



SHORES FORWARD

An Ocean Conservancy &
City of Miami Beach Partnership



Ocean
Conservancy®



Ocean Conservancy's Shores Forward partnership with municipalities in Florida aims to support cities' environmental sustainability efforts and increase their focus on ocean health, water quality and sea level rise. The support can take the shape of expert consulting, engaging with technical and community led networks and securing funding for projects.

The projects presented in this document establish a Shores Forward partnership between Ocean Conservancy and Miami Beach.



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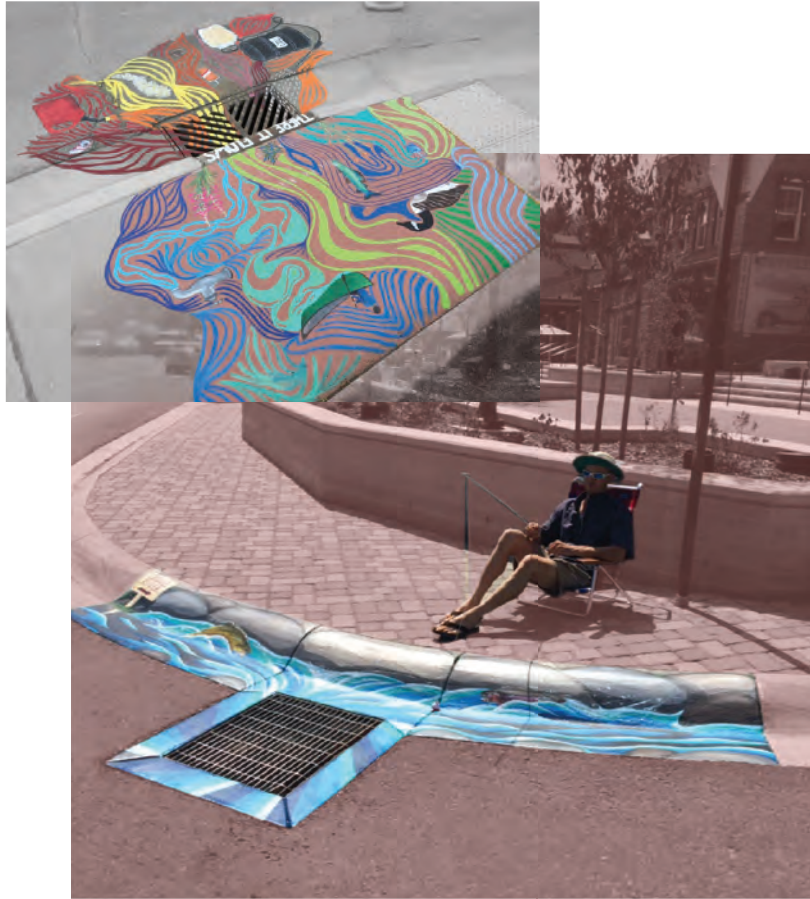
Education & Outreach

New Projects

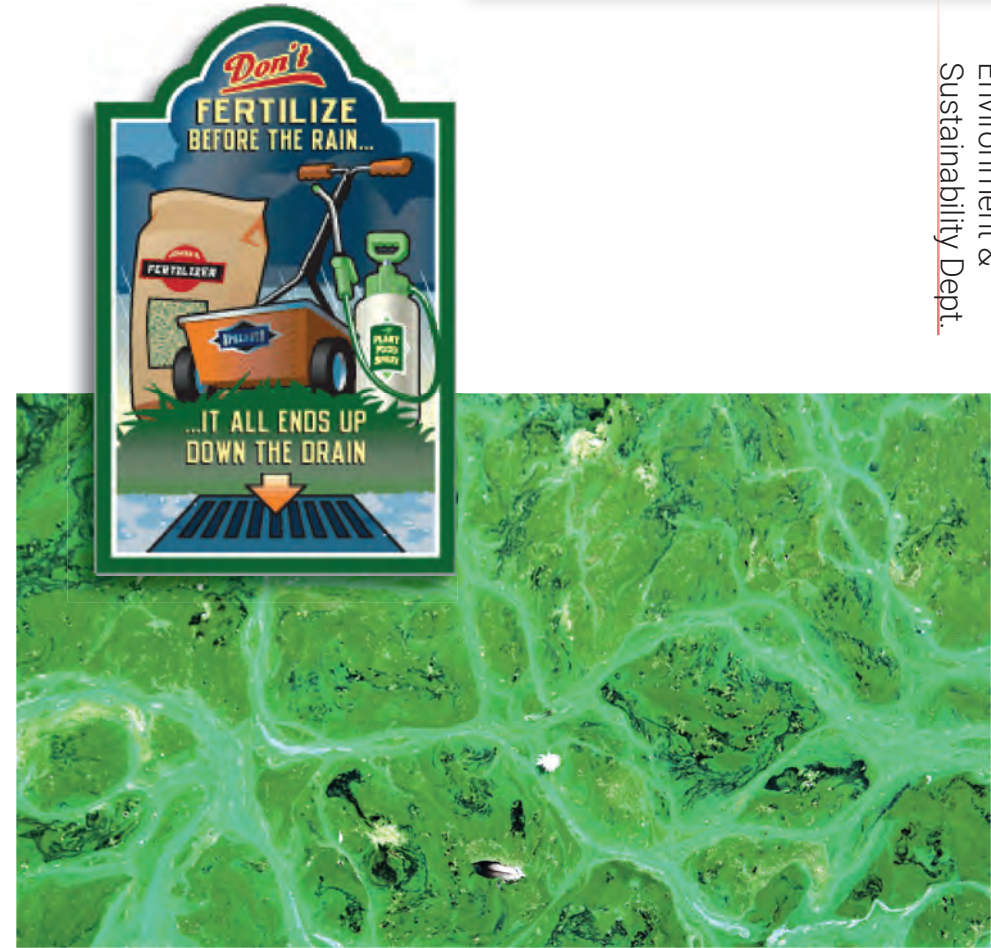
- Storm Drain & Sidewalk Markers
- Pollution Prevention Consumer Education

