

Blue Economy

Part I: What it Means for Florida

UPCOMING SERIES:

Industries of the Future

A Pathway Toward Economic Resiliency

June 21- August 9

Series Summary

The Economic Recovery Support function, in partnership with local, state, and federal partners, will be hosting a series of virtual sessions on Florida's Industries of the Future.

Session Topics:

- State of the Industry
- Industry Assets
- Industry Challenges
- Highlight of Industry Best Practices

21
JUNE

Blue Economy Part I: What it Means for Florida

12
JULY

Blue Economy Part II: Best Practices

19
JULY

Advanced Manufacturing: Microelectronics & Semiconductors

26
JULY

Clean Energy / Cleantech

2
AUGUST

Aerospace & Aviation

9
AUGUST

Agricultural & Life Sciences

Why focus on Industries of the Future?

1. Diversify the economic base
2. Build a more resilient economy
3. Create more high-wage, high-skill employment opportunities

For more information, contact: Milton Cochran at mcochran@eda.gov

“Industries of the Future Initiative”

Part 1 by The Florida Ocean Alliance:
The Blue Economy: What it Means for Florida



Participants on the Blue Economy Panel

**Moderator: Glenn Wiltshire, Vice President of Florida Ocean Alliance;
Deputy Director, Port Everglades**

Valerie Seidel, Principal Economist & President, The Balmoral Group

**Sherry Larkin, Director, Florida Sea Grant College Program,
University of Florida**

Katherine O'Fallon, Executive Director, Marine Research Hub



Florida Ocean Alliance Board Members



*Paul Anderson (President)
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Florida Ports Council*



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*Michael P. Crosby, Ph.D.
Mote Marine Laboratory & Aquarium*



*T. Spencer Crowley, Esq.
Akerman*



*Duane E. De Freese, Ph.D.
Indian River Lagoon Council*



*Jeff Eble, Ph.D.
Hubbs-Sea World Research Institute*



*Monty Graham, Ph.D.
Florida Institute of Oceanography*



*Sherry Larkin, Ph.D.
Florida Sea Grant College Program*

*Kumar Mahadevan, Ph.D.
Director Emeritus
Florida Ocean Alliance*

*David L. McDonald
Director Emeritus
McDonald, Miller & Coleman*

*Jerry Sansom
Director Emeritus*



*Denise McCafferty
Lloyd's Register*



*Alexis Meschelle
Organized Fishermen of Florida*



*James F. Murley, Esq.
Miami-Dade County*



*Becky Prado
WSP USA*



*Ellen Prager, Ph.D.
Earth2Ocean, Inc.*



*Phil Purcell
Marine Industries Assoc. of South Florida*



*Kellie Ralston
Bonefish & Tarpon Trust*



*Jim Sullivan, Ph.D.
Florida Atlantic University
Harbor Branch Oceanographic Institute*



*Matthew Upton
Roffer's Ocean Fishing Forecasting Service*



*Bradley Watson
The Everglades Foundation*



*Jeff Watters
The Ocean Conservancy*



*Gretchen Winters
Florida Harbor Pilots Association*



*Julie Wraithmell
Audubon Florida*

*Lenore Alpert, Ph.D.
Executive Director*

Our Mission & Vision

- Nonpartisan organization dedicated to bringing together the private sector, academia, and nonprofit research organizations to protect and enhance Florida's coastal and ocean resources for continued social and economic benefits
- Committed to positioning Florida as an international leader to integrate ocean conservation, education, and responsible economic development
- Serve as a clearinghouse for information on key ocean and coastal issues facing Florida
- Focus on outreach and educational activities for the public and policymakers

Our Activities

- Developed a 2020 Strategic Policy Plan for Florida's Oceans and Coasts:
 - Protect living marine resources and the marine environment, promote marine economic activity, enhance public outreach & education on ocean and coastal issues
- Annual Florida Oceans Day celebration at State Capitol
 - Inform policy makers on the importance of a healthy ocean for a sustainable and resilient blue economy
- Support ocean-related legislation
 - Reopening of cruise industry
 - Establishing the Florida Flood Hub for Applied Research and Innovation
- Support environmental activity
 - Support environmental Port improvements and NGO activity

BLUE ECONOMY

The Blue Economy is sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem health.

