



# 2022 ANNUAL REPORT

To restore and enhance Santa Monica Bay through actions and partnerships that improve water quality, conserve and rehabilitate natural resources, and protect the Bay's benefits and values

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*a year in review*

# A MESSAGE FROM CEO TOM FORD

Dear Friends,

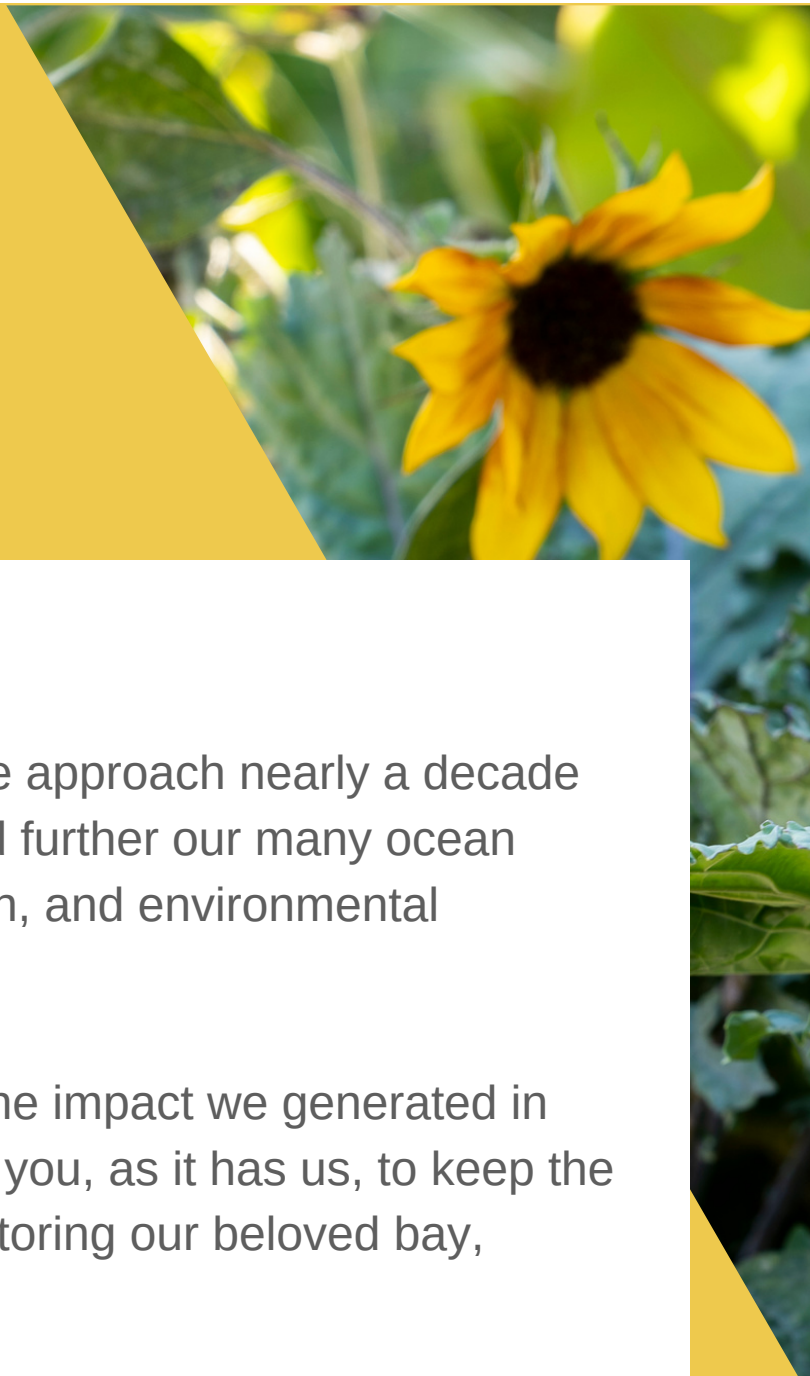
It's been a potent year as we approach nearly a decade of kelp forest restoration and further our many ocean resilience, coastal adaptation, and environmental engagement initiatives.