Ongoing Projects

- Higher Education Event
- Green Schools Challenge
- Underwater Cameras
- Public Messaging



Decorating storm drains and sidewalks through youth or art programs, with organizations like Dream in Green or Bakehouse Art Complex, is a great way to increase awareness around the issue of littering and its connection to water pollution. Ocean Conservancy and Miami Beach will organize a pilot program to decorate selected drains.



Chemicals, marine debris, fertilizers, household & automotive products all endanger the health of the ocean and potentially end up in Miami Beach's waterways. Through education campaigns via social media and informational materials, Ocean Conservancy and Miami Beach can encourage people to be more responsible consumers and environmental stewards.



Promoting water quality stewardship through placement of educational displays on dog bag dispensers, sea walls and other eye-catching locations can help reduce the amount of preventable pollution draining into Biscayne Bay.



Building on the existing partnership with FIU, Resilience Vision 2070, will explore how the city will adapt over the next 50 years. Ocean Conservancy will support this ongoing endeavor and pursue additional opportunities to bring attention to resilience-and-adaptation-focused exercises.



GUIDEBOOK 2019/20



High School Curriculum

WATER QUALITY & CONSERVATION

What's the problem?

In Miami-Dade County residents receive their drinking water from the Biscayne Aquifer. The aquifer is made up of porous limestone and is located underground. The state of Florida manages this water resource and allows utilities to dig wells into the aquifer to reach the freshwater and bring it up for consumers. Some risks the aquifer faces are contamination, over-pumping and salt water intrusion.

Why should we care?

Because the aquifer is located close to the surface and is recharged by rainfall it can become contaminated from above. Things like pesticides on lawns, gas/oil, and waste risk seeping into the aquifer contaminating the water. The aquifer is not a closed system and freely interacts with salt water. As we over-pump the aquifer, remove more water than we should, salt water is replacing the fresh water causing salt water intrusion. Sea level rise is also a factor as salt water intrusion as more salt water is moving inland. This will end up at the aquifer turning the freshwater to saltwater. This requires utilities to move further west to pump for freshwater. The Biscayne Aquifer is at risk of becoming fully saltwater, causing us to lose our water supply. The next water source is the Florida Aquifer which is located below the Biscayne Aquifer and would be much more costly to retrieve water from and is also a limited resource.

What can we do?

Protecting our water resources is a priority for Miami-Dade County and should be for its residents. The Miami-Dade Water and Sewer Department has put together a [conservation list of tips](#) and changes you can make to help conserve water resources. Some easy solutions are to replace fixtures with more water-efficient models like low-flow shower heads, faucets and toilets. The County offers numerous rebates and sometimes even free exchange programs to help make these changes possible.

This year, we are proud to partner with The Ocean Conservancy and share the amazing work that they have done in setting out a vision for Florida's ocean and reefs. "We know this is a phenomenal challenge - to imagine and then realize a Florida whose beaches are (even more) vibrant, whose water is clean and accessible to all, and whose ocean is thriving and providing for millions. We are up to the challenge - and we hope that you are, too!" Laria Seares Jones, Chief Executive Officer.



STE(A)M Activity - Everglades Crisis

Students build a model landscape to illustrate the uniqueness of the Kissimmee Lake Okechobee-Everglades (K-O-E) watershed and use a model to demonstrate how alterations have affected it. Students learn about algae blooms caused by too many nutrients in the water.

