ANNUAL REPORT 2024

ONE LAGOON™

ONE COMMUNITY • ONE VOICE

Indian River Lagoon National Estuary Program

The IRLNEP: People Making an Impact

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Administrative Coordinator

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GIS/IT Data Scientist

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Heather Stapleton
Community Engagement Coordinator

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Community Engagement Coordinator

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Executive Director's Message:

J. Gutowski

Dear IRL Council Board of Directors, Management Conference members, funding partners, community leaders, policy makers and residents:

The IRL Council and Indian River Lagoon National Estuary Program (IRLNEP) are pleased to present this Annual Report for Fiscal Year 2024. We are dedicated to the efficient and transparent use of public funds. Our Annual Report (available online at onelagoon.org) is a product of that commitment.

The IRLNEP serves a unique and essential role for the IRL system and its 7-county watershed. We are the only federally authorized, non-regulatory program that works with federal, state and local partners by convening a Management Conference of over 100 scientists, resource managers and local community representatives to develop and implement a 10-year, lagoonwide, Comprehensive Conservation and Management Plan (CCMP). We are making progress to implement that plan, but much hard work remains. To steal a lyric from The Beatles, we are on the "long and winding road" of IRL restoration and recovery.

Major program milestones for 2024 include funding and managing over 40 projects focused on water quality, habitat restoration, community engagement, science and innovation, and small community projects. By coordinating the work of our Community Engagement Coordinators and our GIS Scientist, we have expanded our outreach and engagement efforts in every lagoon county and made information more accessible to the public through online GIS-based story maps, podcasts, short videos, webinars and social media. In 2024 we also continued to provide technical and professional grant writing assistance to program partners and local communities at no cost to them.

One important activity of the IRLNEP is our ability to convene and communicate with representatives of multiple agencies and organizations at local, state and federal levels. Two milestone activities in 2024 include assisting our state agency partners at the Florida Department of Environmental Protection, St. Johns River Water Management District and South Florida Water Management District to implement the Indian River Lagoon Protection Program passed into law by Governor Ron DeSantis and the Florida Legislature in 2023. At a federal level, the IRLNEP convened ten teams of IRL restoration practitioners to secure a $9.4 million grant award from the NOAA Transformational Habitat Restoration and Coastal Resilience grant program. The goal for this partnership effort is to restore a variety of habitats throughout the IRL and create a unified and coordinated IRL community of restoration practice. One important deliverable from this project will be an update of the IRL economic value assessment.

Historic levels of local, state and federal investments to improve water quality and restore essential natural habitats are beginning to make a difference. While the IRL is showing strong signs of recovery in some areas, its condition is still fragile and more needs to be done. In human health terms, the patient is still in the intensive care unit, requiring close monitoring and continued care. Full recovery depends on reducing or stopping pollutant loads that enter the lagoon from all sources, including fertilizers, septic systems, stormwater, and inadequate or outdated wastewater systems. As regional growth continues unabated, it is particularly important to address wastewater management issues and move forward toward expanded investments in 21st century wastewater and stormwater infrastructure that meet current, as well as future needs.

Thank you for your continuing trust in the IRL Council and IRLNEP. Your support positions the IRLNEP to continue empowering change through effective implementation of projects, cultivation of strategic partnerships, and pursuit of innovative solutions to address the complex problems impacting the IRL. In 2025, we will celebrate our 10th anniversary as an independent special district and look forward to reinforcing our commitment to achieving the IRLNEP mission of One Lagoon - One Community - One Voice.

Regards,

National Estuary Programs:

Restoring and Protecting Our National Treasures

Overview of the National Estuary Program:
The U.S. Environmental Protection Agency (EPA) established the National Estuary Program (NEP) as a core water program authorized by Section 320 of the Clean Water Act. The mission of the NEP is to protect and restore the water quality and ecological integrity of the 28 estuaries designated by the U.S. Congress as "Estuaries of National Significance."

Each NEP is governed by a Management Conference composed of diverse stakeholders. The Management Conference is responsible for developing a 10-year Comprehensive Conservation and Management Plan (CCMP) to guide estuary science, restoration and stewardship. The management conference ensures the CCMP is uniquely tailored to local environmental conditions, is based on local input, and is focused on local priorities.

The Indian River Lagoon National Estuary Program (IRLNEP) was established in 1990 and joined the NEP in 1991. Today, the IRLNEP is the leading organization that connects local, state, federal and community partners with a common goal to restore the IRL. The watershed of the IRL spans forty percent of Florida's east coast, stretching 156 miles in length. It includes seven counties, thirty-eight incorporated cities, over 1.8 million people and a regional economy valued at over $7.6 billion annually.

Twenty-eight Estuaries of National Significance are included in the U.S. EPA's National Estuary Program. Graphic: ANEP.

National Estuary Programs Are:

- Science-based
- Non-regulatory
- Community-driven
- Consensus-building
- Results-oriented
- Effective and efficient

For every dollar the EPA provides, NEPs leverage $17 in local funding to protect and improve coastal environments, communities, and economies.

There Is a Plan for Restoring the Lagoon:

The primary goal of a Comprehensive Conservation and Monitoring Plan (CCMP) is to guide the IRLNEP and its partners in implementing corrective actions and strategies to restore the IRL ecosystem to health. IRLNEP staff fully revised the CCMP in 2019. It was certified by the U.S. EPA in July 2019, and adopted by the IRLNEP Management Conference in August 2019. The CCMP will guide IRLNEP activities and funding until 2030 when the plan will be reviewed and revised, with progress reported and adjustments made as new information and understanding come to light.

The IRL Vital Signs Wheel contains thirty-two action plans that were developed to provide guidance for meaningful actions that will improve lagoon health. Of these, six were designated as critically important: impaired waters, stormwater, wastewater, seagrasses, harmful algal blooms, and financing the CCMP.

Most importantly, the CCMP encourages adaptive and strategic management decisions be made at all levels to improve conditions in the IRL. Federal and state agencies, counties, municipalities, community groups and individual citizens are encouraged to determine which Vital Signs correspond to their areas of individual authority and work to fix the problems over which they have control. This approach respects local home rule decision-making and recognizes that restoration and management actions must consider local conditions that vary spatially and in time.

Read the CCMP online at onelagoon.org.

Adapted from Puget Sound Partnership

Indian River Lagoon National Estuary Program:
What Are We Protecting?

People, coastal communities, the regional economy and federal assets

ECONOMY

The regional economy of the IRL is valued at **$7.6 Billion annually.**

COMMUNITIES

The IRL occupies 40% of Florida's east coast.

Over 1.8 million people live in Volusia, Brevard, Indian River, St. Lucie and Martin Counties.

38 incorporated cities and seven counties impact the IRL.

FEDERAL ASSETS

Canaveral National Seashore

Merritt Island National Wildlife Refuge

Archie Carr National Wildlife Refuge

Pelican Island National Wildlife Refuge

Nathaniel P. Reed Hobe Sound National Wildlife Refuge

Port Canaveral

Port of Fort Pierce

3 International airports

15 Regional or municipal airports

NASA, Kennedy Space Center

Cape Canaveral Space Force Station

Patrick Space Force Base

Navy Ordinance Test Unit

Photo: E. Irvin

2024 Summary of Conditions in the IRL:

How is the Lagoon Doing?

