL EILAR

The Columbian city of Mosquera faces immense amounts of foul-smelling white foam breaking apart and clinging to streets. Environmental authorities have determined that the likely root cause of the foam is discharge from industrial areas and the addition of household detergents into a nearby river. In addition, authorities think the rainy season and vegetal matter in the water are increasing the severity of the problem. This foam phenomenon typically occurs when contaminated water is agitated caused by a narrowing of a river or a bridge.

Although the foam may look harmless, locals are losing business due to the pungent smell and fears of others falling into the foam. Health concerns also worry the people with the potential long-lasting effects, and authorities are working on monitoring the situation and have set up a water treatment plant. Luis Alejandro Camacho Botero, an expert on coastal hydraulics, explains that, unfortunately, other rivers experience similar problems and could pose public health risks in the future if not mitigated. Although natural foams may occur in bodies of water due to the breakdown of materials and influx of nutrients and turbulence such as wind and waves, both natural and synthetic foams may be a health risk. Water pollution continues to be a global problem leading to health problems, lack of clean water, and even death. Occurrences like these in Columbia should be taken seriously and helping to cause change in protecting our waters.

Further Information:

- <https://abcnews.go.com/international/wireStory/fetid-foam-polluted-river-plagues-colombian-city-84371539#:~:text=MOSQUERA%2C%20Colombia%20%2D%2D%20An%20immente,along%20streets%20and%20into%20yards>
- <https://www.bbc.com/news/world-latin-america-61270024>
- <https://www.fox29.com/news/foul-smelling-toxic-foam-spewing-polluted-river-mosquera-bogota-colombia>
- <https://dnr.wisconsin.gov/topic/PFAS/Foam>



Image Source: [https://apnews.com/article/environment-colombia-bogotaf895fb20010f83dac4d12368744685c4#:~:text=MOSQUERA%2C%20Colombia%20\(AP\)%20%E2%80%94,along%20streets%20and%20into%20yards](https://apnews.com/article/environment-colombia-bogotaf895fb20010f83dac4d12368744685c4#:~:text=MOSQUERA%2C%20Colombia%20(AP)%20%E2%80%94,along%20streets%20and%20into%20yards).

Innovative Bike Paths

THANK YOU TO **OCEAN**
RESEARCHER ABIGAIL EILAR

As individuals, cities, and countries worldwide strive to decrease their carbon footprint, many people are turning to bikes to get around. Poland, one of most cycle-friendly countries in Europe, is doing their part by making bike paths more accessible at all times of the day while promoting the health and environmental benefits of biking. In Lidzbark Warmiński, Poland, a bike path has been created using a synthetic material, phosphor, that absorbs solar rays throughout the day, which creates a glow-in-the-dark effect for the trail at night. The bike path is about 330-feet-long with both pedestrian and cyclist sections and cost the town about \$31,000. These innovative installations provide safe and accessible biking areas while utilizing solar energy to power them.

As testing continue, these glow-in-the-dark bike paths and similar projects are becoming more popular in other countries. For example, SolaRoad in the Netherlands utilizes solar panels on the pavement to convert sunlight in electricity. This unique bike road is integrated with solar panels and has proven so successful they are testing the technology on roads with heavy traffic. Testing on many of these projects continue to test the materials against increased traffic, weather, and temperatures. Project cost also must be considered for materials and how large the projects plan to be to determine project feasibility long-term.



Further Information:

- <https://www.sustainability-times.com/clean-cities/a-sun-powered-bicycle-path-glow-in-the-dark-in-poland/>
- <https://www.solaroad.nl/about/>
- <https://www.businessinsider.com/poland-glowing-bike-lane-2016-10>
- <https://hungarytoday.hu/hungary-bike-paths-glowing-fluorescent-cycling/>

Image Source: TPA (TPA Instytut
Badan Technicznych)

Plant Plankton Changes?

THANK YOU TO **OCEAN**
RESEARCHER TESS HOLLAND

Over a 23-year time period, scientists have sampled and observed the waters of the Gulf of Maine, finding worrisome results. Data from the NASA-funded Gulf of Maine North Atlantic Time Series (GNATS) program highlights changes in temperature and salinity of the water; the Gulf is becoming warmer and saltier. According to William Balch, the Bigelow Laboratory scientist, these results “are being driven by this gigantic windmill effect happening out in the North Atlantic, which is also changing the circulation coming into the Gulf of Maine... there used to be these inflows from the North Atlantic bringing water from the southward-flowing Labrador Current, making the gulf cooler and fresher, as opposed to warmer and saltier, which is where we are now.”