CREATE YOUR OWN - Lesson Plan Required*

*see online Guidebook for format

SUBMISSION FORM, DETAILED DESCRIPTION OF ACTIVITIES, BENCHMARKS, & RESOURCES AVAILABLE ONLINE



Dream in Green and Ocean Conservancy have an ongoing partnership to work with teachers across schools in Miami-Dade and Broward to incorporate environmental sustainability, including ocean conservation, in their curriculum as part of the Green Schools Challenge. Miami Beach schools are already participating and Ocean Conservancy will continue supporting Dream in Green.

An expansion of the Coral City Camera project to include a camera and display near popular beach and bay side destinations would provide a glimpse into what is happening under the surface. It could help foster emotional ties between Miami Beach residents and visitors to local marine ecosystems. South Pointe Pier is a likely location.

A vibrant underwater photograph showing a large, branching coral reef in the foreground. Numerous small, blue and yellow fish are swimming around the coral. In the background, a few larger, dark-colored fish are visible against a clear blue sky.

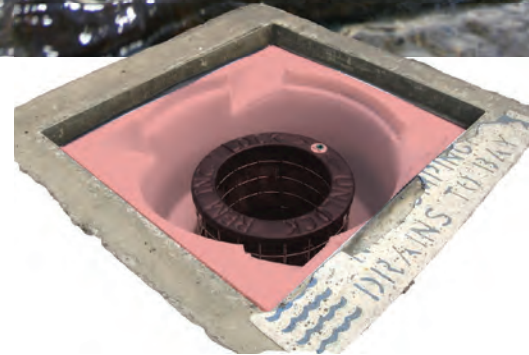
Ocean Trash

New Projects

- Circularity Assessment Protocol
- Microplastics & Roadways
- Youth-Driven Single-Use Plastic Reduction
- Sustainable Events Summit

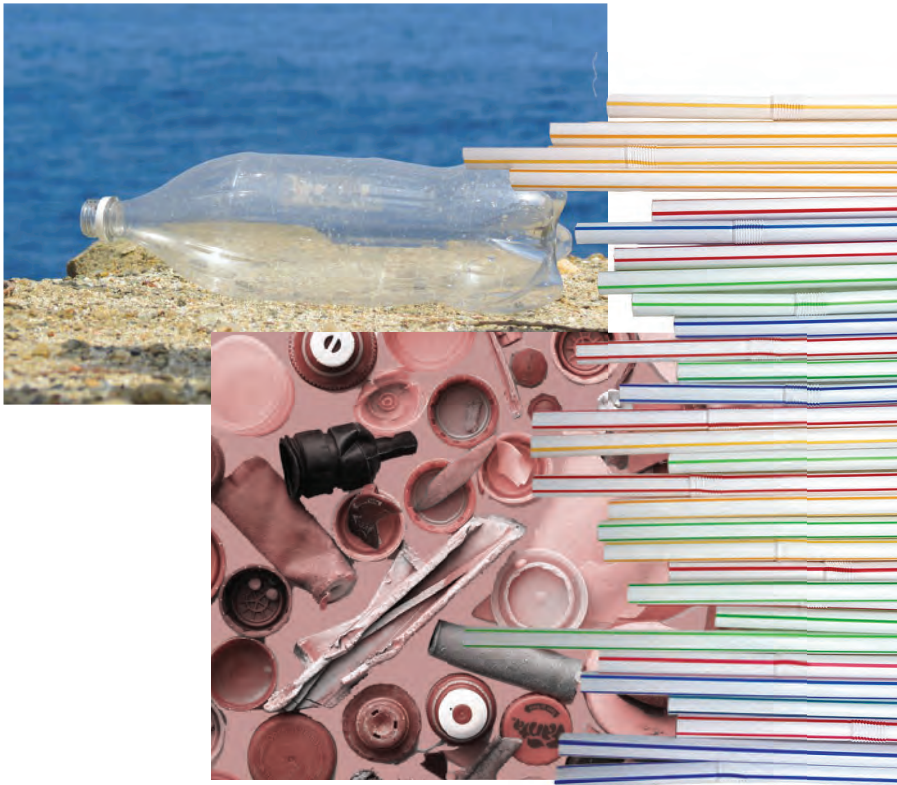
Ongoing Projects

- Polystyrene Messaging
- Recycling & Waste Reduction



Ocean Conservancy is funding Professor Jambeck from the University of Georgia to study plastics pollution in the Miami River. Miami Beach can partner with Ocean Conservancy to complete a similar study in its canals, Bay or outlets. Data collected includes types of plastics found, possible contributing factors such as availability of public waste bins and a systems-survey of municipal waste management processes. Ocean Conservancy plans on engaging local universities where possible.

As much as 28% of microplastics in waterways may come from road tires shredding synthetic rubber compounds. Professor John Weinstein from Citadel College has been working on studying drainage technology and catchment of plastic pollution to reduce quantities of microplastics entering nearby bodies of water. Miami Beach and Ocean Conservancy will examine potential pilot sites.