The Blue Economy encompasses many activities...

Renewable
Energy

Maritime
Transport

Fisheries

Tourism

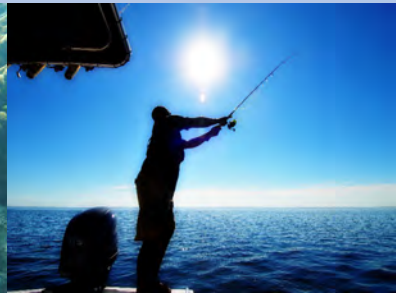
Climate Change

Waste
Management

To learn about other aspects of the blue economy, visit www.worldbank.org/oceans

Florida's Blue Economy

- Florida's coastal counties generated more than \$797 billion of economic value or 77% of the state's more than \$1 trillion economy (based on 2018 data).
- Direct and indirect use of ocean and coastal resources contributed \$73.9 billion.
- More than one million jobs in Florida were directly and indirectly created by activities that used ocean and coastal resources.



Strategic Plan Goals:



- **Blue Economy** – Develop and expand supporting resources.
- **Ocean and coastal resilience** – Ensure resilience to the effects of local and global threats.
- **Human and natural infrastructure** – Improve water, wastewater, stormwater, power infrastructure, and natural habitats.
- **Implementation, outreach, and financing** – Build and sustain broad support and partnerships to execute the Plan with accountability and transparency.

Existing Issues Include:

- Declining water quality (e.g. algal blooms, sewage spills)
- Damaged natural habitats (e.g. coral reefs, mangroves, seagrass beds)
- Climate change: Sea level rise, extreme storm impacts, rising temperatures, ocean acidification, exacerbated coral disease
- Aging infrastructure
- Silos in management
- Data and information access, sharing, and management
- Public-private collaborations



Improve, Create, and Better Utilize Partnerships

- Florida Governor and Legislature
- State and Federal Agencies
- Florida Ocean Alliance
- Florida Ports Council
- Marine Industries (*e.g. Tourism, transportation, fishing, aquaculture, etc.*)
- Conservation, Environmental, and Education Organizations (*Aquatic Preserves, Parks, Estuary Programs, National Seashore, Marine Sanctuary, etc.*)
- Academia
- Other Stakeholders



Thank You

For an executive summary and complete Strategic
Plan for Florida's Oceans and Coasts:

www.floridaoceanalliance.org



Speaker: Valerie Seidel
President and Principal Economist
The Balmoral Group

Industries of the Future Initiative

The Blue Economy
2023 FEMA Conference
Valerie Seidel



Blue Economy

Economic Value

Marine-driven sectors

- Tourism
- Recreational Boating
- Fisheries
- Property value premiums

Vulnerable Sectors

Industries of the Future

Protective/reactive:

- Coastal resiliency
- Nature-Based Solutions

Proactive:

- Renewables

Economic Value

Some examples of the huge dollar values driven by marine activities

\$12.0 billion

Recreational Boating

Miami-Dade, Broward, Palm Beach counties alone - 2018

\$91.0 billion

Property Value Premiums

Atlantic Coast properties with access to the ocean - 2022



Vulnerable Sectors

- Harmful Algal blooms



One example – Harmful Algal Bloom 2018

HAB losses

Ft Myers- Naples MSA
June - October 2018

\$711 million

Lost property values

\$123 million

Lost transaction fees

\$28 million

Recreational fishing

\$62 million

Boat sales



Coastal Resiliency Economics

Some examples of industry sectors of the future

- Resilience Florida spending \$500M to address coastal resiliency at local level
 - \$19M Septic to Sewer
 - \$46.7M Stormwater & Flooding
 - \$63.4M Seawalls
- Gulf Consortium: \$136M for water quality
 - \$76M in Septic to Sewer construction
 - \$32M in Stormwater improvements construction
 - \$28M in Sediment removal
- Jobs: Civil engineers, planners, biologists, water resource engineers, hydrogeologists, structures experts, geotechnical engineers

Seagrasses, Wetlands, and Mangroves provide storm protection and help maintain water quality and clarity.



