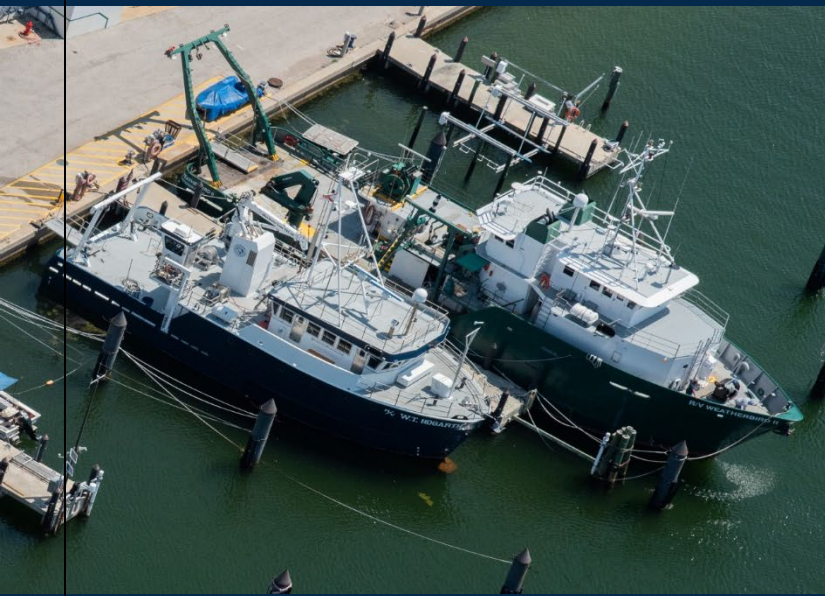




FLORIDA INSTITUTE OF OCEANOGRAPHY

FY 2021-2022

ANNUAL REPORT



Annual Report Submission Timeline

Date of Submission to Chancellor, Florida Board of Governors:..... TBD
Reviewed and Approved by Host Institution Board of Trustees:..... TBD
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Date of Approval by FIO Council:..... TBD
Date of Submission for review by FIO Council:..... TBD

For additional information on the Florida Board of Governors, Florida Institute of Oceanography and its Host Institution, the University of South Florida, please visit:

Florida Board of Governors, www.flbog.edu
University of South Florida, Host Institution, www.usf.edu
Florida Institute of Oceanography, www.fio.usf.edu

FIO 2021/2022 Annual Report

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View from the Bridge

Greetings,

This past year for the Florida Institute of Oceanography, like all of higher education, has been a 'rebuilding year' as we began the intentional process of emerging from two years of COVID-19 impacts that saw substantial reductions in operations, staffing and revenue. We are happy to report that FIO is not only emerging, but emerging strong. Even though we still deal with lingering effects of the pandemic including cancellations, staffing shortages, supply chain issues and the like, our usage and revenue numbers for research vessels and Keys Marine Laboratory are approaching a five-year high.

This report provides an overview and outlook that reflects a strong business model for FIO built on the foundation of performance quality as we support our State University System members and their pursuit of excellence. FIO understands that we are only as good as our member institutions, and we pride ourselves on their successes highlighted in this report.

We at FIO also understand that the bond between the people of Florida, the top-rated public university system in the nation, and the incredibly important maritime 'blue' economy of Florida is the DNA at the center of our existence. The 2021-2025 Strategic Plan, approved last year, is our roadmap to becoming the nation's leading university system for ocean science, technology, engineering and mathematics. Importantly, FIO is working with our membership to improve access to ocean information and knowledge for the people and communities of Florida.

Speaking of the 'blue economy' of Florida, FIO continues to work with our membership to provide exciting leadership opportunities for undergraduate and graduate students, early career faculty, staff and the communities providing support to, and being supported by, FIO operations. We look forward to new peer-to-peer and near-peer mentoring programs that will enhance Florida's STEM workforce and that will create a workforce of ocean STEM experts that reflects the rich diversity of Florida's population.

Enjoy learning more about FIO's activities from the past year, and please join us for the coming adventures of the next year!

Sincerely,



William (Monty) Graham, PhD
Director

Governance as an AISO & 2021-2025 Strategic Plan

Established by the Board of Governors (BOG) in 2009 and supported by the SUS Council of Academic Vice Presidents (CAVP), FIO serves the State University System (SUS) by supporting excellence in marine science, technology and education through infrastructure, programs, information and people to its member institutions across Florida.

The Mission of the State University System of Florida is guided by Article IX, Section 7 of the State Constitution of Florida. An important function of AISOs of the SUS addresses Section 7(d): “defining the distinctive mission of each constituent university and its articulation with free public schools and community colleges, ensuring the well-planned coordination and operation of the system, and avoiding wasteful duplication of facilities or programs.” Thus, FIO’s mission and Strategic Plan not only align with the BOG’s mission, but serve a crucial function in reducing “wasteful duplication” among the SUS members by providing ocean science and education infrastructure for the service of all.

“The mission of the State University System of Florida is to provide undergraduate, graduate and professional education, research, and public service of the highest quality through a coordinated system of institutions of higher learning, each with its own mission and collectively dedicated to serving the needs of a diverse state and global society.”

FIO directly addresses the SUS mission by providing opportunities for students to gain direct experience in marine research, thus enhancing their competitive positions for jobs in marine research and industry; by providing the infrastructure that supports the research of marine science investigators throughout the state; and by developing collaborative academic and research programs that capitalize on the talent and resources of individual partner universities.

In January 2022, FIO and its host institution’s (USF) leadership requested a renewal of FIO’s status as an AISO for an additional five years and an approval of its 2021-2025 Strategic Plan from the Florida SUS BOG. Approved by USF’s Board of Trustees before submittal to the BOG, FIO refined its Vision, Mission, and Strategic Goals and Guiding Principles to align with the SUS:

Vision — The Florida Institute of Oceanography will enable excellence in coastal and ocean science and education. To do so requires advancing science, technology and education through state-of-the-art infrastructure, multi-institutional and cross-disciplinary activities, information sharing, public-private partnerships, diversity and inclusivity, and socially relevant programming.

Mission — The Florida Institute of Oceanography ensures sustained excellence in marine research and education through the advancement and availability of infrastructure, development of partnerships, and the enabling of outcomes that benefit the people of Florida. FIO serves as an enabler, facilitator and coordinator across academia, state and federal agencies, ocean science organizations and the private sector.