Single-use plastic is one of the largest water pollution sources in the world. Local NGO, Big Blue & You, is willing to activate its youth network to visit restaurants and businesses in Miami Beach to encourage them to become ocean-friendly businesses. Ocean Conservancy will work with Miami Beach and NGO partners who are already working on single-use plastic reduction.



Ocean Conservancy will be organizing a sustainable events summit to discuss standards and establish consensus on what makes an event sustainable. The summit will provide information about how events can reduce their carbon footprint and limit waste. The Greater Miami & The Beaches Hotel Association, Greater Miami Convention and Visitors Bureau and others will be invited to discuss sustainable practices and special considerations in regards to the ongoing COVID-19 pandemic.



Miami Beach already has a Polystyrene Ordinance and Ocean Conservancy will work to decrease the amount of Polystyrene in use county-wide, by working with other Miami-Dade municipalities to have ocean trash messaging campaigns.



Ocean Conservancy will work to support the PlasticFreeMB initiative by amplifying messaging, announcements and advocating for a countywide #PlasticFree campaign based on #PlasticFreeMB.

A photograph of two manatees swimming underwater. The manatees are brown and wrinkled, with their heads and flippers visible. They are swimming towards the right. The background is a clear, light blue water.

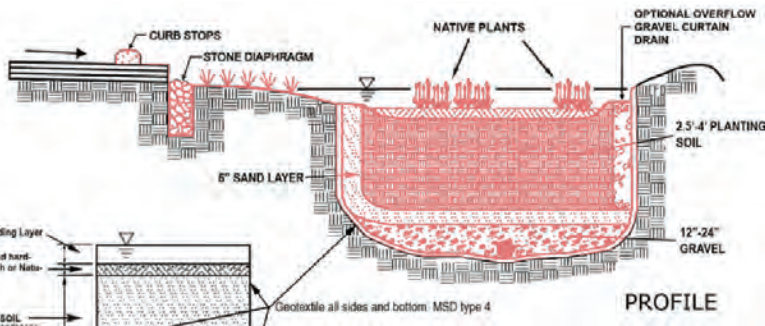
Water Quality

New Projects

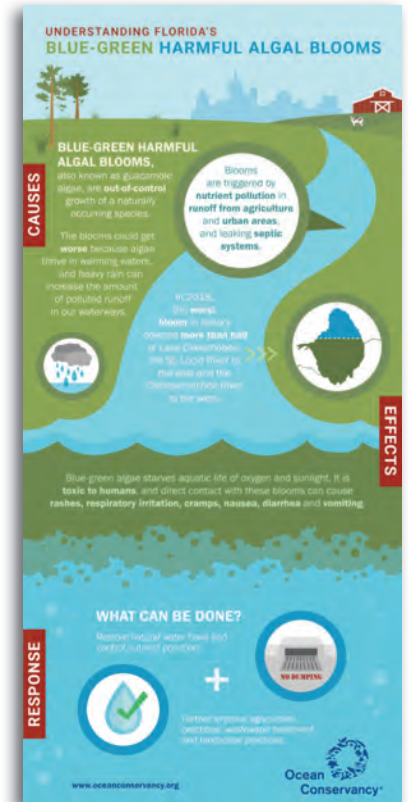
- Green Infrastructure
- Fertilizer Ordinance

Ongoing Projects

- Glyphosate Ban
- Beaches & Biscayne Bay Collective
- Stormwater Infrastructure
- Water Quality Monitoring



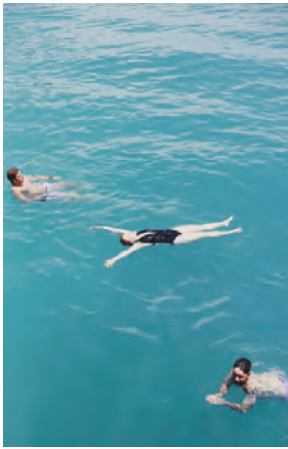
BIORETENTION SECTION (TYPICAL)



Neighborhood improvement projects incorporating bioretention cells, and other types of green infrastructure, can help reduce stormwater runoff and filter out contaminants. Bioretention cells on city property, in sidewalk medians or parking lanes can help reduce pollutant loads entering the stormwater system. Ocean Conservancy will support green infrastructure projects in Miami Beach.

Ocean Conservancy has supported the Miami Beach fertilizer ordinance via commission comments and reviewing language when requested.