Nature-based Solutions Economics

Some examples of industry sectors of the future

- Resiliency Florida spending \$500M to address coastal resiliency at local level
 - \$6.0 M Reef & Other Restoration
 - \$12.5 M Living Shorelines
- Gulf Consortium: \$293 million to restore Gulf coast
 - \$15 M Reef Restoration & Artificial Reefs
 - \$8 M Living Shorelines
- Jobs: Ecologists, Coastal Engineers, Environmental Scientists, Landscape Architects, Marine Contractors
- Tech: Plant-based materials, 3-D printing, Low-carbon cement

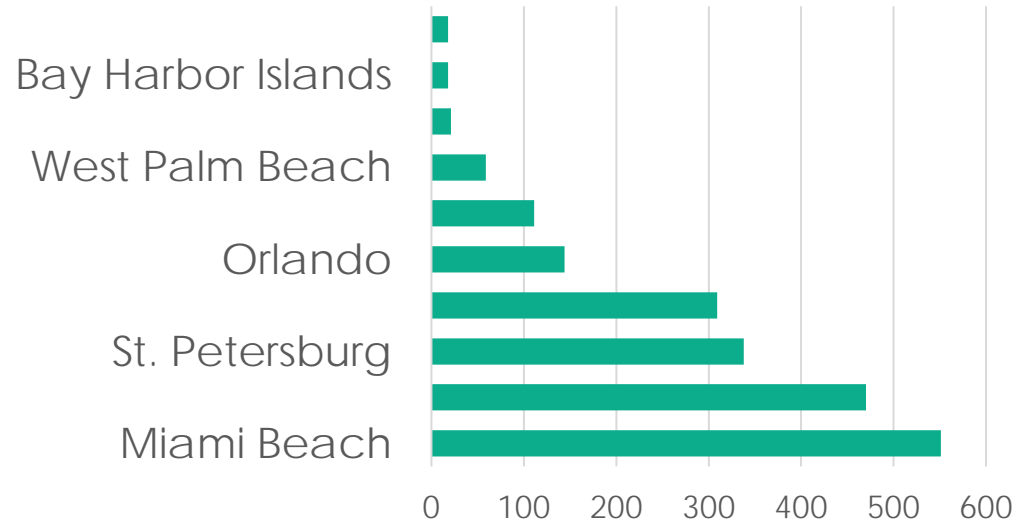
Strategic placement of plants, stone, oyster shells and other natural materials helps prevent coastal erosion, reduce wave energy and maintain coastal processes