Core Values

- *Cooperation, Coordination and Participation* – of members to solve problems related to the coast and oceans and to facilitate education and training of marine scientists who reflect the diversity of Florida.
- *Collaboration and Communication* – among members to leverage the collective vast and deep expertise to benefit Florida in the context of a national and international conversation on critical issues and to communicate outcomes for the advancement of science-based decisions.
- *Transparency and Accountability* – in all interactions that support the members, member institutions and the State University System of Florida.

Strategic Goals

- *Operations*
 - 1) Increase utilization rates of research vessels and KML
 - 2) Develop and implement facilities modernization plans
 - 3) Stabilize operations budgets through use of longer-term needs outlooks
 - 4) Establish service centers within auxiliary units to clarify and strengthen annual operating budgets
- *Education Support*
 - 5) Develop leadership and networking opportunities
 - 6) Develop and coordinate specialized courses and training programs among member institutions
 - 7) Work with non-SUS consortium members (e.g., aquaria, agencies) with educational and work programs
- *Research Support*
 - 8) Increase research collaborations and scholarly output among FIO member institutions
 - 9) Utilize convening power of FIO to host, virtually or in-person, development workshops
 - 10) Implement three to four long-term, state-wide research programs that FIO can support
- *Business Engagement*
 - 11) Broaden and incentivize participation of private sector
 - 12) Work across the FIO membership and other relevant organizations to identify and promote the development of maritime industry clusters.
 - 13) Create a virtual or in-person Annual Industry Forum

Additional Highlights from FIO's 2021-2025 Strategic Plan

Guiding Principles

- FIO will advance its mission through safe, efficient and effective operation of FIO facilities and vessels.

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- FIO will position itself for success by promoting a data-priority culture.
- FIO will identify, acquire and support “state-of-the-art” technologies and platforms to keep the SUS institutions at the national and international forefront of ocean science and education.
- FIO will advocate for informed ocean and coastal stewardship of Florida’s coastal and ocean resources.
- FIO will extend the scientific, social and economic reach of the consortium through broad stakeholder, multi- and trans-disciplinary initiatives. This will include activities that increase diversity, equity, inclusiveness and social justice.

FIO’s AISO Renewal and Strategic Plan 2021-2025 were approved by the Florida SUS Board of Governors in January 2022.

The FIO Consortium

The FIO Consortium is comprised of public and private higher education institutions, state and federal agencies, and marine research organizations, which are broken into Full, Associate and Affiliate memberships. Each institution is designated representation on the FIO Council but only Full Members have voting rights. In order to maintain FIO’s integrity as an AISO, SUS members retain a majority vote representation within the Full Members of the FIO Council.

In July of 2021, FIO welcomed two new members to its consortium. Bethune-Cookman University (B-CU) and the Florida Ocean Alliance (FOA) were approved for membership by the voting members of the FIO Council.

B-CU, a Historically Black College and University (HBCU), has an Integrated Environmental Science Department focused on large-scale coastal and watershed issues and challenges. B-CU also is leading the Halifax River Urban Watershed Sustainability Initiative and is a member of the NOAA Center for Coastal and Marine Ecosystems (CCME).

FOA, a non-profit statewide organization, is dedicated to bringing together the private marine sector, nonprofit research organizations, and academia. The Florida Ocean Alliance serves as a clearinghouse for information on key Florida coastal and ocean issues and recently developed a Strategic Policy Plan for Florida’s Oceans and Coasts: Securing Florida’s Blue Economy to protect living marine resources, the environment, promote marine economic activity and enhance public outreach.

The two new members are the first to join the FIO Consortium in six years, when the organization welcomed the Florida Aquarium.

Administration & Finance

Budget Overview

FIO had recurring operating funds of \$2.2M at the onset of FY 21/22, which included personnel support and day-to-day operational costs. Additionally, a total of \$1.1M was available to carry forward to this fiscal year to support activities. FIO also received \$500,000 through the CARES Act (CRRSSA) COVID-19 relief program. These funds were used to offset lost revenues and operational expenses incurred by the auxiliary accounts.

From the \$1.1M, FIO was able to maintain a \$400,000 reserve from the carry-forward balance for unforeseen expenditures; however, carry-forward funds have been dwindling and a reduced amount is anticipated to be available for operational support in the coming fiscal year. The “carry forward account” supports large expenditures, including shipyard-based maintenance and repairs for the R/V *W.T. Hogarth* and R/V *Weatherbird II*, along with additional expenditures required to maintain research vessels at a “mission ready” status.

While the COVID-19 pandemic continues to impact faculty, student, and industry research, FIO has seen an increase in demand for research vessel usage and, therefore, an increase in revenues in FY21/22 compared to FY20/21. As COVID restrictions continue to ease and more individuals receive vaccinations/vaccine boosters, the demand for research vessel usage will continue to rise.

Keys Marine Laboratory revenues for FY21/22 have rebounded well to pre-COVID numbers. Revenue for FY21/22 was \$355,548. Dorm use accounted for \$150,400, KML vessels and dive operations brought in \$48,280, and use of KML’s seawater well system contributed \$47,400 to the total. A collaborative agreement with Florida Fish and Wildlife Conservation Commission (FWC) to operate the newly constructed Coral Reef Restoration Seawater System (CRRSS) ensured an additional \$90,000 to help cover operational expenses for the first year.

Since July 2021, lost revenue for KML was estimated at \$189,500 impacting 54 groups, including 20 SUS institutions. Lack of flexible dorm space availability was the primary factor (\$142,600 lost revenues) while COVID-related issues accounted for \$37,400 in lost revenue. The remainder was due to lack of staffing from July to Dec 2021 to run requested boat trips and provide scientific dive support.