Water Quality Monitoring



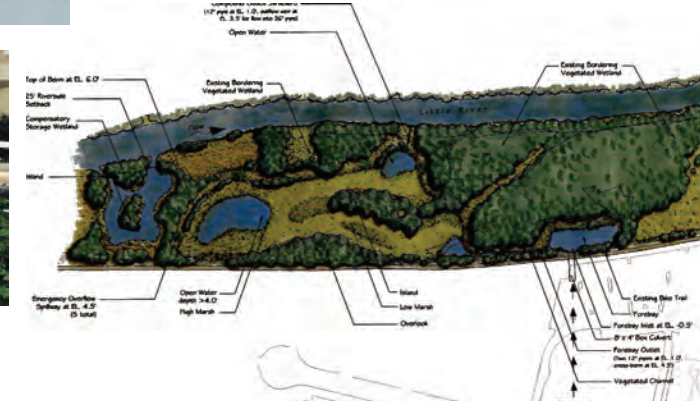
Water testing in Biscayne Bay helps maintain eyes on the water and monitor the health of vital seagrass, marine habitats and bay species. Ocean Conservancy can support the extensive network of water quality monitoring stations already in place.

Water Quality

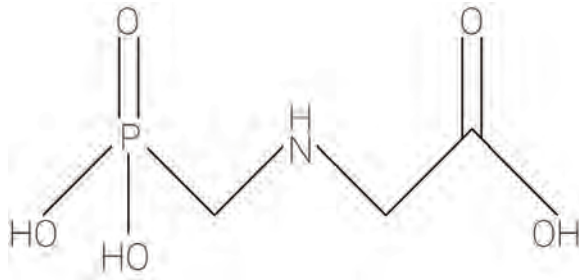
Water Quality



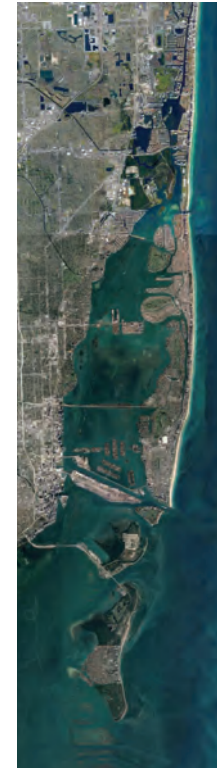
Stormwater Infrastructure



Miami Beach's stormwater capital improvement projects are preparing the city to weather future storms and alleviate sunny day flooding. Ocean Conservancy will support further development of the city's living-with-water approach to stormwater management, parks and greenspace design.



Miami Beach has a glyphosate ban in place since 2018. Reducing chemicals used in landscaping practices is an important step in preventing chemicals from negatively affecting the environment. Ocean Conservancy's scientists will help research alternatives for turf lawns to further improve Miami Beach's environmental stewardship.



Following 2020's August Biscayne Bay fish kill, Miami-Dade County commissioners passed resolutions to study the Biscayne Bay Task Force's recommendations and hire a Chief Bay Officer to coordinate marine health actions across municipalities in Biscayne Bay. Ocean Conservancy will work to advance Shores Forward partners' ocean health priorities.



Marine Wildlife

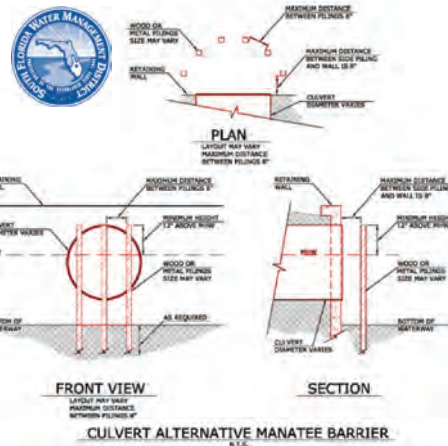
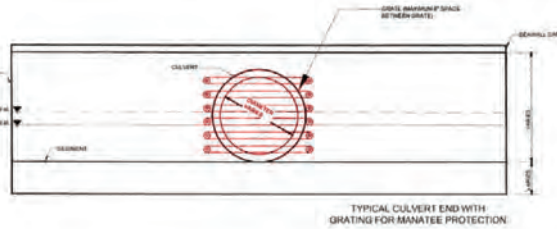
New Projects

- Manatee Protection
- Aquatic & Tidal Habitats
- Seabird Protection Education
- Natural & Artificial Reefs

Ongoing Projects

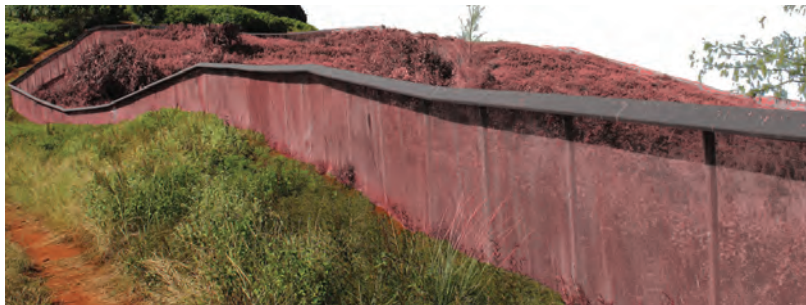
- Native Plantings Round-Table
- Biscayne Bay Aquatic Preserve