Proactive: Renewables in Transport

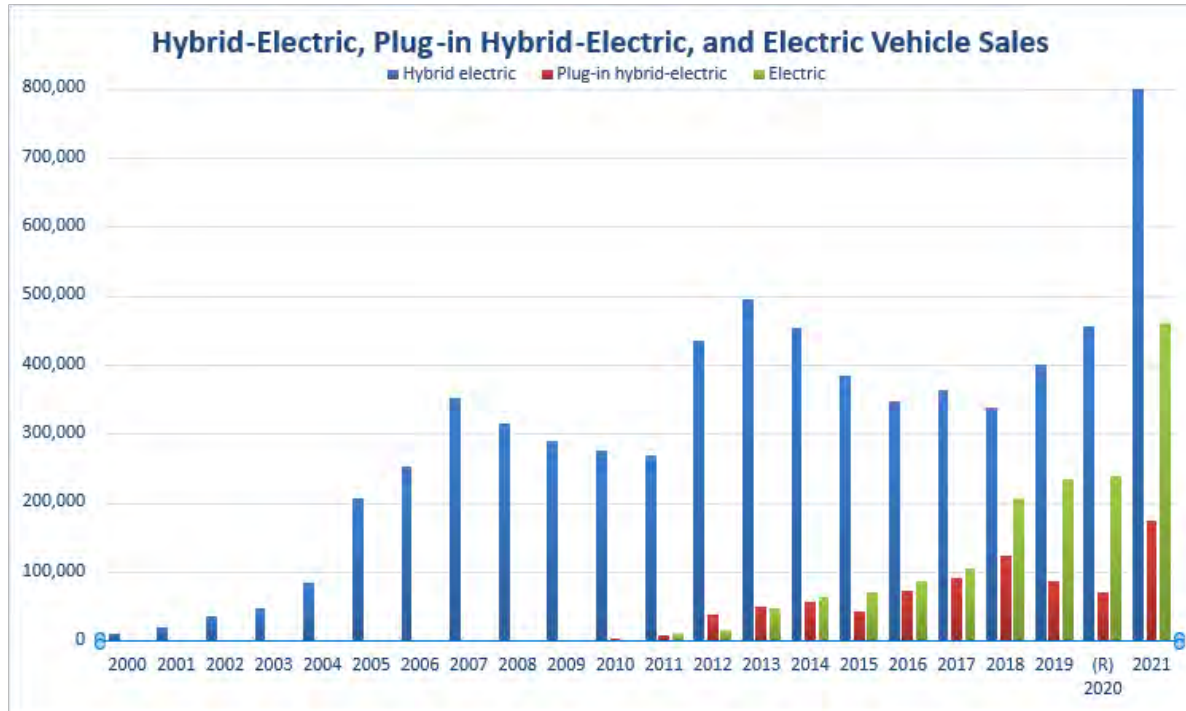
- e-bikes, e-scooters, e-buses – transit and school buses
- Micromobility
 - Motorized transportation device for private use by reservation for point-to-point trips and not capable of traveling greater than 20 miles per hour
- Southeast US increased e-buses in use by 60% in last two years

Ten Largest Micromobility Programs in Florida



■ Amount of Docked Stations In State

Proactive: Renewables at work



Source: Bureau of Transportation Statistics

Industry Sectors

- EV technicians – avg salary \$67K
- Installers, NEVI charging stations \$82K
- Plant-based solutions: \$86K
- Materials scientists - avg salary \$104K





Thank you!

www.balmoralgroup.us



Speaker: Sherry Larkin
Director
Florida Sea Grant College Program

06/21/23

— SHERRY LARKIN, PROFESSOR & DIRECTOR —

Fisheries, Aquaculture & Workforce development

Growing Blue Economy Sectors in Florida



Florida Sea Grant supports integrated research, education and extension to enhance coastal and ocean resources, bolster coastal resilience and enhance economic opportunities for the people of Florida.



Fisheries

- ❑ **Commercial fisheries**
 - Dependent on wild stocks
 - More valuable products
 - Ancillary services

- ❑ **Recreational fisheries**
 - Growing in popularity
 - Complements traditional tourism
 - Increases environmental literacy





Aquaculture

... the **breeding**, **rearing**, and **harvesting** of organisms in all types of water environments

- ❑ Tremendous diversity
- ❑ Technology intensive (e.g., A.I. applications)
- ❑ Vertical/local integration for profits and markets



Workforce Development



Living Shorelines for Marine Contractors



UF/IFAS
Drone Prep Course

Did you know that you need a certificate through the Federal Aviation Administration (FAA) when a drone is operated professionally?

This course is designed to help prepare those who want to incorporate drones into their professional career and need to pass the FAA Part 107 Knowledge Exam.