The following pages recap the impact we generated in 2022. We hope this inspires you, as it has us, to keep the charge of protecting and restoring our beloved bay, beaches, and watershed.

Cheers,



Tom Ford  
Chief Executive Officer  
The Bay Foundation



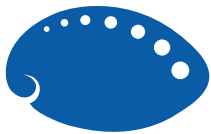
# 2022 AT A GLANCE

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**3.8**

acres of kelp forest restored, bringing the total number to date to ~60 acres



**1,600+**

federally endangered white abalone outplanted to the Palos Verdes Peninsula, bringing the total number to date to ~7,000



**79.53**

tons of non-native vegetation removed from five local restoration sites



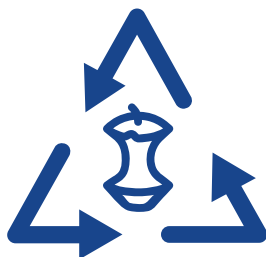
**2,189**

volunteer hours spent across seven coastal projects



**6,331**

native plants were planted across our four restoration sites



**2**

community compost bins activated at Environmental Charter Schools in Inglewood and Lawndale



**3,000**

pollution prevention kits distributed to SoCal recreational boaters with the California State Parks and California Coastal Commission's Boating Clean and Green Program



# OCEAN RESILIENCE

*TBF's Ocean Resilience Program reverses ecological loss by restoring kelp forests, eelgrass meadows, and recovering threatened and endangered species of abalone.*

# RESTORING KELP FORESTS

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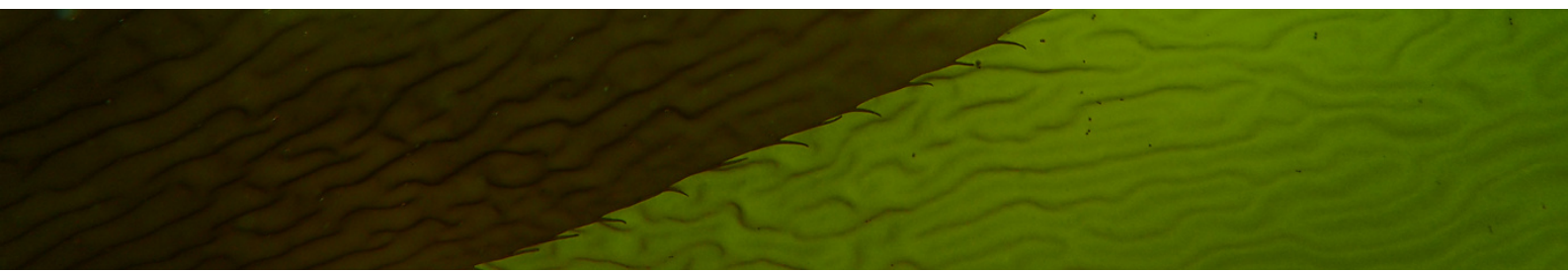
The Bay Foundation (TBF), along with academic researchers and commercial sea urchin harvesters, is **approaching 10 years of a continuous effort to restore rocky reefs** from an urchin barren state to a kelp forest state on the Palos Verdes Peninsula. In 2022, TBF's Ocean Resilience Program **restored 3.8 acres**, and to date, has successfully restored **approximately 60 acres of reef** which has rapidly increased the richness and biomass of algae, fish, kelp canopy, abalone, and lobster. That's more than 45 football fields worth of restored kelp forest!



Our actions have **directly advanced the resilience of the kelp forest and increased biodiversity**. Restorative actions will continue into 2023 with efforts focused on White Point and Point Fermin on the Palos Verdes Peninsula. Why is restoring kelp significant? The three-dimensional kelp forests of Southern California support an incredibly diverse and biologically productive ecosystem that is **home to more than 700 species** of algae, invertebrates, fish, and marine mammals.