FWC

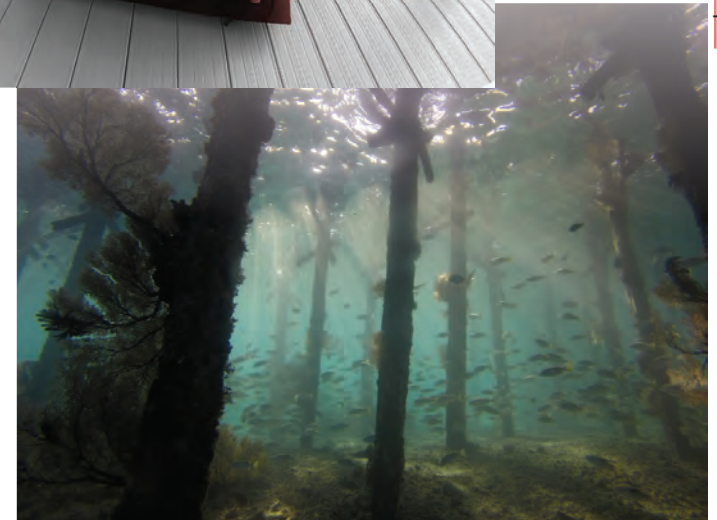
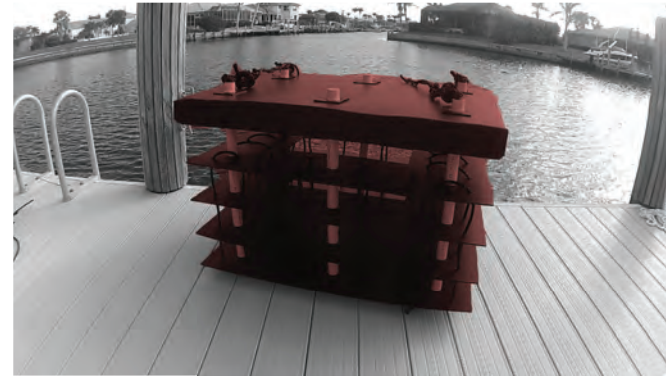


Ocean Conservancy will support Miami Beach's efforts to map all city outfalls on GIS to help prioritize areas for installation of manatee grates. Signage placed near kayak launching stations for light recreation can also be developed.

Miami Beach and Ocean Conservancy can seek opportunities to enhance aquatic and tidal habitats. By increasing the availability of habitats in parks and shorelines, Miami Beach can help its aquatic wildlife thrive.

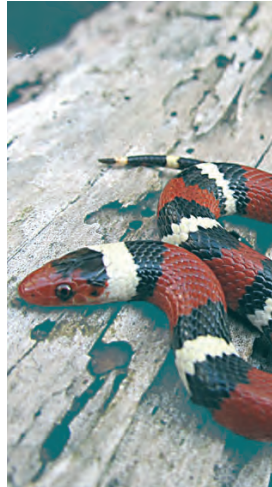
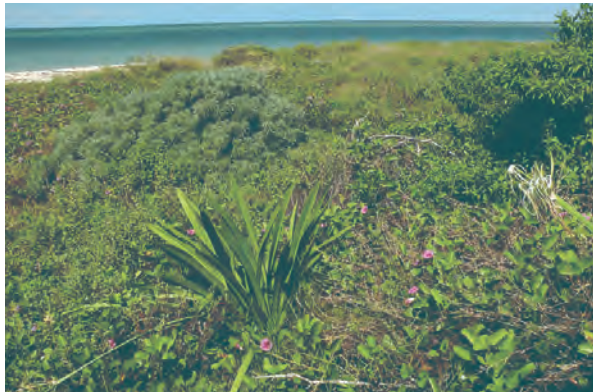


Seabirds are threatened by reduced habitat areas and competing with invasive flora and fauna, which limit sources of food and reproduction ability. On land, invasive flora and fauna reduce seabirds' reproduction success. Ocean Conservancy will aid in the production of educational materials to inform residents about the value of native seabirds, the threats they face and how they can help.



Coral reefs are an important habitat to a diverse range of marine life, rivaling old-growth forests in the longevity of their ecological communities. They are vital to South Florida's economy and are the first line of defense protecting coastlines from storm surge. Ocean Conservancy can support and help find funding for a pilot project to help expand natural reef habitat.