Since 2019, Florida's policy makers have committed nearly $390 million to improving water quality in the Indian River Lagoon, including $100 million annually in 2023 and 2024. Further, citizens in several counties have voted for additional sales taxes that fund restoration, stormwater and wastewater improvements, and land conservation projects. In Brevard County alone, a half-cent sales tax raises an estimated $50 million annually. This funding is implementing vital projects that are helping to revive the lagoon.

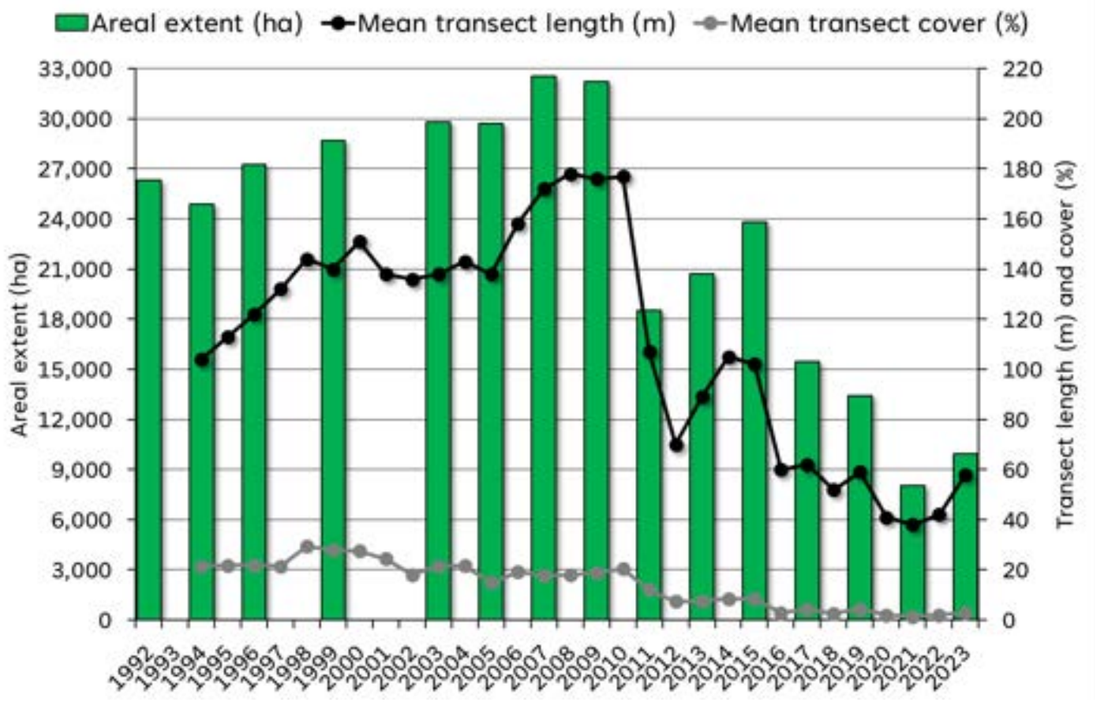
Since 2021, improved water clarity, lack of major algal blooms, and increased collaboration among agencies and local governments to accomplish projects have each contributed to improvements in the lagoon's condition.

After more than a decade of decline, signs of seagrass improvement are now evident in some, but not all, areas of the lagoon. Seagrass mapping completed in 2023 by St. Johns River Water Management District showed an uptick in seagrass extent since 2021. Dense beds of *Halodule wrightii* (shoal grass) and *Ruppia maritima* (widgeon grass) have emerged, particularly in the southern Mosquito Lagoon and northern IRL.

Surveys conducted in 2024 noted continued recovery in those areas, as well as in northern Banana River Lagoon and some parts of southern Indian River Lagoon where species such as S*yringodium filiforme* (manatee grass) and *Thalassia testudinum* (turtle grass) are showing improved growth.

Researchers believe the shallower waters of the northern lagoon and the absence of major algal blooms are allowing more light to reach seagrasses. However, improved water clarity may not be the only contributing factor to the surprising seagrass rebound over the last two summers. Researchers have begun investigating whether recovered areas may have been harboring significant seed banks where seeds were lying dormant until conditions became favorable for growth.

While the lagoon remains in a fragile state, scientists and resource managers are now guardedly optimistic about its continuing recovery. Certainly, gains in seagrass extent have been made over the last several years; however, recovery to date is just one-third of the areal extent of peaks reached in 2007 and 2009. Much work remains to be done but as communities continue to implement projects to improve water quality, we can expect recovery to continue moving in a positive direction.

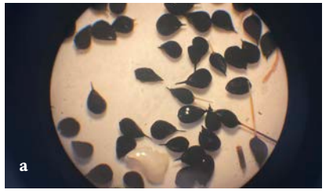


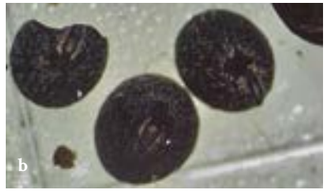
Graphic showing measures of health for seagrasses in the IRL. Note that while the extent of seagrass continued to lose ground through 2021, there have been slight upticks in transect lengths in 2022 - 2024. Cover along transects remains relatively low. Graphic: SJRWMD.

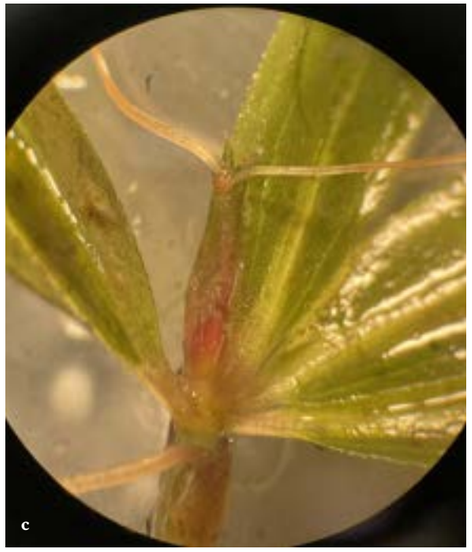
Have You Ever Seen Seagrass Flowers and Seeds?

Seagrasses evolved from land plants more than 100 million years ago. They resemble familiar terrestrial plants and have roots, flowers and seeds. While a casual observer could easily overlook seagrass flowers and seeds, it seems these may be playing a much more important role in recent seagrass recovery than was previously thought.

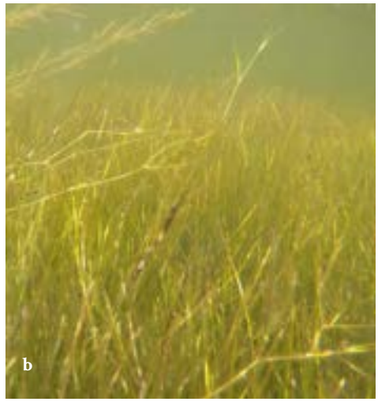
In some parts of the lagoon, seagrass coverage has expanded far beyond what researchers were expecting. This has led them to begin investigations into whether seagrass seeds, and not just vegetative fragments, might be driving the emergence of the dense seagrass meadows observed in some parts of the lagoon over the past several growing seasons.