Table 1. FIO FY-22 Budget

| | Budget/ Revenue (\$) | Expenses (\$) |
|----------------------------|-------------------------|---------------|
| E&G (totals) | 2,244,988 | 2,037,419 |
| Aux (totals) | 1,829,761 | 1,589,196 |
| Research (totals) | 1,249,381 | 1,126,186 |
| Carry Forward | 756,733 | 84,580 |
| <i>Sum</i> | 6,080,863 | 4,837,380 |
| <i>w/out Carry Forward</i> | 4,924,130 | 4,752,800 |

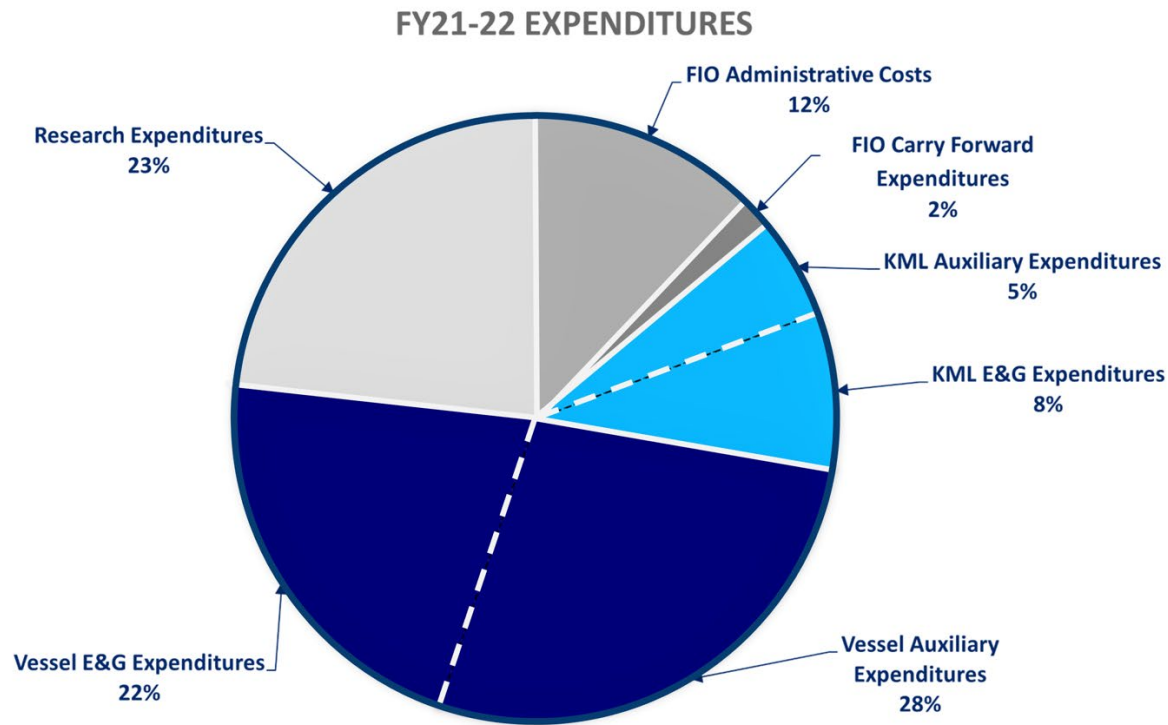


Figure 1. FY21-22 expenditures

Personnel Overview

- The search for a Chief Scientist concluded on October 1, 2021. Dr. Nicole Raineault was hired and serves as Project Director of the Florida RESTORE Act Centers of Excellence Program (FLRACEP).
- The search for a Sr. Biological Scientist for KML concluded on November 8, 2021. Emily Becker was hired to serve in this role.
- The search for a Biological Scientist for KML concluded on November 8, 2021. John (JD) Reinbott was hired to serve in this role.
- The search for a Marine Superintendent concluded on February 1, 2022. Captain Quentin Lewis was hired to serve in this role to oversee all crew and marine operations.
- The search for a Manager, Business & Fiscal Administrator concluded on March 7, 2022. Ms. Kelsey Wilkinson was hired to serve in this role and oversee FIO's Fiscal and Administrative team.
- The search for an Administrative Specialist concluded on March 14, 2022. Ms. Carly King was hired to serve in this role.
- The search for a Fiscal & Business Specialist concluded on April 29, 2022. Ms. Lauren Taylor was hired to serve in this role.
- FIO was able to successfully hire new crew to replace personnel that were laid off, furloughed, or chose to resign during the COVID-19 pandemic (FY20 and FY21). New crew hires included:
 - Mate, Hayden Wiley. Start date August 12, 2021

- Captain (R/V *Hogarth*), Bryan Davis. Start date October 22, 2021
 - Mate, Jason Politano. Start date December 1, 2021
 - Marine Cook, Jordan Adams. Start date February 4, 2022
 - Assistant Marine Engineer, Grady Smith. Start date March 4, 2022
 - Assistant Marine Engineer, Margaret Knott. Start date March 18, 2022
 - Marine Science Technician (OPS), Gabriel Matthias. Start date May 13, 2022
 - Marine Deckhand, Heather Meneses. Start date May 13, 2022
 - Marine Deckhand, Tim Woodard. Start date May 13, 2022
 - Marine Chief Engineer, Joe Darby. Start date July 8, 2022
- While FIO has worked diligently this year to recruit and hire the necessary crew required for safe operation of both vessels, the market has proven to be challenging. This has required continued use of temporary and relief crew to support vessel operations and waterfront vacancies.
 - FIO is currently working to recruit an Administrative Specialist for the Keys Marine Lab (KML). Anticipated start date for this position will be fall 2022.
 - To better align with both the new strategic plan and administrative structure, FIO reclassified its Education Outreach Officer position to Communications and Marketing Manager and is in the process of reclassifying its KML-based Teaching Lab Manager position. FIO is working closely with USF Central HR to ensure the positions are appropriately reclassified based on job duties and the administrative needs of FIO.
 - FIO continues to fill open crew positions on the vessels and is close to full staff. Two of the onboard crew members have moved up to new positions with the vessels and several relief crew members have moved into full-time positions onboard.

A detailed organizational chart provided in Appendix A.

Facilities

Infrastructure & Operational Overview

FIO completed 214 operational days at sea in FY 21/22 and billed nearly \$1.26M.