Giant kelp is one of the fastest growing organisms on the planet, and as it grows, it pulls carbon dioxide from the seawater as part of the first stage of a **carbon sequestration** pathway. Their ability to address ocean acidification and reduce coastal erosion makes kelp forests incredibly valuable in our efforts to **adapt to climate change** in Los Angeles.

Despite kelp forests' immense benefits, a multitude of impacts over the past 170 years has resulted in the **loss of roughly 80% of our kelp in Los Angeles**. Frequently under compounded stressors, the kelp forest is converted into an urchin barren that is not able to provide the same diversity, productivity, or coastal protection. Without algae, the barren offers little carbon sequestration services. **To reverse this trend and create more stable kelp forests, TBF is leading restoration**, reducing the number of urchins on the reef so kelp forests can return and thrive.



# RECOVERING ABALONE POPULATIONS

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TBF's Ocean Resilience Program continues to contribute to a statewide effort to **restore the federally endangered white abalone** in rocky reef habitats. This species is currently a NOAA “Species in the Spotlight”, with one of eight species considered among the most at risk of extinction. To support the restoration of this species, TBF manages the operations and maintenance of two mariculture facilities located at the Southern California Marine Institute. These spaces are used to feed, assess, and acclimate abalone in advance of them being placed in the ocean.

In addition to overseeing these mariculture facilities, TBF researchers coordinate with other partners to outplant abalone into SAFEs (Short-Term Abalone Fixed Enclosures), and BARTs (Baby Abalone Recruitment Traps) along the Southern California coast

In 2022, TBF was involved in **transporting nearly 8,000 juvenile white abalone** to facilities in Southern California. Over **1,600 of these white abalone were outplanted** to the Palos Verdes Peninsula, bringing the total number of abalone outplanted since the inception of this project to ~7,000. TBF continues to monitor these outplanted animals after their release, **ensuring their viability and quantifying success** in the process.

**In our Bay, there is no abalone without the kelp.** White abalone are significant to kelp forests as they compete with urchins for space, which helps keeps the urchins from decimating the forests. They may also clear space for other species to flourish in the kelp forest ecosystem. TBF and partners work’s ultimate goal is to recover abalone populations in the Santa Monica Bay and region to support these rare species and their socioeconomic benefits to people.





# RESEARCHING & RESTORING EELGRASS

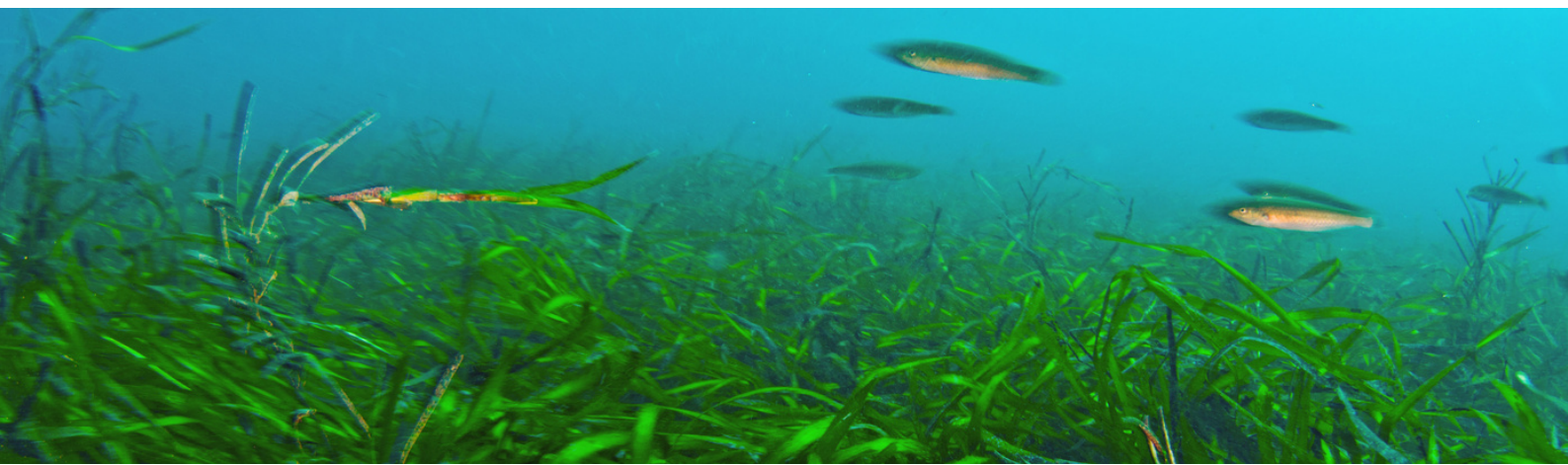
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TBF and project partners conducted **numerous SCUBA-based surveys to monitor eelgrass**, an ecologically significant marine plant, at both transplant and donor sites from 2021. TBF and Paua Marine Research Group (PMRG) divers are closely tracking eelgrass health, fish community, and oceanographic metrics to understand drivers of transplant success.