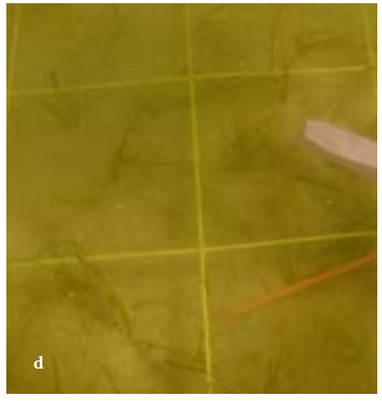


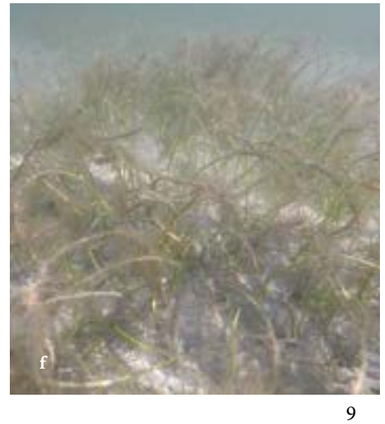


Seeds from (a) *Ruppia maritima* and (b) *Halodule wrightii*; the inconspicuous flower of (c) *Halophila engelmannii*. Photos: SJRWMD



Seagrass recovery continued in some, but not all, areas of the lagoon. Surveys conducted from May to August 2024 revealed continuing recovery in the Southern Mosquito Lagoon (a), Banana River (b) and northern Indian River (c). Areas of the lagoon that are still struggling include the Titusville area (d) and the central IRL where little to no seagrass coverage was observed. In the southern IRL, seagrasses are showing improved growth around Ft. Pierce (e) and Jupiter (f). Photos: SJRWMD.





IRLNEP Sources of Revenue:

IRL Council Annual Contributions:

- U.S. Environmental Protection Agency: $850,000
- Bipartisan Infrastructure Law Funding: $909,800
- South Florida Water Management District: $500,000
- St. Johns River Water Management District: $500,000
- Florida Department of Environmental Protection: $250,000
- Volusia County: $50,000
- Brevard County: $50,000
- Indian River County: $50,000
- St. Lucie County: $50,000
- Martin County: $50,000

Other 2024 Revenues:

- Estimated sales of Indian River Lagoon specialty license plate: $125,000

Fiscal Year 2024 Budgeted Expenditures:

$5,638,950
Total Expenditures
(Includes expenditures from the fund balance forward from FY 2023 for projects still in progress)

$2,463,898
22 New Projects Funded
3 Nutrient Reduction ($450,000)
4 Restoration ($960,800)
7 Research/Monitoring ($340,000)
8 Community Engagement ($713,098)

$234,905
Program Operations
(includes Administrative Services, Administrative Costs, Facilities Expenses)

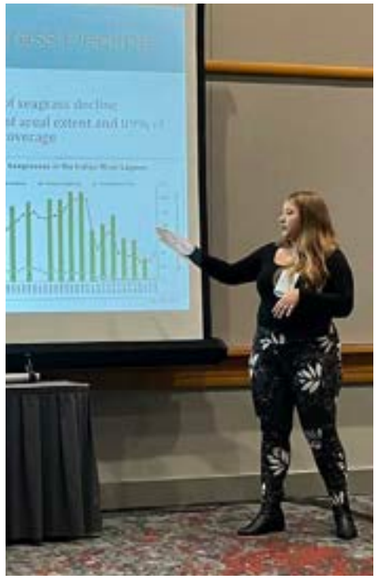
$669,020
Salaries and Benefits

$1,006,940
Fund Balance - End of Year

Thank You to the thousands of Florida drivers who have helped raise over $8 million to fund projects making a difference in the Lagoon.

Photo: Bethune-Cookman University

Your NEP at Work:
Sharing Knowledge, Providing Technical Support



(Left) GIS Data Scientist, KJ Ayres-Guerra, presenting to the Coastal and Estuarine Research Federation conference in February 2024; (Center) Deputy Director, Kathy Hill, Jennifer Thompson (Brevard County) and Community Engagement Coordinator, Caleta Scott, at the February 2024 regional IRL Envirothon competition for middle and high school students; (right) Executive Director, Duane De Freese, takes part in a panel discussion at Bonefish and Tarpon Trust's Win Back Our Water event at the Environmental Learning Center in Vero Beach.

Chief Financial Officer, Daniel Kolodny, pilots the IRLNEP boat to assist with oyster and shoreline restorations in Mosquito Lagoon.

Community Engagement Coordinator, Heather Stapleton, participating in a community event in Indian River County.

Jessy Wayles was interviewed for a segment on WUCF's *News Night* about IRL restoration efforts in Volusia and Brevard Counties.

Community Engagement Coordinator, Caleta Scott, helps monitor seagrasses planted in Martin County.

Administrative Coordinator, Erin Bergman (center), and other Coastal Connections volunteers cleaned up the Oslo Riverfront Conservation Area in Indian River County.

Kathy Hill appeared on St. Lucie County's *Inside St. Lucie* program with host, Erick Gill, and Commissioner Chris Dzadovsky to discuss issues affecting the Indian River Lagoon.

Caleta Scott, Duane De Freese, Jessy Wayles and Daniel Kolodny attended the annual Indian River Lagoon Symposium at Florida Atlantic University's Harbor Branch campus in March 2024.

Investing in Innovation:

IRLNEP-Funded Projects Raising the Bar on Research and Restoration

Biodegradable Materials Replacing Plastics

The global issue of microplastic pollution has become more fully understood in recent years. Microplastics, which include fibers, fragments, beads and other materials that typically measure less than five millimeters in length have been documented in every coastal or oceanic area sampled and are known to occur in both animals and humans. This has led the restoration community to begin re-examining the use of plastics in restoration. Lagoon restoration practitioners have been exploring and testing alternative materials to determine whether non-plastic materials can yield the structural and functional benefits that plastic materials have shown.

(a) Oyster mats made from BESE Elements, derived from potato starch, are a viable alternative to plastic Vexar mats. (b) Oyster rings, constructed from jute and cement, are used to encourage the growth of oysters and other organisms. Note the oysters growing on the darker, previously deployed oyster ring versus the newly installed rings. (c) Bags made from steel mesh were tested as an alternative material for use in oyster restoration. Photos: University of Central Florida and Marine Discovery Center.

(d) Shell bags made using woven basalt fibers are being tested as an alternate restoration material. (e) BESE bags (orange and white) are tested in the field alongside other types of construction materials. Photos: University of Central Florida and Marine Discovery Center.

Understanding Hypoxia and Nutrient Fluxes in the IRL

Researchers at Florida Institute of Technology are studying how hypoxia (low oxygen) can alter how nutrients are cycled within ecosystems. Previous studies have suggested that sediments in healthy estuaries remove 30-65% of the nitrogen and 10-55% of the phosphorus in water before it is discharged into the ocean. However, areas of estuaries that experience hypoxia have shown less efficient nitrogen removal. The Florida Tech team discovered that during cooler months in 2022, both nitrogen and phosphorus were being removed from the water column and deposited into sediments. By March 2023, when waters warmed and oxygen levels near the bottom fell, nutrients were released from sediments into the water column. These data demonstrate the ability of sediments to act as both a sink and a source of nutrients to overlying water and underscore the importance of maintaining healthy sediments on the lagoon bottom.

(a) Data loggers placed at study locations collect information about environmental conditions, which can later be downloaded to a computer for analysis. (b) A muck core sampled from the IRL is prepared for analysis. (c) Dr. Austin Fox prepares to pull up sampling equipment placed at a study site. Photos: Florida Institute of Technology.

Enhancing Mosquito Impoundments as Vital Fish Nursery Habitats

The Indian River Land Trust has been working with Indian River County Mosquito Control to assess how to better manage mosquito control impoundments so that their value as fish nurseries could be enhanced. Throughout much of the lagoon, impoundments are managed for mosquito control. Because salt marsh mosquitoes lay their eggs on moist soil, impoundments are flooded during the summer breeding season to interrupt the breeding cycle. Many impoundments are later opened during the fall and winter to allow water exchange with the lagoon.