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
Southern Magnolia <i>Magnolia grandiflora</i>						
Spanish Bayonet <i>Yucca aloifolia</i>						
Spanish Moss <i>Tillandsia usneoides</i>						
Spatterdock <i>Althaea rosea</i>						
Big-flower star orchid <i>Epidendrum rigidum</i>						
Sting Lily <i>Croton americanus</i>						
Swamp Milkweed <i>Asclepias Perennis</i>						



Ocean Conservancy will host and organize a virtual round-table to discuss native plantings and landscape design in South Florida. Native plantings are important to support the livelihoods of native animals and maintain a climate resistant ecosystem.

Over the last 10-20 years, seagrass coverage has decreased by nearly 90% in some areas of Biscayne Bay. Ocean Conservancy will help Miami Beach develop local seagrass nurseries to provide specimens for plantings. Ocean Conservancy will also advocate for healthier and more abundant seagrass coverage at the city and county level across Biscayne Bay.



Carbon Pollution & Climate

New Projects

- Blue & Green Roofs
- Beach Carbon-Footprint Reduction

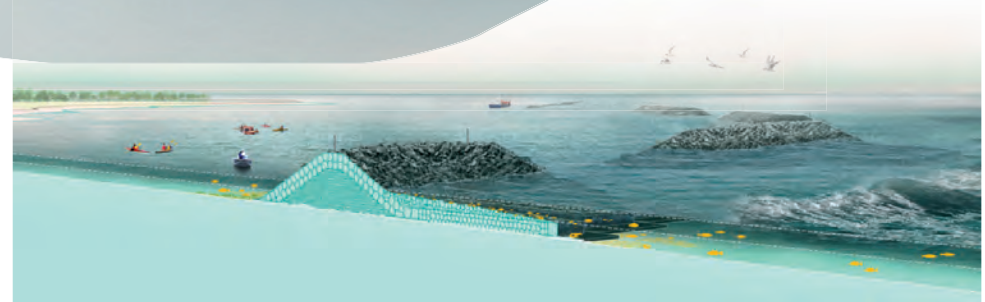
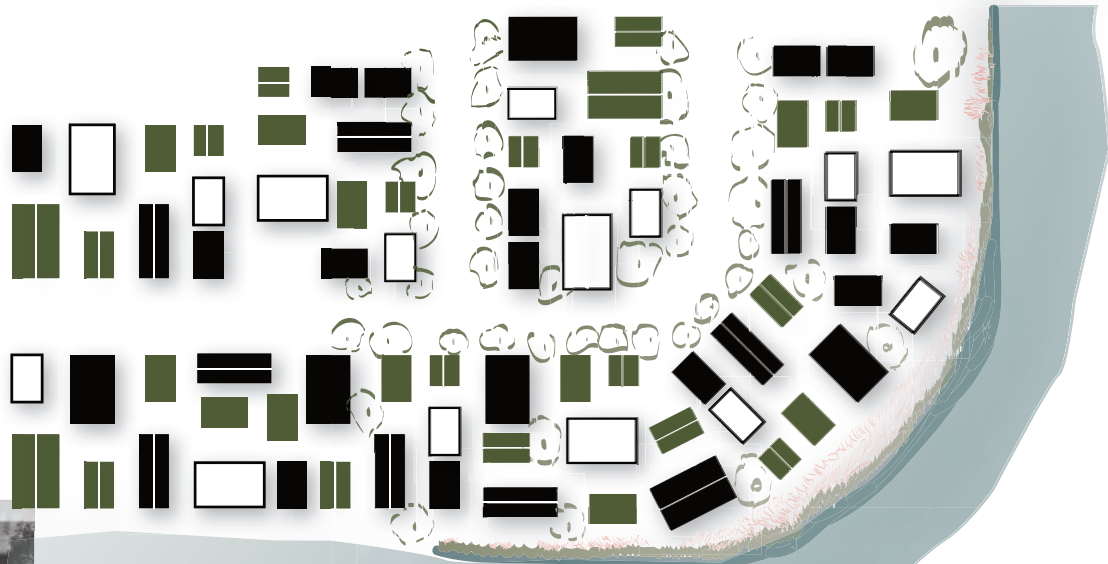
Ongoing Projects

- Living Shorelines
- Energy Efficiency in Buildings
- Carbon Mitigation
- Efficient & Clean Transportation

Florida DEP



Planted roofs or green roofs not only provide cooling and light reflectance but also help offset a building's carbon emissions. Miami Beach, is in a subtropical region and can experience over 50" of rain each year. Blue roofs help cool down buildings and detain stormwater runoff to reduce street level flooding. Ocean Conservancy will help apply for funding for projects, especially in lower-income neighborhoods to increase their environmental resilience.



Rehabilitation of sea walls provide opportunities to incorporate living shorelines with traditional grey infrastructure, such as rip-rap. Ocean Conservancy is interested in funding a portion of the DBOT (Design, Build, Operate, Transfer) process for a living shoreline project in Miami Beach.