Virtual Option	In-person Option
Where: February 7-8, 2022	Where: February 10-11, 2022
Where: Zoom Classroom	Where: UF/IFAS Extension Suwannee County
Time: 9:00am - 12:30pm	Time: 9:00am - 3:30pm
Registration: https://ufl.edu/extension/classroom/107p.cj	Registration: http://ufl.edu/extension/suwannee/107p.cj

FLORIDA SEA GRANT

**Introductory Training in
Geographic Information
Systems (GIS)**



SEAFOOD HACCP
ONLINE TRAINING COURSE: *Segment II*

Sea Grant | UF/IFAS Extension | Sea Grant | UNIVERSITY OF FLORIDA

#

Speaker: Glenn Wiltshire
Deputy Port Director
Port Everglades



**PORT
EVERGLADES**
BROWARD COUNTY • FLORIDA

Industries Of The Future

June 21, 2023

Glenn Wiltshire
Deputy Port Director



Florida Port's Economic Impact



More Than **\$117 Billion** Statewide

More Than **900,000 Jobs** Statewide

Infrastructure & Technology



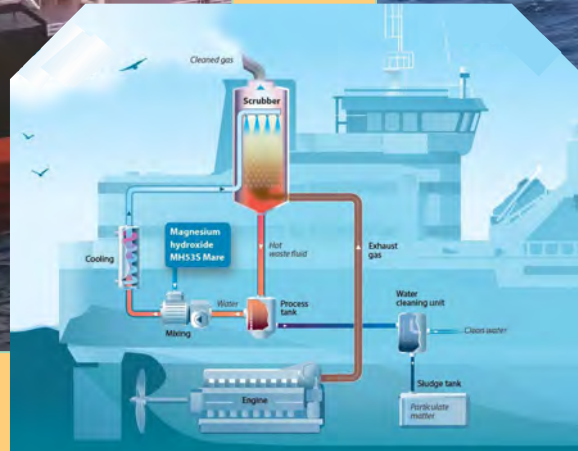
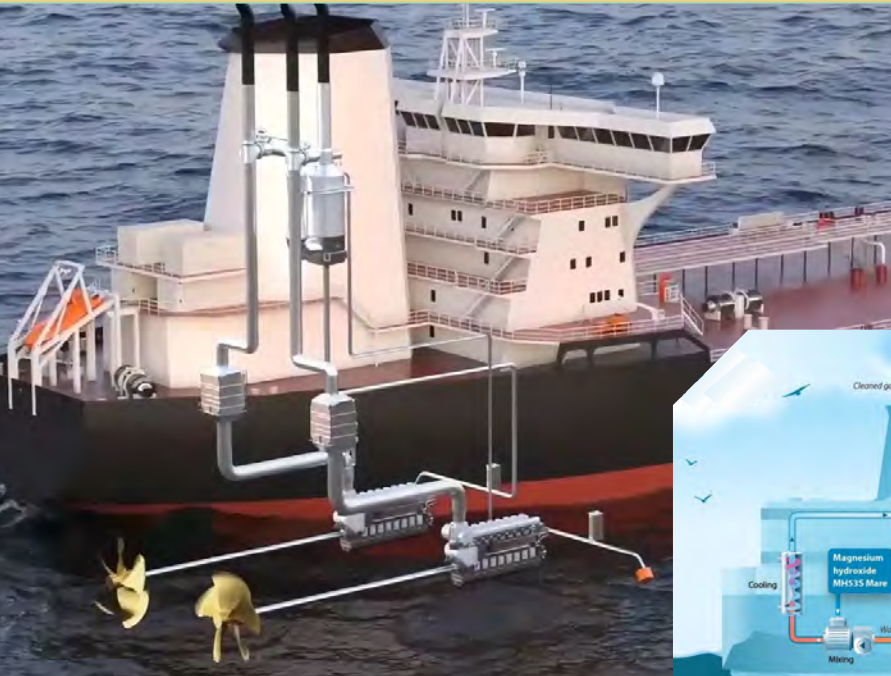
Electrification/Shore Power



Autonomous Vessels and Vehicles



Scrubbers



Alternative Fuels

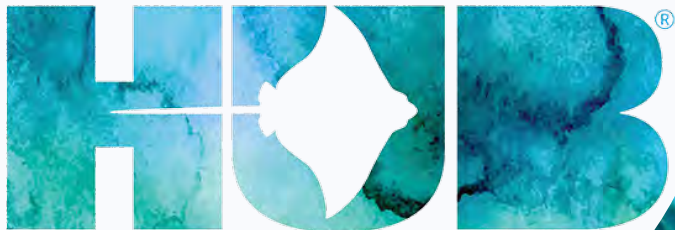


Resiliency



Speaker: Katherine O'Fallon
Executive Director
Marine Research Hub

marine
research



Florida's Blue Economy!