Working in three impoundments, researchers captured, tagged and monitored juvenile snook and tarpon to determine whether juvenile fishes left impoundments during the open season. Unexpectedly, results showed that fish movements increased the most during the time when impoundments were closed, so fish were prevented from leaving to seek out adult habitats in the wider lagoon. The team next experimentally opened impoundments temporarily in the summer to determine if fish would emigrate if given the opportunity. Results showed that while summer drawdowns were likely not feasible across all impoundments, where it was possible, juvenile snook and tarpon left impoundment nursery habitats when they were opened during the summer. The study demonstrated that by using relatively inexpensive management practices, impoundments could be managed to enhance the recreational fishery in the IRL.

(a) Bee Gum Point mosquito control impoundment, showing how the perimeter dike isolates it from the IRL except through the opening and closing of culverts at select locations. (b) Juvenile tarpon is tagged and released back into the impoundment. Tag information would be recorded by data loggers when the fish passed through a culvert to enter the lagoon. Photos: Indian River Land Trust.

One Lagoon — One Voice: The Podcast

In September 2024, the IRLNEP's *One Lagoon — One Voice* podcast surpassed 2,500 downloads. The podcasts, which began in 2023, highlight the people and projects making a difference in lagoon health. Listen in and share them with others to help us keep the public informed about conditions in the lagoon. Get them wherever you get your podcasts, or visit:

onelagoon.org/one-lagoon-one-voice-podcast/

Season 1 Episodes:

- What are NEPs? What Do They Do and How are They Different From Other Organizations?
- IRL Lookback: A Perspective on Access and Fostering a Love of the Environment
- Southern IRL Environmental Issues and Solutions
- Monitoring Lagoon Health: The Indian River Lagoon Observation Network (IRLON)
- Lagoon Perspectives From a Fifth Generation Commercial Fishing Family
- IRL Restoration: Jumpstarting Seagrass Growth in the IRL
- Conservation Lands Create Unique Recreational Opportunities on the IRL
- Professional Guides Talk Fishing on the IRL, Past and Present
- Seagrasses: Moving Towards Restoration in the Indian River Lagoon
- The Brevard Aquarium Project
- Manatees in the Indian River Lagoon
- IRLNEP Mission: One Lagoon, One Voice

Season 2 Episodes:

- Leading the Way Toward Oyster and Shoreline Restoration in Mosquito Lagoon
- All About Mosquito Control Impoundments
- Get the Muck Outta Here! Why Muck Removal is Important to IRL Restoration
- Helping Homeowners Connect to Sewer Systems in Priority Communities
- Floating Wetlands and Other Stormwater Treatments to Reduce Pollution to the IRL
- Long-Term Monitoring of Harmful Algal Blooms in the IRL
- Brevard County's SOIRL Program: Partnering with Citizens to Fund Restoration

In Remembrance:

Photo:FAU-Harbor Branch

On May 7, 2024, the lagoon community lost a researcher, mentor, author, teacher, collaborator, and friend. Dr. M. Dennis Hanisak was the Director of the Marine Ecosystems Health Program and Director of Education at Florida Atlantic University - Harbor Branch. Dennis joined the research team at Harbor Branch in 1977. As a research professor, Dennis was an expert in macroalgae and seagrasses, and authored over 70 books and scientific publications. His most recent work focused on better understanding the health of the IRL and the stressors that impact it. He was instrumental in developing educational programs for students of all ages and founded the Semester By the Sea program to train college students in conducting research.

In 2023, Dennis authored the One Lagoon Monitoring Plan for the IRLNEP, which provided the program with its first comprehensive monitoring plan. Dennis also collaborated with the IRLNEP on seagrass restoration. His work helped lay the foundation for the Program's Seagrass Nursery Network of five land-based seagrass nurseries constructed to provide seagrasses for restoration and research.

One Community: IRLNEP Management Conference

Thank You to Our Management Conference Volunteers

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Joe Earman (Vice-Chair), Indian River County Commission
Stacey Hetherington, (Secretary), Martin County Commission
Rob Feltner, Brevard County Commission
Chris Dzadovsky, St. Lucie County Commission
Aaron Watkins, Florida Dept. Environmental Protection
Doug Bournique, St. Johns River Water Management District
[Open], South Florida Water Management District
Wade Lehmann, U.S. EPA, Region 4 (Advisory)

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Elizabeth Pigman, South Florida Water Management District
Jennifer DiMaio, U.S. EPA, Region 4 (Advisory)

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Dr. James Sullivan, FAU/Harbor Branch Oceanographic Institution
Laurilee Thompson, Citizen
Diana Turner, Florida Dept. Environmental Protection
Charles Vogt III, Florida Department of Health
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Dr. Laura Wilson, Marine Resources Council
Janet Zimmerman, Florida Inland Navigation District

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Erin Cartmill, St. Lucie County
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Dr. Linda Walters, University of Central Florida
Dr. Edie Widder, Ocean Research and Conservation Association
Kelly Young, Volusia County

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Dr. Graham Cox, Indian River County
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Barbara Ford, Indian River County
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Cheryl McPhillips, Brevard County
Leslie Munroe, Indian River County
Doug Patterson, Brevard County
Linda Roberts, Indian River County
Suzanne Schreiber, Volusia County
Tess Sailor-Tynes, Volusia County
Steven Schlitt, Indian River County
Charles Venuto, Brevard County
Ashley Weber, Volusia County
Keith Winsten, Brevard County