So, what does this mean? Phytoplankton – an organism critical to the health of the marine ecosystem of Maine and even New England – is now 65% less productive as compared to twenty years ago. Phytoplankton perform photosynthesis underwater; they absorb carbon dioxide and release oxygen. However, if phytoplankton are not as productive, this will increase the level of carbon dioxide circulating in the waters which, in turn, can lead to ocean acidification. When the pH of the ocean is lowered and carbonate ions become unavailable as they bind with hydrogen ions, shelled organisms are left with no resources to build their shells. This has a ripple effect throughout the entire food web as shelled organisms are a source of food and nutrition to predators. Even a microscopic organism as small as phytoplankton can cause massive changes in an entire marine ecosystem.



Further Information:

- <https://earthobservatory.nasa.gov/features/Phytoplankton>.
- <https://www.nasa.gov/feature/esnt/2022/nasa-funded-study-gulf-of-maine-phytoplankton-productivity-down>.
- <https://ocean.si.edu/ocean-life/invertebrates/ocean-acidification>.

Image Source:

<https://www.nasa.gov/feature/esnt/2022/nasa-funded-study-gulf-of-maine-phytoplankton-productivity-down>

Close to Home: Herring River Estuary

THANK YOU TO **OCEAN**
RESEARCHER TESS HOLLAND

Restoration work on the Herring River Estuary, may begin this fall, thanks to the U.S. Department of Agriculture's National Resources Conservation Service (NRCS). This would be the largest Estuary restoration project in the Northeast. This past April, the NRCS announced their investment of \$42.5 million in 21 projects across Cape Cod, all geared towards improving water quality. Of the total investment, \$29 million will be used to support the Herring River restoration project.

Before the dike was constructed in 1909, the Herring River Estuary was a thriving and healthy ecosystem, with economic benefits from Herring and Oysters. However, the dike, intended to create farmable land and reduce mosquitoes, did neither. Instead, the dike hinders the natural flow of saltwater mixing with freshwater and been detrimental to the health of the wetland area: invasive species have grown abundant, oxygen levels in the water are low, and fish, notably herring, struggle to migrate effortlessly (Friends of the Herring River). (cont...)



Image Source: <https://www.capecodtimes.com/story/news/2022/04/28/cape-cod-water-resources-projects-herring-river-wellfleet/7433915001/?fbclid=IwAR0uJFoAolmt6QZ3OkB5tYatrFnAvumuWIBctqNreg0FrNogmsE9eGcbyds>

(Cont...) To improve the health and quality of the wetlands, the project aims to increase the river width at Chequessett Neck Road from 18 feet to 165 feet and will feature control gates so the flow of water into the basins will be controlled, according to Don Palladino, past President of the Friends of Herring River. He also explained that structures will be built at Mill Creek and Pole Dike Creek, and roads nearby will be elevated to prevent flood damage to pre-existing homes, roads, and other buildings in the area (Friends of the Herring River).

For the first phase of the project, the culverts at the Chequessett Neck Road dike will be replaced and updated, which will revive 570 acres of the 1,100-acre marsh, and construction is forecasted to begin in November of this year. When completed, the Herring River restoration project will be the largest wetland restoration project in the Northeast, according to Carole Ridley, project coordinator. For more information, view our previous update on the Herring River Restoration Project in [OCEAN 57](#).

Disclosure: The initial “Conceptual Restoration Plan” was developed over two years by the inter-governmental “HERRING RIVER TECHNICAL COMMITTEE”. Editor Gordon Peabody was Chair of the HRTC.

Editor's UPDATE (Wellfleet, MA, August 17, 2022): As we went to press, the Wellfleet Selectboard's vote to accept nearly \$50 million in grants from state and federal agencies means that the Herring River Restoration Project will move from the planning to construction phase.

Further Information:

- <https://www.capecodtimes.com/story/news/2022/04/28/cape-cod-water-resources-projects-herring-river-wellfleet/7433915001/?fbclid=IwAR0uJFoAolmt6QZ3OkB5tYatrFnAvumuWIBctqNreg0FrNogmsE9eGcbyds>.
- <https://www.capecodtimes.com/story/news/2022/04/07/last-leg-permitting-phase-1-herring-river-restoration/7268208001/>.
- <http://www.friendsofherringriver.org/>.
- <https://provincetownindependent.org/news/2022/05/11/herring-river-restoration-project-wins-29m-grant/>.

Image Source:

<https://www.nps.gov/caco/learn/nature/herring-river-tidal-restoration-project.htm>



Bird Safe Glass



THANK YOU TO **OCEAN**
RESEARCHER CATIE URQUHART

Many people know the gloomy experience of finding an injured bird outside their home, beneath a window that it naively flew into. We often ask ourselves, why do birds fly into windows? It turns out that birds cannot see glass at all, but only see the reflections in the glass' surface. While we see a hard surface, hundreds of millions of birds each year are led to death by the simple reflection of trees, shrubbery, and sky in our windows. In fact, some large, modern buildings made mostly of glass, such as the Minnesota Vikings stadium, can kill up to 100 birds a year.