Table 2. Ship Users and Revenue FY 21/22

| Ship User | Days at Sea | Vessel | Estimate | Month |
|---------------------------|-------------|-------------|--------------|--------|
| USF-Grasty | 7 | Weatherbird | \$30,000.00 | Jun-21 |
| HDR INC | 45 | Weatherbird | \$430,202.75 | Jun-21 |
| USF-Weisberg/Law | 1 | Hogarth | \$7,500.00 | Jul-21 |
| Univer. Washington-Fox | 6 | Hogarth | \$60,664.84 | Aug-21 |
| FWRI | 8 | Hogarth | \$60,000.00 | Sep-21 |
| FAMU-Martinez-Colon | 4 | Hogarth | \$3,000.00 | Sep-21 |
| Eckerd College-Schwing | 1 | Hogarth | \$750.00 | Sep-21 |
| USF-Wiesberg | 4 | Weatherbird | \$44,000.00 | Sep-21 |
| USF-Janosik | 3 | Hogarth | \$2,250.00 | Oct-21 |
| FGCU-Rumbold | 3 | Hogarth | \$3,000.00 | Oct-21 |
| USF-Law | 4 | Hogarth | \$11,250.00 | Oct-21 |
| Univer. Washington-Fox | 1.5 | Hogarth | \$64,732.31 | Oct-21 |
| USF-Grasty/Hommeyer | 4.5 | Weatherbird | \$47,400.00 | Nov-21 |
| Mote Marine-Heil | 7 | Hogarth | \$93,500.00 | Dec-21 |
| USF-Jaeger | 8.5 | Weatherbird | \$2,250.00 | Jan-22 |
| FGCU-Adhikari | 3 | Hogarth | \$3,000.00 | Feb-22 |
| USF-Law | 4 | Hogarth | \$7,500.00 | Feb-22 |
| UCF-Walters | 1 | Hogarth | \$750.00 | Feb-22 |
| Eckerd College-Schwing | 1 | Hogarth | \$750.00 | Feb-22 |
| UF-Durham | 1 | Hogarth | \$30,000.00 | Feb-22 |
| FAU-Hanisak | 4 | Hogarth | \$3,750.00 | Mar-22 |
| FL Aquarium-Judkins | 5 | Hogarth | \$5,500.00 | Mar-22 |
| New College-Gardiner | 0.5 | Weatherbird | \$5,500.00 | Apr-22 |
| FWRI/FWCC-Garret | 5 | Weatherbird | \$16,500.00 | Apr-22 |
| L3-Harris-Leishman | 1.5 | Weatherbird | \$44,000.00 | Apr-22 |
| USF-Seibel | 4 | Weatherbird | \$4,400.00 | Apr-22 |
| UWF-Pomory | 4 | Weatherbird | \$4,500.00 | Apr-22 |
| FAU-Kaiura | 5 | Hogarth | \$3,000.00 | Apr-22 |
| USF-Weisberg/Law | 0.5 | Hogarth | \$3,750.00 | May-22 |
| FAU-Bracken/Grissom | 5 | Hogarth | \$3,750.00 | May-22 |
| UNF-Ross | 7 | Hogarth | \$4,500.00 | May-22 |
| USF-Judkins (MFS) | 1 | Hogarth | \$156.25 | May-22 |
| USF-Greely | 1 | Hogarth | \$750.00 | May-22 |
| USF-Grasty/Dauphin-Powers | 6 | Weatherbird | \$66,000.00 | May-22 |
| Eckerd/USF-Brooks | 7 | Weatherbird | \$66,000.00 | May-22 |
| NOAA Fisheries-David | 13 | Weatherbird | \$99,000.00 | May-22 |
| FIT-Wood | 9 | Hogarth | \$33,750.00 | Jun-22 |
| FWRI-Keenan | 8 | Hogarth | \$60,000.00 | Jun-22 |
| FWRI-Hubbary/USF-Buck | 6 | Weatherbird | \$66,000.00 | Jun-22 |