1. University of Florida-Institute for Food and Agricultural Sciences: Enhancing Living Shorelines
2. Marine Discovery Center: Enhancement of Habitat and Biodiversity in Mosquito Lagoon Using Non-Plastic Materials
3. University of Central Florida: Charge on - Habitat Restoration in Mosquito Lagoon, Florida
4. University of Central Florida: Unintended Consequences - Are Non-Plastic Materials Always Better?
5. City of Cocoa: Design and Engineering for Dixon Blvd. Water Quality and Resiliency Project
6. Brevard Zoo: Restore Our Shores Community-Based Seagrass Restoration in the IRL
7. Florida Institute of Technology: Suffocating Sand - Mapping Hypoxia and its Impacts on the IRL, Phase II.
8. Florida Institute of Technology: Suffocating Sand - Mapping Hypoxia and its Impacts on the IRL, Phase I.
9. Florida Institute of Technology: Optimization of an Environmentally-Friendly Denitrification Bioreactor, Year 2
10. Bethune-Cookman University: IRL Seagrass Restoration Using a Mosquito Control Impoundment
11. Indian River County: Restoration for the Lost Tree Islands Conservation Area, Phase 4
12. St. Lucie County: Sheraton Stormwater Treatment Area
13. Ft. Pierce Utilities Authority: Reducing Nutrient Loading to the IRL from Septic Systems and Aging Infrastructure
14. Manatee Observation and Education Center: Manatee Observation Center Seagrass Restoration Project
15. City of Port St. Lucie: Septic to Sewer Conversion to Reduce Nitrogen Pollution Along the Monterrey Waterway
16. Martin County: Connect to Protect Septic to Sewer Connection Program, Year 3
17. City of Stuart: SE Illinois Avenue Living Shoreline Project
18. Florida Oceanographic Society: Optimizing Seagrass Nursery Production for Restoration Applications
19. Martin County: Reduction of Nutrients Using Floating Treatment Wetlands
20. University of Florida: Clam Population Restoration, Year 4
21. WSP, Inc.: Atmospheric Deposition Monitoring Stations in the IRL
22. Florida Institute of Technology: Microcystin in IRL Coast-Dwelling Mammals
23. University of Florida and Florida Atlantic University - Harbor Branch: HAB Monitoring in the IRL, Year 4
24. Smithsonian Marine Station: IRL Species Inventory, Year 4
25. Applied Ecology: State of the Lagoon Technical Report, Year 4
26. Tetra Tech: CCMP Project Inventory and Support
27. IRLNEP: One Lagoon Communication and Brand Activation
28. IRLNEP: Building Lagoonwide Capacity for IRL Seagrass Recovery
29. IRLNEP: Small Grants Program
30. IRLNEP: Technical Support of Conferences and Workshops
31. IRLNEP: Vessel for Restoration Support Activities
32. IRLNEP: Community Engagement Coordinators
33. WSP, Inc.: Atmospheric Deposition Monitoring Stations
34. Mote Marine Lab: Using Genetic Tools to Boost Seagrass Restoration Success in the Indian River Lagoon
35. University of Florida and Florida Atlantic University - Harbor Branch: HAB Monitoring in the IRL, Year 5
36. Smithsonian Marine Station: IRL Species Inventory, Year 5
37. IRLNEP: Priority Communities Restoration and Capacity-Building (projects TBD)
38. IRLNEP, IDEAS, Diversity of Thought, and others: One Lagoon Communication and Brand Activation
39. IRLNEP (5 contracts): Building Lagoonwide Capacity for IRL Seagrass Recovery
40. IRLNEP: Small Grants Program
41. IRLNEP: Technical Support of Conferences and Workshops
42. IRLNEP, Natua Strategies, T. Pinney and Assoc., and Angie Brewer, Inc.: Capacity-Building Through Grants Writing
43. IRLNEP: Community Engagement Coordinators

Every Project is Progress

IRLNEP-Funded Projects FY 2024:

Numbers preceding project names correspond to map locations for FY 2024 IRLNEP projects. FY 2023 projects are not described below but are shown on the map as recent projects. For details of these projects, see the IRLNEP 2023 Annual Report.

7. Suffocating Sand: Mapping Hypoxia and its Impacts on Benthic Nutrient Fluxes in the IRL, Phase II.

Sponsor and Partners: Florida Institute of Technology, Brevard County Department of Natural Resources, Brevard Zoo, City of Cocoa Beach, City of Satellite Beach

Outputs: The project will deploy continuous monitoring stations to monitor bottom waters in the IRL and determine the extent and duration of hypoxia in IRL sub-basins over a multi-year period; produce publicly available datasets; report on the extent and duration of hypoxic events, nitrogen and phosphorus fluxes, and sediment sulfide content.

Outcomes: Project provides the first quantification on the impacts of hypoxia and sulfides on nutrient cycling. Enhanced science-based tools will be made available for restoration site selection; mechanisms and metrics to track success will be developed. It is expected that informed site selection will improve restoration success and lead to improved water, sediment and habitat quality.

IRLNEP Contribution: $ 74,986

Partner Match: $ 71,725

Total Project Cost: $ 146,711

13. Protecting the Indian River Lagoon and Reducing Nutrient Loads Caused by Septic Systems and Aging Wastewater Infrastructure

Sponsor and Partners: Fort Pierce Utilities Authority

Outputs: The project will remove 50 aging septic systems and provide connection to centralized sewer. Nutrient reductions of 850 lbs. of nitrogen and 10 lbs. of phosphorus per year are expected. Approximately 4.23 miles of sewer pipes will be lined by PVC Cured-in-Place-Piping.

Outcomes: Short-term benefits include reduction in septic system density and reduced nutrient and pollutant loading caused by aging and failing septic systems. Cured-in-Place PVC lining will eliminate the risk of untreated sewage entering the IRL. In the longer term, improvements to IRL health conditions for residents, tourists and wildlife will continue with the eventual goal of removing the IRL from the Impaired Waters list.

IRLNEP Contribution: $ 364,640

Partner Match: $ 981,415

Total Project Cost: $ 1,346,055

15. Septic to Sewer Conversion Along the Monterrey Waterway to Reduce Nutrient Pollution

Sponsor and Partners: City of Port St. Lucie, Florida Atlantic University - Harbor Branch

Outputs: Microbial source tracking confirmed elevated fecal coliform levels along the Monterrey Waterway. This program will convert 16 residential septic tanks to a centralized sewer system. Property owners within 50' of the Monterrey waterway will be eligible to participate in the program, which covers 50% of the sewer conversion cost. The City will also offer 10-year interest-free connection fee loan. Approximately 98.4 pounds of total nitrogen is expected to be removed each year.

Outcomes: Benefits of the project include: enhanced community understanding of nutrient reduction; incentivizing conversion of 16 septic tanks in the Monterrey Hot Spot area; significant nutrient reductions; better Indian River Lagoon protection. Long-term benefits include fewer algal blooms; habitat improvements; and restoration of biological diversity.

IRLNEP Contribution: $ 50,000

Partner Match: $ 50,000

Total Project Cost: $ 100,000

Photo: C. Gibson

21

Every Project is Progress
IRLNEP-Funded Projects FY 2024:

17. SE Illinois Avenue Living Shoreline Project

Sponsor and Partners: City of Stuart
Outputs: The project will install a living shoreline to prevent erosion and provide habitat. Plantings will remove nutrients from existing stormwater discharge. A buffered shoreline will be constructed at the north end of SE Illinois Avenue to provide filtration for stormwater runoff.
Outcomes: Project serves a model for future living shoreline efforts and implementation for the City's efforts to implement strategies to improve the quality of runoff and to advance BMAP goals. Long-term erosion protection, and restoration of natural shoreline habitats will provide continuing ecosystem benefits.
IRLNEP Contribution: $ 84,217
Partner Match: $ 84,217
Total Project Cost: $ 168,434

18. Optimizing *Syringodium filiforme* (Manatee Grass) Production Factors in a Subtropical Seagrass Nursery for Restoration Applications

Sponsor and Partners: Florida Oceanographic Society, University of Florida
Outputs: There are limited resources detailing methods to grow *S. filiforme* in a nursery setting and few available sources of plants outside of harvesting declining natural beds. Nursery-based mesocosm studies will test a variety of planting methods for *Syringodium.* Deliverables include: development of protocols for growing *S. filiforme* in a nursery setting; a nursery planting guide; and preparation of 1-2 peer-reviewed publications.
Outcomes: Optimizing and standardizing *S. filiforme* nursery growing techniques will increase the availability of stock for restoration, allowing nursery-grown stock rather than harvested plants to be utilized in restorations. With success, these methods may be applicable to other seagrass species not currently being looked at as restoration targets.
IRLNEP Contribution: $ 15,783
Partner Match: $ 26,896
Total Project Cost: $ 42,679