While buildings with enormous windows have grown increasingly popular, our Audubon societies are not asking us to avoid windows, but rather to build our windows with bird safe glass! Bird safe glass is specially designed to make glass visible to birds through a variety of unique techniques. For example, some companies create a UV coating on glass that is almost invisible to humans. Others add a thin film to glass or etch it with a pattern of markings spaced every 2" by 4". This "2x4 Rule" creates spaces that researchers showed birds will not try to fit through, thus avoiding collision. Many local organizations, such as Mass Audubon, are lobbying for laws that would require large buildings to be built with bird-safe glass. However, if you're interested in making your own home bird-safe, check out this website for some useful tips.



Further Information:

- <https://www.allaboutbirds.org/news/new-study-may-help-minnesota-vikings-stadium-reduce-bird-collisions/>
- <https://www.collidescape.org>
- <https://www.audubon.org/news/what-does-bird-safe-glass-even-mean>

Image Source:

<https://www.glassonline.com/satinal-strato-bird-friendly-the-first-anti-collision-eva-film-to-protect-birds/>

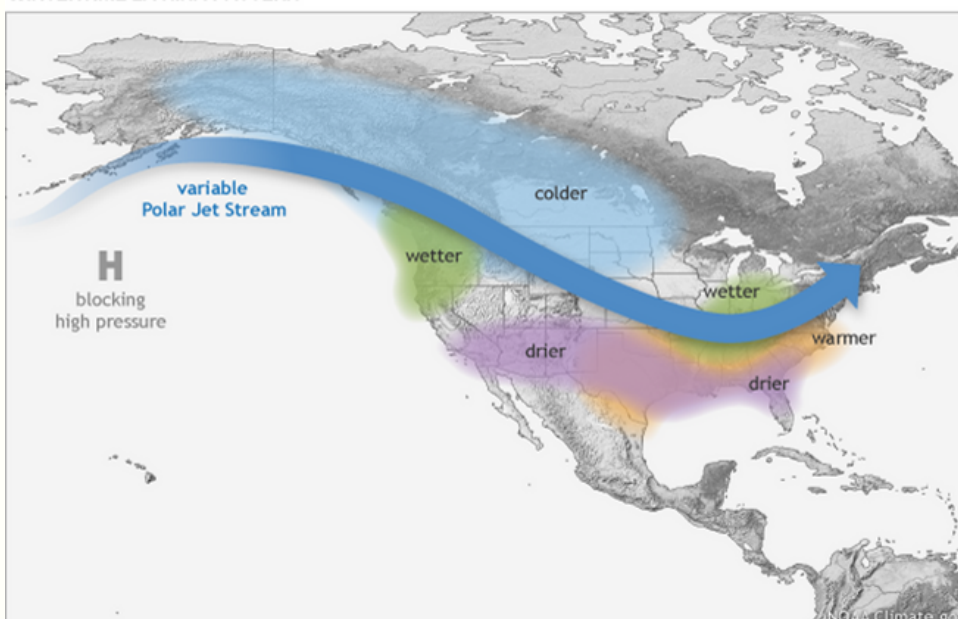
The Calm Before the Storm

THANK YOU TO **OCEAN**
RESEARCHER CATIE URQUHART

The El Niño– Southern Oscillation (ENSO) is an irregular weather pattern that occurs across the Southern Pacific Ocean, causing predictable weather changes globally. Every two to seven years, an ENSO episode will occur, shifting between El Niño, characterized by warm waters and heavy rains in the equatorial Pacific, to La Niña, the Pacific cooling period that causes extreme weather in the Atlantic region. While El Niño periods are more common and often more destructive than La Niña events, we are currently experiencing an unusually extreme La Niña event in both intensity and length.

Our current, most intense La Niña is about to enter its third Fall and Winter season since its origin in September 2020. Extended La Niña’s like this one—deemed “triple dips”—are rare and have adverse effects on the Atlantic hurricane season. For example, the colder Pacific sea-surface temperatures weaken the upper-level winds, creating more favorable conditions for hurricanes and tropical storms to form in the Atlantic Ocean. So, what would a “triple dip” mean for us? For our readers in Cape Cod and the rest of the Northeastern US, expect to reinforce those hurricane shutters and buckle up for a bumpy Winter! On the other hand, our readers in the South and West have faced—and will continue to face severe droughts throughout the end of 2022 thanks to La Niña.