NOAA

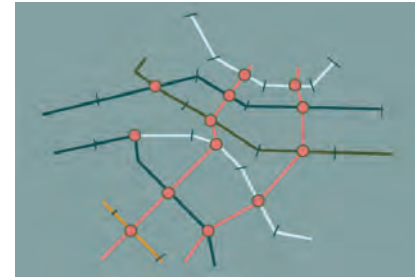


Lifeguard ATV fleets could be electrified and help reduce Miami Beach's carbon footprint. Ocean Conservancy will support funding applications when the city is ready to electrify its fleet or pursue other energy-efficient solutions.

Miami Beach has been designated a Solsmart Gold community by the U.S Department of Energy. Through solar-friendly policies, the city is helping make it easy for property owners to chose solar. Together, Ocean Conservancy and Miami Beach can pursue grants to increase access + incentivize older building stock to retrofit systems for improved efficiency, not limited to solar energy improvements.



Miami Beach completed a greenhouse gas emissions inventory and will have a Climate Action Plan to guide actions to reduce its emissions. Ocean Conservancy will work with the city to review the development of projects and support any actions and plans undertaken to lower emissions or prepare for climate change.



After electricity usage in the built environment, the transportation sector is the second highest emitter of greenhouse gas pollution. Miami Beach is developing a network of EV charging stations to help promote electric vehicles and expanding its EV fleet. Ocean Conservancy will support informational campaigns and advocate at the county level for improved and more efficient county-wide public transportation.

SHORES FORWARD

An Ocean Conservancy Initiative



Ocean Conservancy is working with you to protect the ocean from today's greatest global challenges. Together, we create science-based solutions for a healthy ocean and the wildlife and communities that depend on it.

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- Pg. 6: DIG graphics
- Pg. 7: <https://pixabay.com/photos/cyanobacteria-cyanophyta-algae-4469840/> + Fertilizer Infographic: <https://deldot.gov/Programs/stormwater/index.shtml#dc-wherestorm>
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- Pg. 23: Ocean Conservancy + OpenText - https://oceanc.emotion.com/search/comp.aspx?caption_id=115529&results_view=image_text&isshortcut=false&isPopup=true&comp_total_matches=46&first_match=36&collection_id=0&large_07=harmful+&sort_direction_0=d&sort_direction_1=d&sort_field_0=relevance&sort_field_1=last_modification_date&recursive=&collection_list=&requested_matches=12&random_seed=0&minimum_score=0&field_boolean_expression=&search_page_uri=&showNextPrevious=true + Blue Green Marina: <https://pixabay.com/photos/marina-sailing-boat-sailing-boats-3580133/>
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- Pg. 31: Inter-fluve - <https://interfluve.com/our-work/>
- Pg. 32: USFWS Fence - <https://abcbirds.org/invasive-species-and-seabirds/> + Piping Plover Drawing - <https://picryl.com/media/piping-plover-1-male-2-female-674683> + Piping Plovers Flying - https://upload.wikimedia.org/wikipedia/commons/8/8c/Piping_plover_pair_in_flight.jpg
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- Pg. 40: Green Roof Technology - <http://www.greenrooftechology.com/project-portfolio>
- Pg. 41: Living Breakwaters Project/Rebuild by Design - <https://stormrecovery.ny.gov/learn-more-about-living-breakwaters-project>
- Pg. 42: Kid's Footprints - <https://unsplash.com/photos/3ybjCPXEA5w> + MB Sustainability Plan - https://www.miamibeachdl.gov/wp-content/uploads/2017/08/Clity-of-Miami-Beach-Sustainability-Plan_FINAL.pdf + Core Reef - <https://www.pexels.com/photo/fishes-near-coral-reef-3468655/>
- Pg. 43: EV charging sign - https://www.flickr.com/photos/woolamloo_gazette/13310792553/in/photolist-mheHtk-TG047s-2aWU7HC-GrepHj-9h85M-9h3iE-9h85b-9h2Hu-9h24j-9h20e-22v2VL-JgIK62-v37rM4-257jBEH-22v3u3-2hw9rah-RBB9j-YjQ863-NjHaxu-AMT3Ne-PQMnxX-NjGRJJ-PN32Q9-JQy7Z1-PN2tsw-PuCUb-NK94zp-28g89Sg-99ENIK-QCXKae-99HvN-9aQaU-YKyc3-mhdxSx-MvMYS1-99HWWm-raKiPm-SoeYs5-Z2lAvf-RTVsj-JTUcmZ-aAYs8-Udounj-J79gTh-oXgIG-28A4Vm1-99ENRD-28xNfC-bQ87XX-28xNfG + Electric Scooters - <https://pixabay.com/photos/e-scooter-escooter-electric-scooter-449668/> + Bus Stop - <https://unsplash.com/photos/M6bSWTcVkg>