19. Reduction of Nutrients Using Floating Treatment Wetlands

Sponsor and Partners: Martin County
Outputs: This project reduces nutrients in the St. Lucie Estuary and greater IRL by replacing dilapidated floating treatment wetlands in two stormwater treatment areas with floating wetlands of an improved design. A total of 12 floating wetlands (6,280 ft²of surface area) will be installed within the Golden Gate and Old Palm City STAs. Annual average nutrient reduction of 412 lbs total nitrogen and 140 lbs total phosphorus is expected.
Outcomes: In alignment with Florida DEP's BMAP program, and the IRLNEP CCMP, this project will provide water quality benefits by reducing nitrogen and phosphorus loadings discharged into the Indian River Lagoon. The long-term goal is to meet 5-10 year BMAP TMDL targets for total nitrogen and total phosphorus.
IRLNEP Contribution: $ 35,360
Partner Match: $ 40,000
Total Project Cost: $ 75,360

33. Atmospheric Deposition Monitoring Stations

Sponsor and Partners: IRLNEP, WSP USA Environment & Infrastructure, Inc, St. Johns River Water Management District, Indian River County Environmental Health Department, FAU-Harbor Branch
Outputs: Project continues operations for dry and wet atmospheric deposition monitoring of total phosphorus and total nitrogen from the region's only atmospheric monitoring station. This year, 2 additional monitoring stations will be added under an additional contract.
Outcomes: The project is vital to better understand the role of atmospheric deposition in the IRL's nutrient budget. Long-term data collection and analysis will produce robust datasets for use in Total Maximum Daily Load determinations and development of Basin Management Action Plans.
IRLNEP Contribution: $ 90,000
Partner Match: Not required
Total Project Cost: $ 90,000

Photo: D. Hansen

Every Project is Progress
IRLNEP-Funded Projects FY 2024:

34. Using Genetic Tools to Boost Seagrass Restoration Success in the IRL

Sponsor and Partners: Mote Marine Laboratory, University of Florida, Florida Oceanographic Society; Florida Atlantic University-Harbor Branch

Outputs: Seagrass restoration in the IRL relies on donor material from seagrass nurseries. However, these nurseries lack information on the current genetics of their stock. This project will analyze the genetic diversity of seagrass donor material, the genetic diversity of natural seagrass meadows in the IRL, and novel tools for improving seagrass restoration success. Project will genotype *Halodule wrightii* in nurseries and natural populations; analyze whether disturbances promote maintenance of genetic diversity; analyze how genetic diversity impacts *H. wrightii* stability; and analyze how low-light priming impacts *H. wrightii.*

Outcomes: Short-term goals include: providing practitioners and managers with information on seagrass genetic diversity and novel restoration techniques for increasing seagrass stability and genetic diversity. Longer term goals include incorporation of results into seagrass management and restoration; increased restoration successes in seagrass and associated ecosystem.

IRLNEP Contribution: $ 25,014

Partner Match: $ 9,682

Total Project Cost: $ 34,696

35. Harmful Algal Bloom Monitoring in the IRL

Sponsor and Partners: University of Florida and Florida Atlantic University - Harbor Branch

Outputs: Data collected are reported to the IRLNEP on a quarterly basis and more widely as conditions require. Combined data are used in developing quantitative models. Additional water quality data from St. Johns River and South Florida Water Management Districts are included in all models.

Outcomes: Improved knowledge of current conditions in the IRL; Improved modeling will identify relevant environmental drivers triggering HABs.

IRLNEP Contribution: $ 150,000

Partner Match: Not required

Total Project Cost: $ 150,000

36. Indian River Lagoon Biodiversity Inventory, Year 5

Sponsor and Partners: Smithsonian Marine Station at Ft. Pierce

Outputs: Continue to improve and organize the IRL Species Inventory; develop and refine the data portal *Symbiota*, an open-source, content management system for curating specimen and observational data; and communicate the availability of the Inventory as a learning tool.

Outcomes: Improved citizen knowledge, understanding and stewardship for the IRL and its species; preservation of existing information in the Species Inventory; expansion that keeps focus on Lagoon biodiversity and continues to engage students, researchers, resource managers.

IRLNEP Contribution: $ 25,000

Partner Match: Not required

Total Project Cost: $ 25,000

37. Capacity-Building and Restoration in Priority Communities

Sponsor and Partners: IRLNEP with various partners

Outputs: Project applies Federal funding from the Bipartisan Infrastructure Law to initiate projects that deliver lasting change with expanded outreach to identified communities within the Indian River Lagoon watershed. These projects range from assisting non-profit groups in capacity-building to assisting local governments with funding stormwater or wastewater projects that benefit priority communities.

Outcomes: Expected outcomes from the project include relationship-building with communities where the IRLNEP had not previously worked; assisting communities with projects and programs that benefit the IRL while also assisting communities; and developing innovative approaches to projects that, when implemented, have multifaceted benefits.

IRLNEP Contribution: $ 360,800

Partner Match: Not required

Total Project Cost: $ 360,800

38. One Lagoon Communications and Branding Support

Sponsor and Partners: IRLNEP, IDEAS, Firefly Group, Brandt Ronat Co., O'Hara Communications, Diversity of Thought, Inc.

Outputs: This project improves IRLNEP's web and social media communication enhancements; production of web videos, podcasts, development of a diversity strategy and task force, and production/layout of public-facing documents.

Outcomes: Enhanced brand recognition throughout the IRL watershed; communication of an IRNEP value proposition that expands funding; improved public awareness; and improved public support for IRL restoration projects and programs.

IRLNEP Contribution: $ 161,375

Partner Match: Not required

Total Project Cost: $ 161,375

39. Building Lagoonwide Capacity for IRL Seagrass Recovery, Year 3

Sponsor and Partners: IRLNEP, Sea and Shoreline, LLC; Florida Atlantic University-Harbor Branch; Florida Oceanographic Society; Brevard Zoo; Marine Discovery Center

Outputs: The project builds capacity for IRL seagrass restoration through recurring investments in infrastructure, equipment and personnel to create land-based or in-lagoon seagrass nursery supply chains that support restoration efforts and associated research to better understand seagrass ecophysiology and cultivation.

Outcomes: Four regional restoration centers and a processing facility will address the needs of restoration practitioners in the IRL, primarily as these pertain to available supplies of filter feeders, shoreline plants and seagrasses. The project will increase knowledge of three species: *Halodule wrightii, Ruppia maritima* and *Syringodium filiforme* and document best practices for raising seagrasses.

IRLNEP Contribution: $ 500,000

Partner Match: Not required

Total Project Cost: $ 500,000

Photo: D. De Freese

Every Project is Progress

IRLNEP-Funded Projects FY 2024:

40. IRLNEP Small Grants Program

Sponsor and Partners: IRLNEP, various community partners
Outputs: Project delivers a suite of small restoration and citizen engagement projects funded between $500 and $5,000, with a focus on community engagement, education focused on the IRL, stewardship and restoration activities.
Outcomes: Enhanced citizen engagement and knowledge of the IRL leading to improved support for restoration and protection efforts; improved habitat and water quality; enhanced student and citizen innovation, problem-solving skills, and increased knowledge of the local environment.
IRLNEP Contribution: $ 25,000
Partner Match: Not Required
Total Project Cost: $ 25,000

41. IRLNEP Technical Support of Conferences and Workshops

Sponsor and Partners: IRLNEP, various community partners
Outputs: The IRLNEP will continue to assist community partners in developing and delivering high-quality conferences, workshops, symposia and public events that align with CCMP priorities.
Outcomes: Expanded community outreach/education to better-inform stakeholders and resource managers about IRL issues, advancing the IRLNEP mission and leveraging available funds efficiently.
IRLNEP Contribution: $ 25,000
Partner Match: Not Required
Total Project Cost: $ 25,000