Additionally in 2022, TBF, alongside PMRG, Vantuna Research Group, and Scripps Institution of Oceanography, **procured CA State Proposition 50 funding** to utilize SCUBA-based surveys, side-scan sonar, and the deployment of a suite of biophysical oceanographic sensors (light, temperature, dissolved oxygen, among others) to **further elucidate key data gaps** outlined in the Santa Monica Bay National Estuary Program's Comprehensive Conservation Management Plan surrounding submerged aquatic vegetation and soft-bottom habitat within the Bay.

Eelgrass (*Zostera*) is a marine flowering plant that forms “meadows” and is found in temperate regions throughout the world. **Eelgrass and other seagrasses provide several ecosystem benefits and services** including nursery habitat development, carbon sequestration, erosion reduction, and water quality improvements. Despite the importance of seagrasses, these habitats are experiencing staggering rates of loss through an amalgamation of global threats and local stressors. Therefore, **TBF and PMRG’s work aims to fill research gaps on open coast eelgrass habitats and develop restoration techniques.**



# COASTAL ADAPTATION

*TBF's Coastal Adaptation Program, and its many partners, are bringing back dunes, plants, and wildlife to Los Angeles beaches.*

*These “living shorelines” help provide nature-based solutions to address climate change, add beauty, and protect our coast from erosion and flooding. Scientific monitoring results demonstrate that living shorelines create beaches with higher elevation and more complexity, helping to hold back the ocean, while simultaneously preserving recreation for people and refuge for wildlife.*



# IMPLEMENTING LIVING SHORELINES

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## Malibu

TBF and partners are **restoring approximately 3 acres** of sandy beach and dune habitats at Zuma Beach and Westward Beach to improve coastal resiliency and increase beach health.

In 2022, rounds of semi-annual post-restoration monitoring continued and in February 2022, we conducted supplemental seeding of the sites and **planted an additional 245 plants at Westward Beach and 99 plants at Zuma Beach**. Interpretive signage was installed in May 2022, and the [Year 1 Annual Report](#), which summarizes activities and scientific monitoring for this site, was finalized in May 2022.





# IMPLEMENTING LIVING SHORELINES

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## Santa Monica Beach Restoration Pilot Project

In 2022, TBF completed a **5-year scientific monitoring** effort in which vegetation continues to expand, and dunes continue forming. Data from the southern portion of restoration area show **over 0.5 meters of sand accretion**, with dunes along fence lines of up to a meter in height, in addition to **federally endangered western snowy plovers regularly recorded** in monitoring data.

Since the original project permit was set to expire in 2021, City of Santa Monica opted to pursue a permit amendment to **establish the site as a permanent feature of the coastline**. TBF continued working with the city to draft a Coastal Development Permit (CDP) amendment, including supplemental documents, such as the new Adaptive Management Plan.





# IMPLEMENTING LIVING SHORELINES

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## Los Angeles

TBF and partners are implementing a multi-habitat approach to restore **almost 4 acres** of beach and coastal bluff habitat at Dockweiler State Beach.