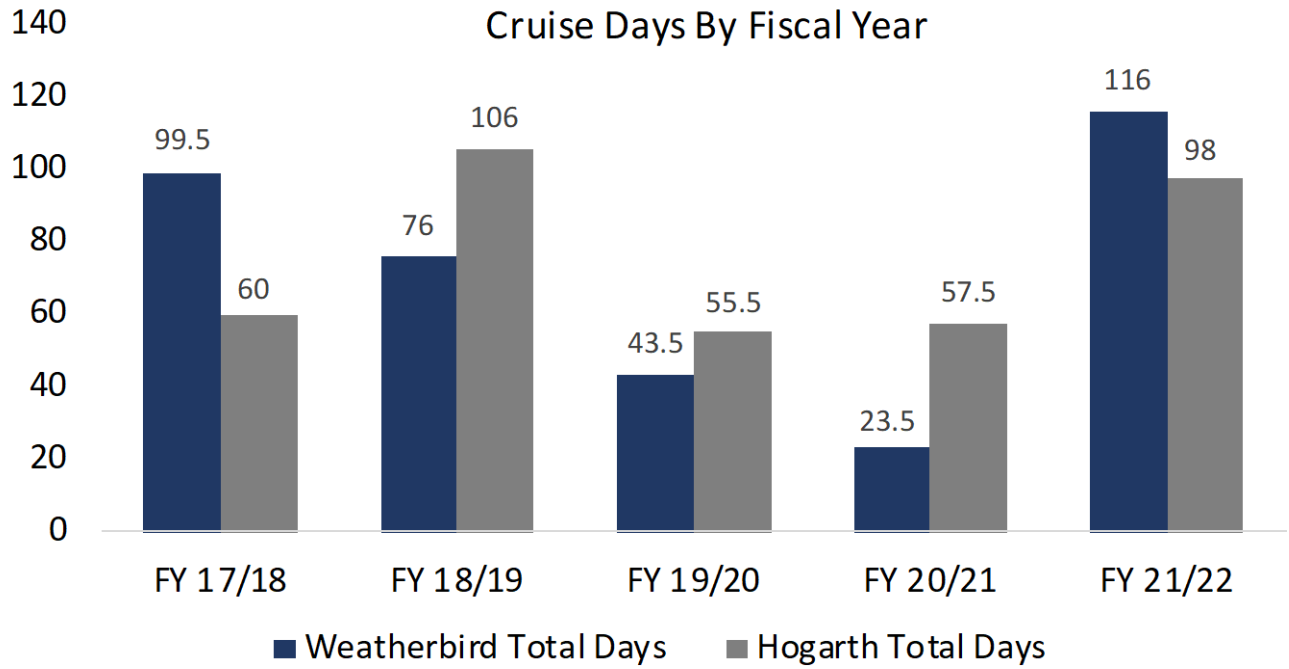


Figure 2. Cruise days by fiscal year

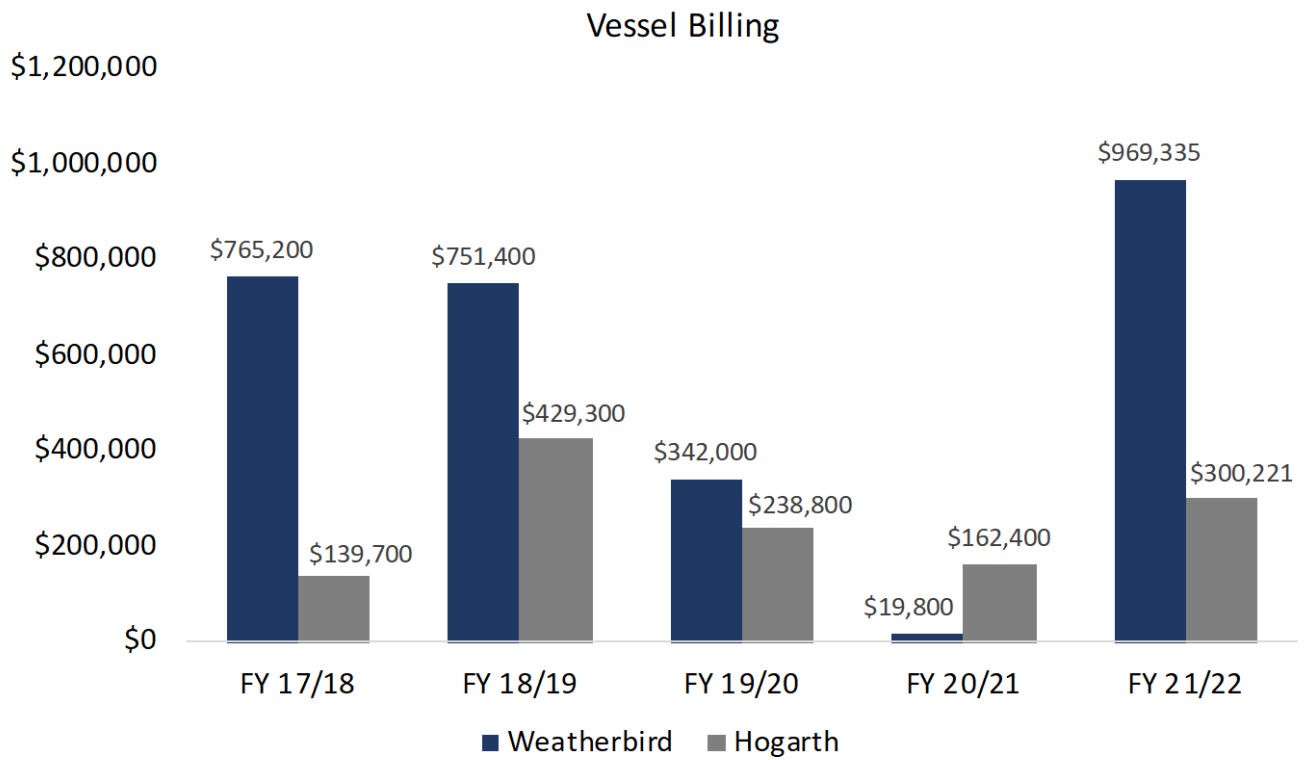


Figure 3. Vessel billing by fiscal year

Through the State University System (SUS) FIO Sponsored Ship Time program (formerly known as Subsidized Ship Time), 10 SUS members were awarded over 77 state-sponsored ship days at sea. The program heavily subsidizes the cost of FIO vessels' daily rates. The purpose of the program is to expose undergraduate and graduate students enrolled at SUS institutions to field-based research and educational activities at sea. For many students, this opportunity provides them their first chance to participate on a research-focused cruise.

The R/V *Hogarth*, which has a significantly lower daily rate (FY 21/22 rate of \$6,700/day compared to the R/V *Weatherbird*'s rate of \$11,000/day), accomplished 68 SUS-sponsored days at sea. The SUS institutions that utilized sponsored ship days aboard the R/V *Hogarth* were FAMU, FAU, FGCU, FIU, Eckerd College, UCF, UNF, USF, and UWF.

The R/V *Weatherbird* completed nine sponsored SUS days at sea with most of them being awarded for a collaborative research project with FIO members New College of Florida (NCF), Mote Marine Laboratory, and Eckerd College. USF was also awarded a sponsored SUS cruise on the R/V *Weatherbird* because the research and educational activities required a bigger working deck platform.

In February 2022, Quentin Lewis joined FIO as Marine Superintendent. Captain Lewis was recruited from the Bermuda Institute of Ocean Sciences where he served as Marine Superintendent of the Marine Operations Department, operating the R/V *Atlantic Explorer*. He earned his bachelor's degree in maritime transportation from the United States Merchant Marine Academy and has a U.S. Coast Guard Master's License. The marine superintendent is responsible for the operation of FIO's two research vessels, the R/V *Weatherbird II* and the R/V *Hogarth*.

R/V *Hogarth*

The R/V *Hogarth*'s schedule included ship-time support for many FIO-sponsored educational cruises. The vessel supported undergraduate coursework for ten different SUS institutions, mostly through its Sponsored Ship Time Program. In addition, the vessel worked with Florida Fish and Wildlife Research Institute and funded university research programs.

With the vessel now in its fifth year of operation, scheduled maintenance on major shipboard systems was necessary. Manufacturer's (Duckworth Steel Boats) recommendations for servicing the generators were completed in the spring of 2022. In addition, modifications to the bow thruster hydraulic system and electronic controls are underway, which will improve station-keeping capabilities moving forward. Vessel operations also completed a 5,000-hour service on the *Hogarth*'s main engines in February and March.

The vessel completed the fiscal year with several extended cruises supporting educational programs at three different FIO member institutions, working in the waters off the Florida Keys. The work included a 48-hour port call to wait out the passage of the first tropical storm of the season.

Nearly 500 students participated in research and educational activities on the R/V *Hogarth* in FY 21/22. 438 undergraduates and 49 graduate students, mostly from FIO's SUS member institutions, took advantage of opportunities aboard FIO's state-of-the-art vessel.

R/V *Weatherbird II*

The R/V *Weatherbird II* opened FY 21/22 supporting science operations with the Marine Animal Response Team (MART) commissioned for the hull shock testing on the Aircraft Carrier CVN-78 *USS Gerald R. Ford* by the United States Navy. The tests were conducted approximately 150 miles southeast of Jacksonville, Florida. The R/V *Weatherbird II* transited to the operational area off the coast of Jacksonville in late June 2021, and remained on call until operations concluded in mid-August. Throughout the fall of 2021, the vessel supported research and educational cruises for both FIO member institutions and several outside academic and research organizations.

During the vessel's winter maintenance period, upgrades were completed on the satellite communications systems on board the vessel. The upgraded system allows for increased data transfer on and off the ship to support operations requiring telepresence capabilities. In addition to standard maintenance items, upgrades were made to the flowthrough seawater system, data acquisition, and navigation systems.