42. Capacity-Building Support and Grants Writing

Sponsor and Partners: IRLNEP, Natua Strategies, T. Pinney & Associates, Angie Brewer & Associates, LLC
Outputs: Identification of new grant opportunities and potential revenue sources for IRLNEP stakeholders. Provision, at no cost, of technical support and grant-writing assistance to local governments and community partners for project benefiting IRL water and habitat quality.
Outcomes: Local governments and community partners will build their capacities for accomplishing IRL-focused restorations, nutrient reductions, and education projects. Professional grant-writing assistance provided to partners provides transfer of knowledge regarding effective approaches to successful grant writing. Increased revenues are secured for IRL restoration projects.
IRLNEP Contribution: $ 20,000
Partner Match: Not required
Total Project Cost: $ 20,000

43. IRLNEP Community Engagement Coordinators

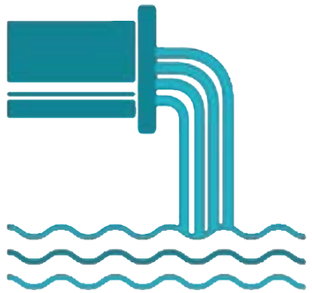
Sponsor and Partners: IRLNEP
Outputs: Project funds 3 staff that implement projects and programs to improve engagement, strengthen partnerships, improve the visibility of the Program and maintain focus on IRL issues. CECs will represent the Program at public meetings and events, provide technical assistance and conduct engagement programming.
Outcomes: Improved public awareness and sense of stewardship for the IRL; increased understanding of the Lagoon as a driver of the regional economy; improved public support for restoration that drives political will for expanded funding of restoration and protection efforts.
IRLNEP Contribution: $ 196,875
Partner Match: Not required
Total Project Cost: $ 196,875

Progress Powered by One Lagoon

Graphic: IRLNEP

Partners At Work

There's More Going on to Help the Lagoon Than You Think

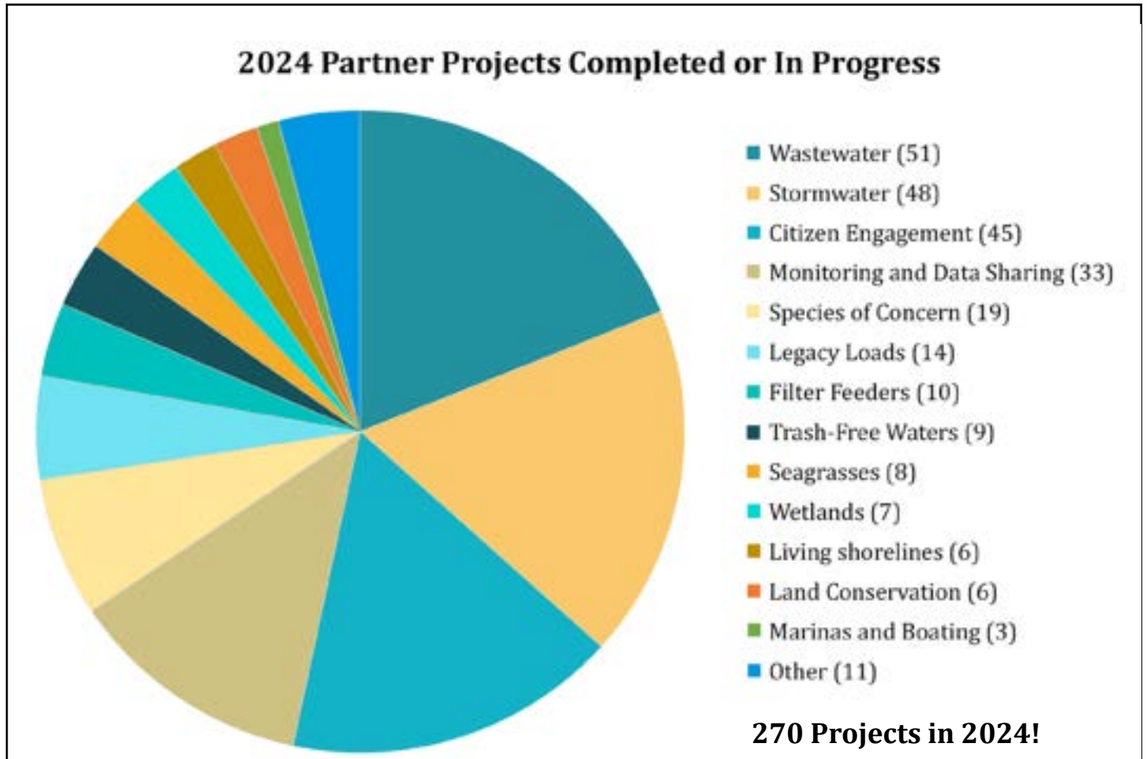


270

Projects accomplished by IRLNEP partners in fiscal year 2024

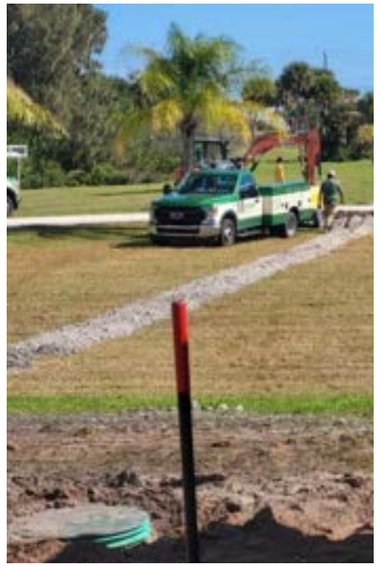
When we asked our federal, state and local partners what IRL-focused projects they were working on, outside of any joint projects with the IRLNEP, we received information on 270 projects that were either completed or in progress during fiscal year 2024.

This brings the total number of reported projects to 1,140 over the past four years. Congratulations partners!



Graphic: IRLNEP

(Left) Brevard County Wheeler Road denitrification project installed a level gate for water diversion into a treatment train of Best Management Practices. (Center) Volusia County recently completed a sanitary sewer collection system in Indian Harbor Estates that will serve 280 homes. (Right) Indian River Land Trust acquired 48 acres of mangrove forest and adjoining upland forest habitat and one-quarter mile of Indian River Lagoon shoreline. Photos: Brevard County, Volusia County, Indian River Land Trust.



(Left) SJRWMD is constructing the M1 Canal Project to prevent stormwater from 5,300 acres in the Melbourne area from entering the IRL. This water will be diverted through a treatment area and then to the St. Johns River. (Center) Indian River County Parks & Recreation is converting septic systems to STEP wastewater systems in four barrier island parks, including Round Island Park. (Right) SFWMD, the U.S. Army Corps of Engineers and other partners broke ground on the C-23/24 Stormwater Treatment Area that will reduce nutrients and sediments that flow into the St. Lucie Estuary and the IRL. Photos: SJRWMD, Indian River County, SFWMD.

Thousands of Volunteers, Many Ways to Make a Difference:

Whatever your interest, everyone can do something to help improve the IRL.

UCF

Save the Manatee Club

The lagoon community owes a tremendous debt of gratitude to the thousands of volunteers who contribute their time and energy to oyster, shoreline and seagrass restoration, monitoring wildlife, tracking water quality, and many other volunteer or citizen-science projects.

Thanks for all that you do!