Implementation of the beach portion of the project was initiated in January 2022 and completed in March 2022. The first round of post-restoration monitoring of the beach site occurred in July 2022. Site maintenance was on-going, and implementation of the bluff restoration was conducted in October 2022.





# IMPLEMENTING LIVING SHORELINES

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## Manhattan Beach

Approximately **3 acres** of beach dune habitat, is being restored in Manhattan Beach. The goals of this project are to increase shoreline resilience, implement nature-based protection measures against sea level rise and coastal storms, and increase engagement of the community through enhanced beach experiences, outreach, and education.

In 2022, implementation kicked off in January and to date, **nearly 28 tons of iceplant was removed, 1,400 native dune plants have been planted**, the project's boundary was delineated, and sand fencing segments were installed to promote dune growth. The first round of post-restoration monitoring was conducted in August 2022. An additional round of seeding occurred in fall 2022.





# IMPLEMENTING LIVING SHORELINES

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## Santa Monica Dune Restoration

This project is being **planned** in partnership with the City of Santa Monica, California State Parks, Audubon Society, and public stakeholders. It will include **restoration of approximately 4.5 acres of beach habitat** on Santa Monica Beach, including an area with a current snowy plover enclosure.

This project was **approved to receive funding** by the Refugio Beach Oil Spill Trustee Committee in September 2021 through the National Fish and Wildlife Foundation. The grant agreement was executed in August 2022. Project outreach, stakeholder engagement, planning, design, and permitting were initiated in fall 2022.





# RESTORING LOS ANGELES' LARGEST DUNES

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The LAX Dunes, (also known as the El Segundo Dunes), are the **largest remaining remnant contiguous coastal dune system in Southern California**. The 302-acre dune site is owned and managed by Los Angeles World Airports (LAWA). The site provides habitat for **over 900 species**, including the beautiful and delicate federally endangered El Segundo Blue Butterfly.

In 2022, TBF, LA Conservation Corps, and IO Environment **planted approximately 13,500 native plants** through spring 2022. TBF performed compliance monitoring where data were subsequently entered, analyzed, and compared to success criteria. Non-native vegetation removal is ongoing with the support of volunteers and IO Environment.





# REVITALIZING BALLONA WETLANDS ECOLOGICAL RESERVE VIA COMMUNITY STEWARDSHIP

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TBF, in partnership with California Department of Fish and Wildlife, Friends of Ballona Wetlands, and community volunteers are **removing invasive vegetation** while strengthening public involvement and stewardship at the Ballona Wetlands Ecological Reserve. In 2022, TBF continued maintaining and expanding the restoration site with an estimated **16.66 tons of invasive iceplant being hand-pulled** along with the removal of other non-native vegetation.

The **restoration footprint expanded an additional 0.52 acres this year**, with a total project restoration amounting to 2.23 acres to date. 12 restoration volunteer events were hosted and consisted of **149 volunteers**. Six additional targeted non-public restoration and site maintenance events were held. TBF staff, project partners, and interns focused on removing non-native vegetation such as radish (*Raphanus sativus*), prickly lettuce (*Lactuca serriola*), ice plant, and Geraldton carnation weed (*Euphorbia terracina*). **Scientific monitoring of the site is ongoing.**





# ENVIRONMENTAL ENGAGEMENT

*TBF's Environmental Engagement Program carries out initiatives that foster the transformation of perceptions, attitudes, and behaviors into concrete, pro-environmental action. It uses an integrative approach that involves social science, education, leadership building, and creative, empowered communications.*

# ADVOCATING FOR CLEAN BOATING

TBF continued working with Southern California coastal boating communities **to prevent pollution and increase stewardship.**

In 2022, this program distributed over **3,000 California Boater Kits** to recreational boaters, carried out a **community-based social marketing** pilot in Marina del Rey, **monitored over 70 sewage disposal facilities** from San Diego to Santa Barbara, trained over **100 individuals to become environmental educators** known as Dockwalkers, facilitated presentations and outreach events, gained over **2,000 views** to its *Consider a Marine Composting Toilet* video, and produced multiple reports including a recap on our Marine Protected Area Boater Education Project and Boater Sewage Disposal Survey Report.