WINTERTIME LA NIÑA PATTERN



Further Information:

- <http://www.climate.gov/enso>
- <https://www.axios.com/2022/06/16/la-nina-triple-dip-global-temperatures>

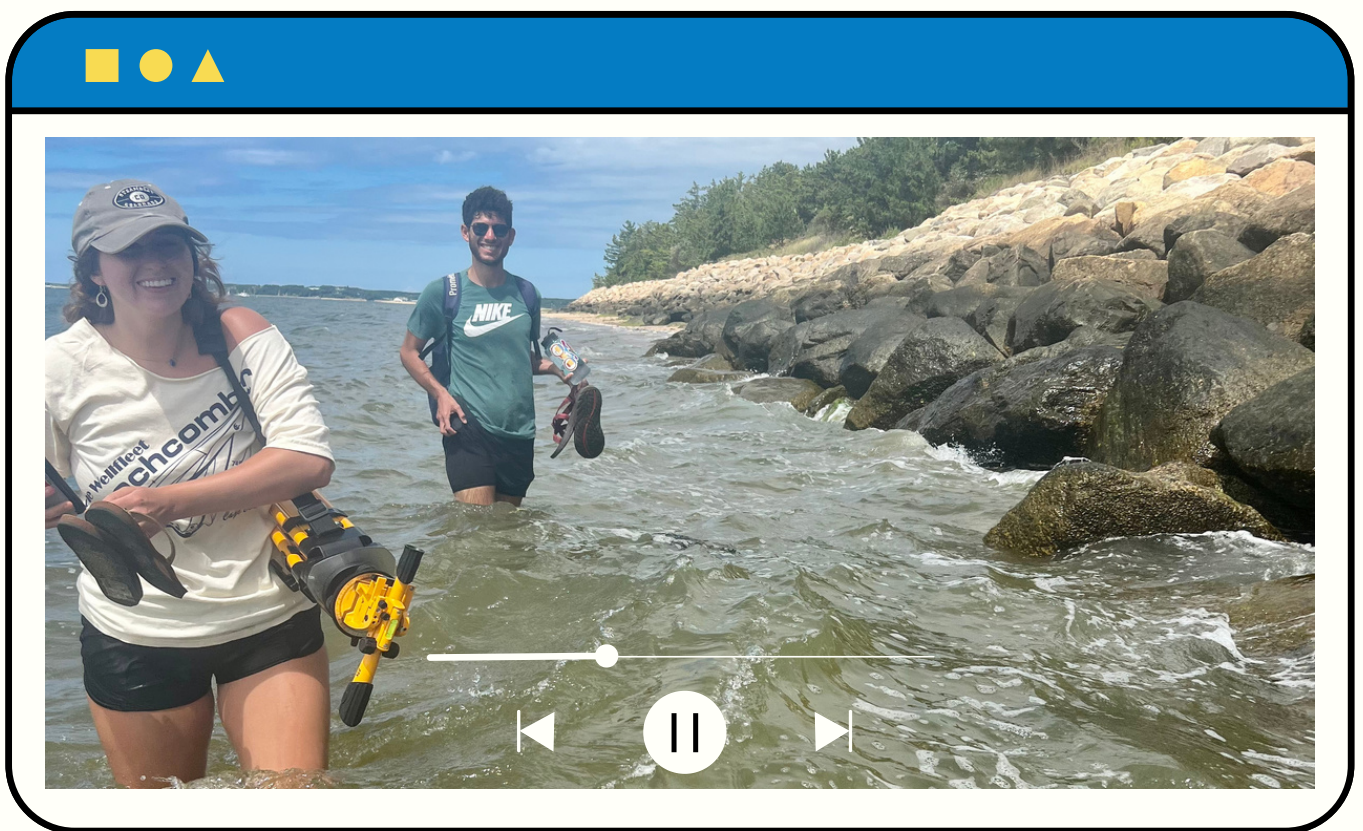
Image Source:

<http://www.noaa.gov/news/la-nina-develops-during-peak-hurricane-season>

Sneak Peak: OCEAN 61

OCEAN 61 will feature our summer interns and some of the work they have been helping us with!

Here is a screen shot of Paige, helping us measure beach sand movement and caught by the tide.



COMING
SOON

Thank you!

Editor's Final Words:

I am especially grateful to Associate Editor Catherine Urquhart and Research Coordinator Jessica Hillman, for supporting my commitment to environmental education.

-Gordon Peabody, **OCEAN** Editor.

Check out our website for other free publications:
www.safeharborenv.com/ocean-newsletter

Thank you for your support!



Gordon Peabody,
*Safe Harbor
Director*



Jessica Hillman,
*Research
Coordinator*



Catherine Urquhart,
*Associate
Editor*

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