Innovation and technology in our backyard.



Mission

The Marine Research Hub is building Florida's Blue Economy by engaging collaboration from all sectors: research, education, government, private, & economic development organizations to support commercialization of research-based solutions to create jobs, build business, harden our infrastructure, and create positive impact for the health of our marine environments and community.



Founding members of the Marine Research Hub
Since 2017

Industry & Workforce

- All industry sectors
 - Energy
 - Transportation
 - Construction
 - Agriculture
- Marine Industries Association of South Florida
 - Apprenticeship Program
 - Pre-Apprenticeship - Junior Achievement
- Credentialing Programs



Government & Policy

- Municipalities
- County
 - West Palm Beach
 - Broward
 - Miami-Dade
- State



Port Connections

- Port Everglades
- PortMiami
- Port of West Palm Beach



Outreach & Education

- MODS (Museum of Discovery & Science)
- Guy Harvey Foundation
- Public School programs
- Educational events



Economic Development

- Greater Fort Lauderdale Alliance
- BDB – Business Development Board of Palm Beach County
- BEACON Council
- Broward Workshop



Funding Support, Investors & Partnerships

- Investors
- Private Equity
- Public-Private Partnerships
- Family Offices
- Grants



Incubator/Award Programs-Blue Tech Development

- Ocean Exchange
- Levan Center at NSU
- University-based business development
- Seaworthy Collective
- Pitch Competitions/Business Development
- Mentors



Academic & Research

- Florida Atlantic University – Harbor Branch Oceanographic Center & SEATECH
- Florida International University – College of Arts, Science, & Education & FIU Research
- Nova Southeastern University – Halmos College of Arts & Science, Guy Harvey Research Institute
- University of Miami – Rosenstiel of Marine, Atmospheric & Earth Science
- Broward College



Investable solutions with global impact

Ocean Exchange global accelerator program 2022 had 173 applicants with 24 finalists presenting in Fort Lauderdale.

Three award categories each carrying \$100,000 prize and \$10,000 collegiate award.

Marine Research Hub is a sponsor and



**OCEAN
EXCHANGE**

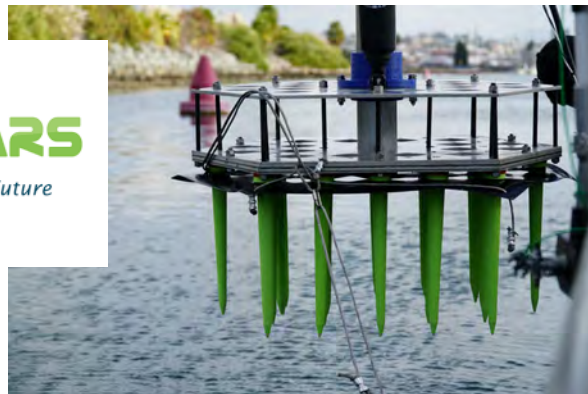
October 22-24, 2023
Fort Lauderdale, FL



**Carbon capture & transformation
technology.**



ecospEARS
Cleantech for a Better Future



**Eliminates PFAs, PCBs, Dioxins, & other
persistent toxins from soil & water in situ.**

2022 Neptune Finalists - Ocean Exchange

Sway

Seaweed-Based, Compostable
Replacements for Plastic Packaging



Team

Julia Marsh
Co-Founder & CEO
Matt Mayes
Co-Founder & COO
Leland Maschmeyer
Co-Founder

Problem

~8 million tons of plastic waste escape into the oceans each year, 40% of which is thin-film packaging. These bags and wrappers are not recyclable and eventually degrade into microplastics. As demand continues to grow, we need solutions.