# ADVOCATING FOR COMMUNITY COMPOSTING & GARDENING

Table to Farm, initiated in 2016, is a partnership between TBF, Environmental Charter Schools (ECS), and the community collaboratively working to reduce greenhouse gas emissions by **recycling organic food waste and growing local produce**.

Between 2016 and 2019, three compost hubs were established at ECMS-Inglewood, ECMS-Gardena, and ECHS-Lawndale. In 2020, a community garden was established alongside ECMS-Inglewood's gates. 2022 highlights included **authorship of a case study** on the community garden's development and ongoing support of ECMS-Inglewood's **monthly community garden volunteer events**.

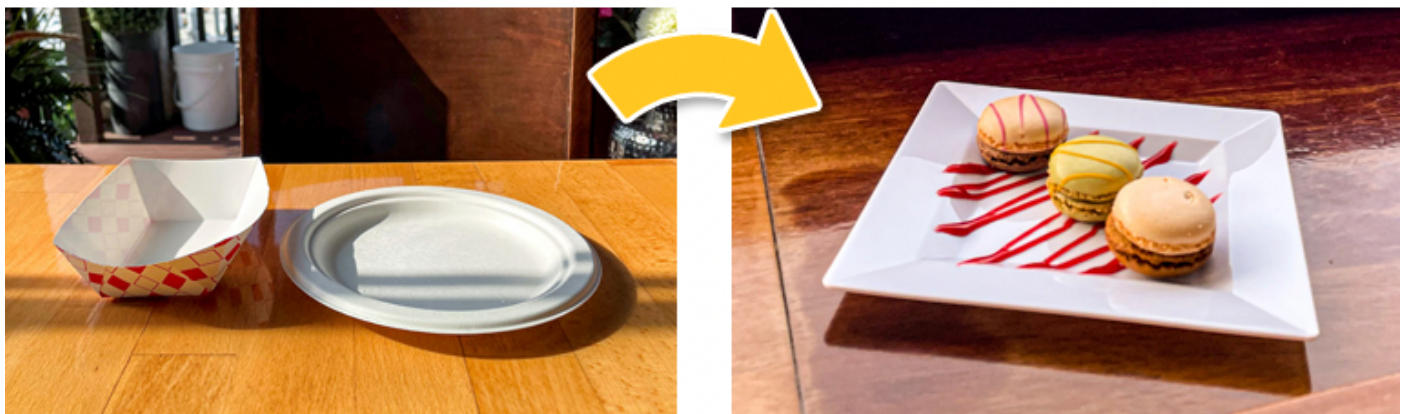
This work will be complimented by grant funds awarded in 2022 to **revitalize three ECS community composting bins** and co-develop aligned curriculum. This revitalization project was initiated in fall 2022 with the **re-construction of ECMS-Inglewood and ECHS-Lawndale's community compost systems**.





# REDUCING SINGLE-USE DISPOSABLES

**ReThink Disposable**, is a technical assistance program of Clean Water Action (CWA) and Clean Water Fund, that **prevents excess waste before it starts** by working with local governments, food service businesses, and consumers to minimize single-use disposable plastic. CWA partnered with and trained TBF in 2018 to implement ReThink Disposable in Los Angeles, and in early 2022, TBF **produced a case study** that captures our 2021 source reduction efforts.



# REDUCING SINGLE-USE DISPOSABLES

## REUSABLE | LA

TBF continued to participate in the **Reusable LA** coalition, a strong network of partners working to **resolve LA's plastic pollution issue** by championing a reusable culture through legislative advocacy, outreach, and engagement.

**2022 resulted in critical legislative wins for plastic pollution prevention at both the County of Los Angeles and the City of Los Angeles.** Specifically, Reusable LA coalition members advocated for LA County's Reduction of Waste from Single-Use Articles and Expanded Polystyrene Products Ordinance which will phase out disposable foodware that is not compostable or recyclable, phase out the sale or rental of expanded polystyrene, and require that full-service restaurants use reusable foodware for dine-in.