Marine Cleanup Initiative

ORCA

Marine Discovery Center

UCF

Brevard Zoo

Marine Resources Council

Florida Oceanographic Society

Friends of St. Sebastian River

Indian River Land Trust

Saville Visuals

Marine Discovery Center

University of Florida

FY 2025 Projected Expenditures

$ 8,596,854
Total Expenditures

$7,736,277
Projects

3 Nutrient Reduction ($350,000)
8 Restoration ($6,455,815)
6 Scientific Research ($442,212)
8 Public Engagement/Education ($473,250)
Project Reserves ($15,000)

$ 265,800
Program Operations
(includes Administrative Services, Administrative Costs, Facilities Expenses)

$ 594,777
Salaries and Benefits

$ 1,059,862
Fund Balance - End of Year

Photo: L. Engelbrecht

On the Horizon in 2025:

LEVERAGING THE POWER OF PARTNERSHIPS AND NEW FUNDING

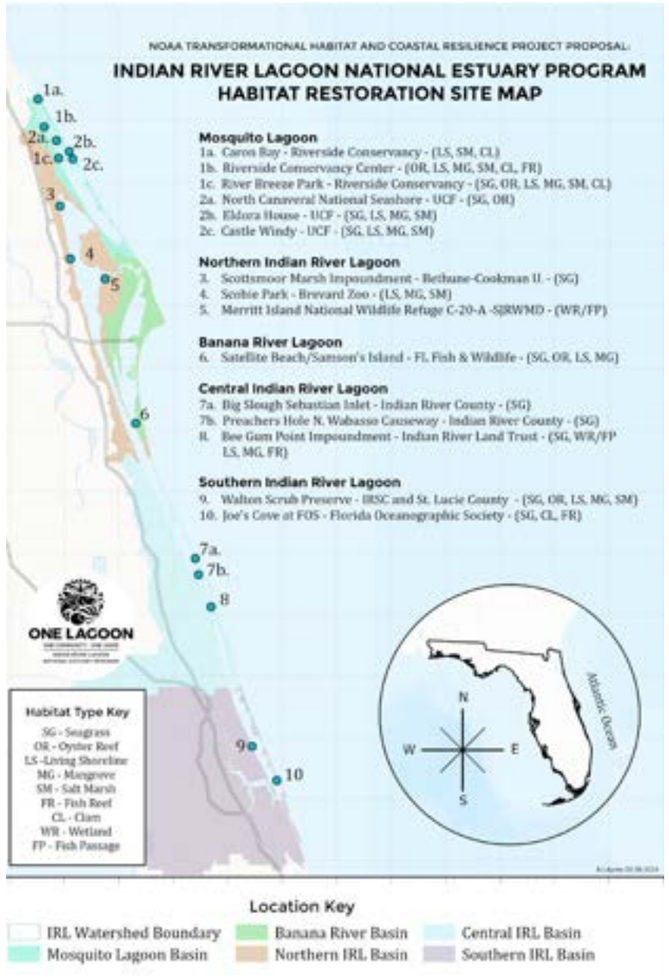
National Oceanic and Atmospheric Administration (NOAA) Funding: A Transformational Opportunity

In August 2024, the IRLNEP was notified that our proposal for a three-year, $9.4 million NOAA Habitat Restoration Grant would be funded. NOAA funding was made available through the federal Bipartisan Infrastructure Law and the Inflation Reduction Act. This multi-location, multi-species project highlights the capability of the IRLNEP to coordinate large-scale restoration projects. It also provides a historic opportunity to cultivate and sustain a lagoonwide community of practice for habitat restoration.

In partnership with ten restoration organizations and with support from additional subcontractors, the IRLNEP will spearhead restoration efforts focused on seagrasses, oyster reefs, living shorelines, wetlands, clams, and fish reefs. The project responds to an urgent need to restore essential fish habitats, enhance ecosystem functions and increase resilience in the Indian River Lagoon. Most of the project's fifteen locations address multiple habitat types. Funding will also support an IRL socio-economic analysis, student internships, community engagement and education outreach.

Lead partners in this landmark project include:

- Bethune-Cookman University
- Brevard Zoo
- Florida Fish & Wildlife Conservation Comm.
- Florida Oceanographic Society
- Indian River County
- Indian River Land Trust
- Indian River State College
- Riverside Conservancy
- The St. Johns River Water Mgmt. District
- The University of Central Florida



Historic Levels of State Funding

The IRL Protection Program was enacted in 2023 by the Florida Legislature and Governor Ron DeSantis. This historic legislation positioned the IRL to receive $100 million in state funding in Fiscal Years 2023 and 2024 to support priority water quality projects through a competitive grants program administered by Florida Department of Environmental Protection (FDEP). The legislation authorized creation of the IRL Watershed Research and Water Quality Monitoring Program that calls for FDEP to coordinate with St. Johns River Water Management District, South Florida Water Management District and The IRLNEP to implement a comprehensive water quality monitoring network throughout the IRL and fund research pertaining to water quality, ecosystem restoration, seagrass impacts, and seagrass restoration.

Historic Levels of Federal Funding

The Bipartisan Infrastructure Law (BIL), enacted in 2021, allocated funding to the U.S. EPA for water infrastructure improvements nationwide. Among its provisions, the BIL designated $132 million in funding to be distributed equally among the twenty-eight National Estuary Programs. This funding, made available in Fiscal Years 2022 - 2026, provides each NEP with an annual grant of $909,800, totaling $4,549,00 over the five-year funding cycle.

Recognizing that building infrastructure and improving community capacity can yield benefits that will endure beyond this one-time federal funding opportunity, the IRLNEP has allocated funds strategically to build the infrastructure needed to support seagrass restoration and research and invest in IRL projects that build capacity within our most vulnerable and underserved communities (identified by the IRLNEP as "priority communities"). In September 2024, the IRLNEP issued a Request For Proposals for projects occurring in priority communities. Grants will be awarded in Fiscal Year 2025.

Continuing to Improve Capacity for Seagrass Restoration and Research

Utilizing BIL funding, the IRLNEP created the Seagrass Nursery Network through a competitive process. Partners in this network include: the Marine Discovery Center in New Smyrna Beach, Brevard Zoo in Melbourne, Florida Atlantic University - Harbor Branch, Sea and Shoreline, LLC in Ft. Pierce, and Florida Oceanographic Society in Martin County. The nursery network is in varying stages of completion and operation. All nursery sites have been constructed and most are now in operation, growing and supplying several species of seagrasses for restoration or research.

In 2025, the IRLNEP will begin its third year of funding for this innovative infrastructure and capacity-building concept.

Staff and volunteers from Brevard Zoo plant tanks in the newly constructed seagrass nursery. Photo: Brevard Zoo.

The seagrass nursery at Florida Oceanographic Society. Photo: FOS.

Seagrass nursery under construction at Sea & Shoreline LLC's location in Brevard County. Photo: Sea & Shoreline, LLC.

"The greatest threat to our planet is the belief that someone else will save it."

— Robert Swan

Photo: William Hoag

NON-REGULATORY SCIENCE-BASED CONSENSUS-BUILDING

Indian River Lagoon National Estuary Program
Hosted by the IRL Council
1235 Main Street • Sebastian, FL 32958 • onelagoon.org • (321)536-6039

Follow us on social media:

ONE LAGOON
ONE COMMUNITY • ONE VOICE

This Indian River Lagoon National Estuary Program 2023 Annual Report was developed under Assistant Agreements No. CE-00D90119 and 4T-02D39922 awarded by the U.S. Environmental Protection Agency. It has not been formally reviewed by EPA. The views expressed are solely those of the IRL Council and EPA does not endorse any products or commercial services mentioned.