Solution

Sway offers home compostable thin-film packaging derived from seaweed. Our packaging meets the critical performance requirements of plastic, but comes from a benevolent feedstock and degrades within weeks rather than decades.

SWAY



NovFeed

Biotechnology Platform That Transform Organic
Waste into Protein-Rich Feed Ingredients



Team

Diana Orembe
Founder & CEO
Otaigo Elisha
Founder & COO
Stephano Koroza
Aquaculture Scientist

Problem

Yearly, over 20 million tons of wild fish are caught and processed into feed for the fastest growing part of the world food system aquaculture. Since 2000, there's been a 5-fold increase in prices of protein ingredients rendered from wild fish.

Solution

NovFeed offer a protein feed for aquaculture made from renewable raw materials through precision fermentation-based ingredients and proprietary bio factories. It offers a sustainable high-protein alternative to fish meal. The product contains 70% crude protein and a balanced amino acid profile.

NovFeed

Science. Future. Feed



2022 Neptune Winner

Water Warriors

Poseidon Pellets to absorb phosphorous on contact



Team

John Gradek
CEO
Steve Chamberland
CRO
Dr. Mallikarjuna Nadagouda
Lead Scientist

Problem

Nutrient pollution is one of our most challenging environmental problems, resulting in compromised water from our smallest stream to our coastlines. It's a menace, impacting human health, and causing millions of dollars in damage.

Solution

Poseidon pellets were made to adsorb phosphorus on contact, so issues like algae blooms and loss of marine life never happen. Water flows through our pellets and phosphorus stays behind. We return the nutrients to the land as a fertilizer.



Kintra Fibers

A New Polyester

Bio-based, Biodegradable, Infinitely Recyclable

KINTRA



Team

Billy McCall
Co-Founder & CEO
Alissa Baier-Lentz
Co-Founder & COO
Dr. Rebecca Ruckdashel
Fiber Extrusion Scientist

Problem

Traditional PET polyester is fossil fuel-based, is responsible for fibrous microplastic pollution in the ocean, and results in toxic textile waste in landfills. No sustainable alternative delivers performance and price parity.

Solution

We have developed a new polyester that is: 1) Bio-based, 2) Biodegradable, and 3) Compatible with standard manufacturing equipment. Kintra reduces emissions by 95%, and addresses microfiber pollution and textile waste. All while delivering performance and price parity.



Shoreline Infrastructure Emerging Companies

Market for Shoreline Infrastructure:

- Florida: 9,243 miles of sea walls.
- Estimate cost: \$75.9 billion
- Miami-Dade; \$3.2 billion
- Broward: \$863.2 million
- Palm Beach: \$544.2 million



Kind Design - Living SeaWall, Miami, FL



Smart Sea Wall Technologies,
Hollywood, FL



FENEX, Fort Lauderdale, FL



ECONcrete

Investing in Sustainable Blue Economy

Tackling climate change, protecting biodiversity and fostering inclusive economic growth will require more than \$3 trillion of investments in the world's oceans in the coming decades.

Of the 17 United Nations Sustainable Development Goals, the “Life Below Water” goal has received the least amount of public money.

Meeting the UN High Seas Treaty's commitments and supporting a sustainable blue economy will require public and private funds, as well as philanthropic and non-governmental organizations.

The four largest areas for investment are:

Decarbonize Marine Transportation –

\$1.2 trillion

Marine Solutions to Ecosystems –

\$1.1 trillion

Marine Renewable Energy –

\$840 billion

Sustainable Aquaculture –

\$225 billion



Building our Blue Economy in South Florida

Thriving economy & coastal communities need healthy marine & freshwater environments and many solutions can be found if we look to the ocean. Elevating our resources and assets will benefit our community while taking care of our backyard.

Contact: Katherine O'Fallon
Katherine@marineresearchhub.org



Since 2017

Questions & Answers

For More Information,
Please Contact:

Milton Cochran

Economic Development Integrator
ERSF Field Coordinator

U.S. Department of Commerce,
Economic Development Administration

mcochran@eda.gov

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