This ordinance passed in April 2022 and will take effect on May 1, 2023. Reusable LA partners also **mobilized around the advocacy of three City of LA plastic reduction** ordinances which ban expanded polystyrene at local restaurants and retail stores, prohibit all single-use plastic bags, and require zero-waste practices at city facilities and events. The City of LA passed these three new laws in December 2022 that will take effect in April 2023.



Additionally, TBF **partnered on 5 Gyres' Plastic-Free Parks campaign** by supporting the call for community science volunteers around the country to document plastic pollution in U.S. National Parks.

More than **14,000 pieces of trash** were submitted from 44 sites around the country, from Kenai Fjords National Park to Cuyahoga National Parks, Alaska-Ohio.

The data was compiled in this [Plastic-Free Parks TrashBlitz 2022 Report](#) and the goal is to work toward solutions that protect our national parks and federal lands.



# COASTAL RESEARCH INSTITUTE

*TBF and Loyola Marymount University's (LMU) Coastal Research Institute engages LMU faculty, undergraduate and graduate students in multidisciplinary, hands-on approaches to research related to coastal resource management in Los Angeles. Research focuses on environmental and social challenges affecting Santa Monica Bay and its watersheds and contributes to furthering policies and actions that improve the health of the Bay and watershed.*

# COASTAL RESEARCH INSTITUTE

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2022 was another busy year for the Coastal Research Institute. TBF and the Seaver College of Science and Engineering at LMU engaged faculty and staff supporting research, literature reviews, and method development that will advance the Santa Monica Bay National Estuary Program's (SMBNEP'S) Comprehensive Conservation and Management Plan.

**Three research efforts** focused on Harmful Algal Blooms (HABs), environmental stress impacting mussels, and eelgrass. Each of these efforts focuses on a specific habitat, pelagic, rocky intertidal, freshwater riparian, and soft bottom respectively. Each of these habitats are identified in the SMBNEP Comprehensive Monitoring Program where the **ultimate goal is to track the extent and condition of these habitats over time.**





# WHO WE ARE



## Board of Directors

*Our Board of Directors oversees TBF's progress with a focus on the organization's fiscal health, capacity, and operational stature.*

## Staff

*Our staff is comprised of science and communication experts who are passionate about understanding and protecting the Santa Monica Bay and the Bay watershed.*

# STAY CONNECTED



## PHOTOS

Title Page: TBF, Table of Contents: TBF, CEO Message: Laura Doss-Hertz, Restoring Kelp: TBF, Abalone: TBF, Oriana, Diver Planting Eelgrass: TBF, Eelgrass With Fish: TBF, Living Shorelines Intro: TBF, Volunteers Removing Non-Native Plants: TBF, Malibu Shoreline: TBF, Santa Monica Beach: TBF, Planting Native Plant: TBF, Shoreline Scientists: TBF, Los Angeles Shoreline: TBF, Manhattan Beach With And Houses: TBF, Shoreline Scientist: TBF, Burrowing Owl: TBF, LAX Dunes: TBF, Ballona Wetlands: TBF, Environmental Engagement Intro: TBF, TBF, Living Shorelines Intro: TBF, Malibu Shoreline: TBF, Santa Monica Beach: TBF, Los Angeles Shoreline: TBF, Manhattan Beach: TBF, Burrowing Owl: TBF, LAX Dunes: TBF, Ballona Wetlands: TBF, Native Plant: TBF, Environmental Engagement Intro: TBF, Pumpout Unit: TBF, Boater Kit Distribution: Christine Pernin, Boater Kit: TBF, Community Garden: Laura Doss-Hertz, ECS Staff Construction: TBF, Compost Bin Construction: TBF, Reducing Single-Use Disposables: TBF, Reusable LA logo: ReusableLA, Plastic-Free Parks campaign: 5Gyres, Beach Scientists: Coastal Research Institute, Santa Monica Bay Overlook: Canva Pro Photos: Coastal Research Institute, Santa Monica Bay Overlook: Canva Pro Photos, Staff: TBF