The R/V *Weatherbird II* continued research operations in the spring of 2022, supporting both state and federally funded projects stretching from the northern Gulf of Mexico to Atlantic waters offshore of Cape Canaveral.

During FY 21/22, the vessel hosted more than 100 students on-board; 76 undergraduate students and 25 graduate students joined research cruises.

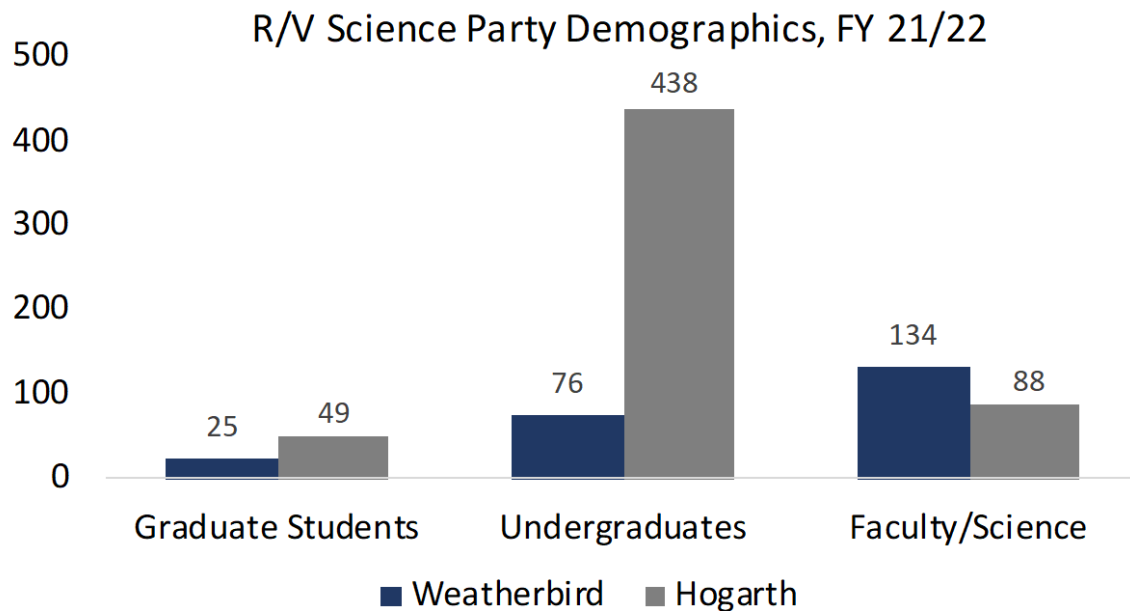


Figure 4. Research vessel science party demographics for FY 21/22

Keys Marine Laboratory

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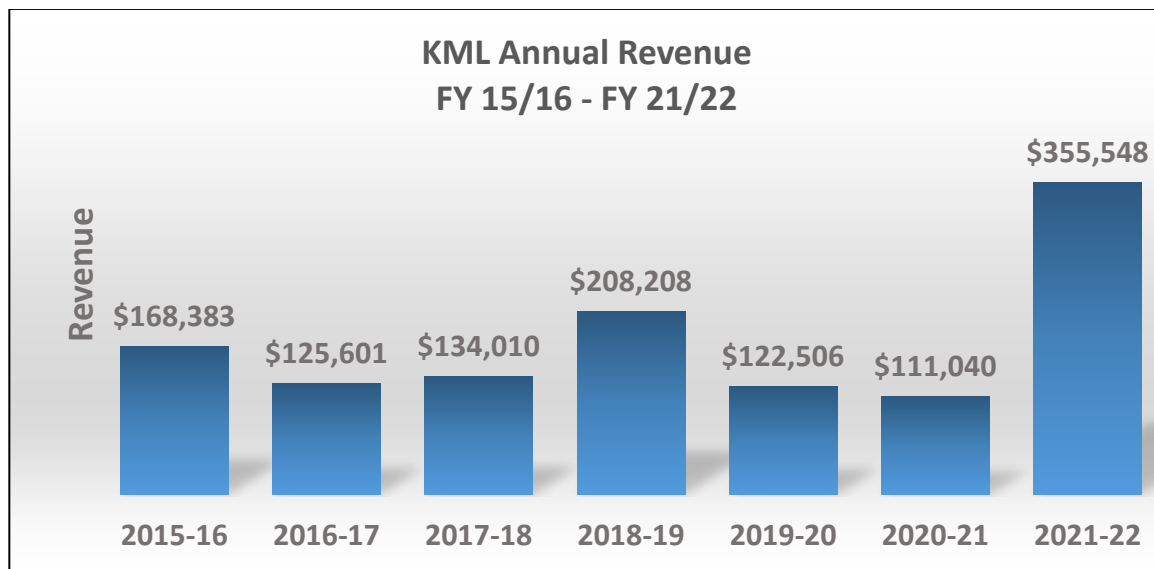


Figure 5. KML Revenue FY 15/16 - Present

KML Usage & User Demographics

Over the last seven years, KML has been utilized regularly by eight of the twelve SUS institutions. SUS usage per year averages 33% of all the groups hosted at KML. FSU, FGCU, and USF most frequently used KML during this seven-year period. During FY 21/22, KML provided access and support for a total 102 groups, of which 36 were from SUS institutions (Figure 6). SUS groups at KML consisted of 82 undergraduate students, 42 graduate and doctoral students, and 35 researchers and faculty members.

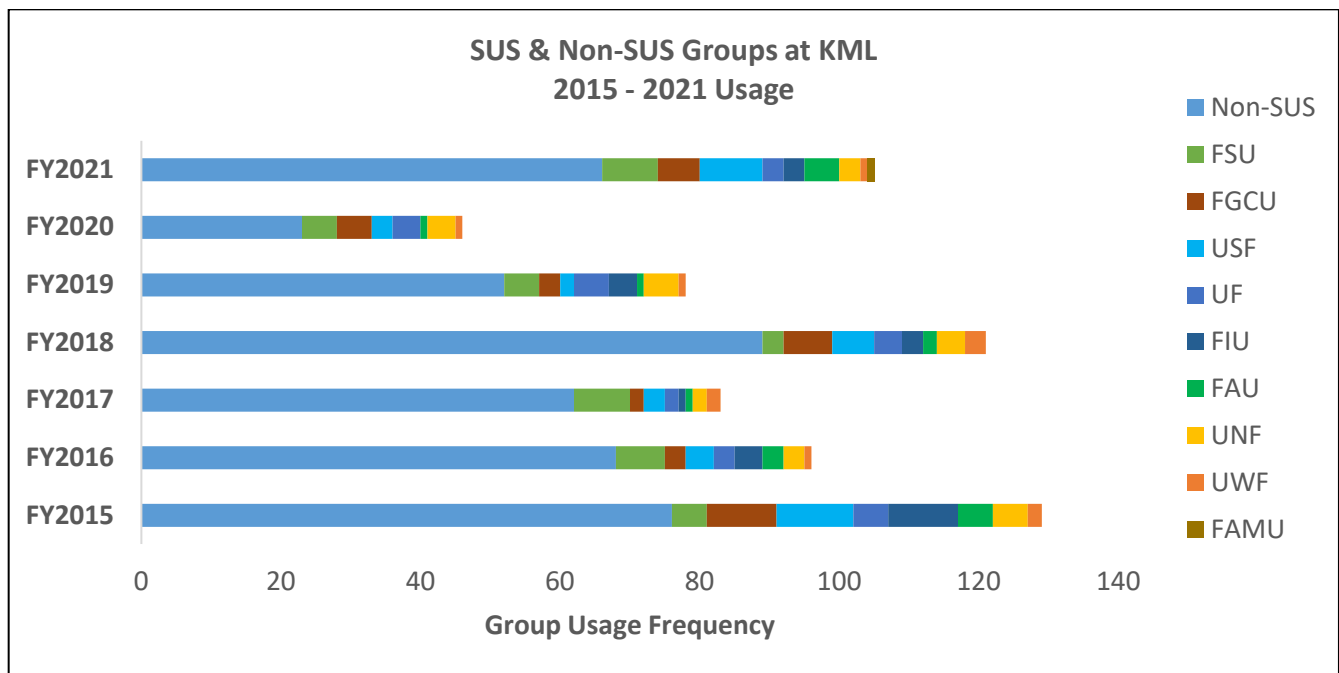


Figure 6. Seven Year Lookback: SUS vs. Non-SUS Usage of KML

Table 3. KML Demographics of KML User Groups

| Groups at KML | Total # All Groups | SUS Institutions | | | |
|---------------|--------------------|------------------|-----------|----------|--------------------|
| | | # SUS Groups | Undergrad | Graduate | Faculty/Researcher |
| FY 20/21 | 44 | 20 | 38 | 19 | 24 |
| FY 21/22 | 102 | 36 | 82 | 42 | 35 |

Table 4. Overnight vs. Daily Usage at KML

| KML Use | Dorm Use + Day Access | | | | Dorm Use | | | Day Access | | |
|----------|-----------------------|----------------|-------|---------------|----------|----------|----------|------------|----------|--------|
| | Total # Groups | Total # People | # SUS | SUS Frequency | # Groups | # People | # Nights | # Groups | # People | # Days |
| FY 20/21 | 44 | 159 | 7 | 20 | 21 | 116 | 1,367 | 23 | 43 | 1,227 |
| FY 21/22 | 102 | 436 | 8 | 36 | 50 | 301 | 620 | 52 | 135 | 806 |

Table 5. Vessel & Scientific Diving Usages at KML

| KML Vessel Use | Total # Vessel Days | | | Total # People | | |
|----------------|---------------------|------------|------------|----------------|--------|--------------|
| | Snorkel Trips | Dive Trips | Total Days | Snorkelers | Divers | Total People |
| FY 20/21 | 25 | 62 | 109 | 215 | 128 | 343 |
| FY 21/22 | 41 | 89 | 122 | 270 | 279 | 549 |

Table 6. Seawater System Totals

| KML SW System Use | # Groups | # SUS | SW Use | | |
|-------------------|----------|-------|-------------|------------|-----------|
| | | | # Tank-Days | % Capacity | Revenue |
| FY 20/21 | 11 | 0 | 3871 | 54% | \$55,410 |
| FY 21/22 | 38 | 3 | 3018 | 48% | \$144,882 |

Infrastructure Upgrades

Infrastructure upgrades this year included the replacement of the antiquated KML phone system. Another critical upgrade at KML was initiated by the Florida Keys Electric Cooperative for hurricane preparedness. New storm-resistant poles and transformers have been installed and await connection by electrical contractors to complete the upgrade to the main electrical service at KML.

KML has been working with the USF Facilities Planning and Management team to draft a master site plan for the KML Conservation Management Plan. A strategic, phased approach to implement this plan would create a sustainable storm-resistant marine field station better positioned to meet the future needs of the scientific community. Phase 1 would include construction of elevated housing for students and faculty/researchers. Phase 2 would accommodate an Aquaculture and Wet Lab Annex with additional dock space for small research vessels, improving access to the eastern seawater system. Phase 3 would replace four aging buildings with a new multi-purpose facility designed to support educational and research experiences, as well as provide space for regional collaborations and community engagement. During construction, office space in the older buildings would temporarily move to the Aquaculture and Wet Lab Annex described in Phase 2, allowing KML operations to continue uninterrupted. *See Appendix B for a visual representation of the master site plan.*

KML Seawater Systems

The Coral Reef Restoration Seawater System (CRRSS), a collaborative effort between FWC and FIO/KML, became fully operational in March 2022. This new system provides increased capacity (2,600-gallon tables) for reef restoration projects for the Florida Reef Tract. Space is allocated in the CRRSS for the FWC Coral Reef Rescue initiative. Rescued corals (held in land-based facilities since 2018) are successfully spawning in captivity. The team from Florida Aquarium's Center for Conservation reared new coral recruits and transitioned them to the CRRSS tables in April for out-planting trials in the Middle Keys. Pieces of elkhorn

(*Acropora palmata*) and fused staghorn (hybrid elkhorn-x-staghorn colonies (*A. prolifera*)) to be used for land-based spawning brood stock were temporarily held in CRRSS tables in June and July for transport to Apollo Beach, Florida.

A relatively new start-up restoration group, Islamorada Conservation and Restoration Education (I.CARE from Islamorada, Florida) staged staghorn corals in the KML SW well system during the year, transitioning coral fragments from the Mote Marine Lab in-water nursery in the Lower Keys, to Islamorada outplant sites. Guy and Jessica Harvey (Guy Harvey Ocean Foundation) visited KML in September 2021 to tour the facility and interview members of the I.CARE team that were holding corals in the KML system for out-planting.

Funding for the maintenance and operations of the new FWC CRRSS contributed an additional \$90,000 in revenue for KML during FY 21/22. A new contract and agreement further strengthening the FWC/FIO collaboration will ensure \$105,000 annually over the next five years going toward the operation of the CRRSS which is earmarked for pre-approved coral reef restoration projects. Always ready to assist all restoration partners and thanks to capacity standing at the ready, the CRRSS system was able to safely hold several hundred coral fragments awaiting out planting while emergency repairs could be made to the new Mote satellite facility in the Middle Keys.

KML received an NSF award in 2019 for seawater systems infrastructure upgrades and improvements (DBI-1929638). The COVID pandemic and additional worldwide dynamics have resulted in unanticipated delays due to work force shortages and supply chain disruptions that precipitated requests for No-Cost Extensions (NCE). Additionally, the significant increase in cost for critical materials such as building supplies and lumber, fiberglass, and electrical components have contributed to budget overages and a need for NSF supplemental funding to complete this project. With NCE and supplemental funding requests approved by NSF, attention is now focused on completion of the NSF infrastructure improvement and seawater system expansion project, expected to be completed by August 2023. Final electrical upgrades are in progress and focus this summer and fall will be on the buildout of 20 new experimental seawater tables supplied by the new degassing tower and well water treatment plant.

Programs

Sponsored Ship Time & R/V *Hogarth* Positioning Around Florida

The Florida Institute of Oceanography (FIO) has a strong record of supporting FIO members in the form of fully (or partially) subsidized access to FIO vessels and the Keys Marine Laboratory (KML). This year, the organization has modified how that direct support is allocated to SUS members. The approach, based on the goals set in the [2021-2025 FIO Strategic Plan](#), is a thoughtful attempt to be equitable, impactful, justifiable, and efficient. In Fiscal Year 22/23, FIO is positioning the R/V *Hogarth*, FIO's newest and most agile research platform, around the state at various ports in order to offer direct access to SUS members located a considerable distance away from the homeport in St. Petersburg.

FIO has come up with a list of pre-set activities designed to enrich field-based learning, especially for first-time research vessel-goers and also welcomes faculty, students, and guests from the SUS who simply want to tour the *Hogarth* and learn about its capabilities and advanced equipment. SUS members could request support for the R/V *Weatherbird II*; however, the costs of transits, port fees and other direct costs are the responsibility of

the user. Requests asking for full financial support from FIO for sponsored time at the Keys Marine Lab were to be academic in nature (education or training), demonstrably high impact, and require no additional course fees other than for costs of travel and food.

Requests for R/V *Hogarth* Activities and Sponsored Ship Time were due at the end of May 2022. FIO received 27 requests for R/V *Hogarth* activities, 2 for supported R/V *Weatherbird* cruises, and 2 requests for sponsored laboratory time at KML from 11 of the SUS institutions, all of which have been awarded.



Figure 7. R/V *Hogarth* positioning FY 22/23

Marine Field Studies Course

In its ninth year, the multi-institutional FIO Marine Field Studies Course, a 5-week summer course hosted by FIO, had thirteen undergraduate students enrolled from the Florida SUS system. The course is focused on field

study techniques in a variety of marine habitats. The blog featuring the students' experiences can be found here: <https://marinefieldstudies2022.blogspot.com/>

Starting in May in Jacksonville, the class awards 3 - 4 credits (depending on institution) and is taught by professors at University of North Florida (UNF), Florida Atlantic University (FAU), Florida Gulf Coast University (FGCU), University of South Florida (USF) and University of West Florida (UWF), who serve as the course's instructors, respectively, for a week each. The instructors are subject matter experts in the different marine habitats experienced and lead the students in a variety of independent and team-based research methods focused on fisheries and species, habitat analysis, water quality, and much more.

The FIO Marine Field Studies Course is targeted toward sophomore- and junior-level undergraduate students at the five host institutions mentioned above. The FIO Council, in conjunction with the instructors from the five host institutions, are re-envisioning the course for 2023 and beyond to meet equity and access goals outlined in FIO's 2021-25 Strategic Plan.



Field Studies Students on R/V Hogarth

Research

Florida RESTORE Act Centers of Excellence Program (FLRACEP)

The Florida RESTORE Act Centers of Excellence Program (FLRACEP), established by the Gulf Coast States Act of 2012, is administered by FIO. With funds managed by the U.S. Department of Treasury, competitive research grants awarded through the FLRACEP to Florida institutions emphasize ecosystem science and monitoring, coastal fisheries research and assessments, and scientific framework development (e.g., estuarine systems & benthic habitat mapping) in the Gulf of Mexico. FIO awards Centers of Excellence to a broad base of non-governmental participants, including institutions of higher education, with interest and expertise in science, technology, and monitoring to support a healthy Gulf of Mexico environment and economy. FIO continues to serve as the administrative agent for the next ten years.

The current Centers of Excellence (Table 7) are in year three and are expected to continue under a no-cost extension until early 2024 due to pandemic-related hardships; however, all Centers report resuming normal field and lab activities by spring 2022. FIO worked with the FLRACEP Program Management Team, researchers, management agencies, and RESTORE partners across the Gulf region to develop the request for proposals (RFP) IV, to be released in July 2022. This anticipated \$2 million in funding will address restoration impacts with the dual purposes of reviewing outcomes from the billions of dollars spent on restoration projects to date and informing future restoration efforts. A transdisciplinary approach involving end-users is encouraged to provide scientific, economic, and social insights. Workshops and discussions at the FLRACEP All Hands meeting in January 2022, and at the Gulf of Mexico Conference (GOMCON) in April 2022, including with the National Academy of Sciences Gulf Research Program, helped inform the RFP, which aims to be broadly applicable to the other Gulf State Centers of Excellence, with an ultimate goal of a Gulf-wide synthesis of restoration impacts. In addition, the Spawning Habitat and Early-Life Linkages to Fisheries (SHELFL) project is undergoing its second science review in the third quarter of 2022, to consider a renewal of the Center of Excellence for 3.5

years for continued research on egg and larval stages of fish species critical to Florida’s economy. This project has been active since 2016 with a goal of increasing the pace, scope, and efficiency of observations to assess the abundance and distribution of early life stages for Florida’s marine fisheries. The researchers have leveraged archived egg samples collected by NOAA for DNA barcoding studies during the pandemic.

Table 7. FLRACEP Awards for Centers of Excellence

| Center of Excellence to date (Awardees) | Amount Awarded |
|--|-----------------------|
| <i>*SUS Institutions</i> | |
| <i>FIO- to administer FLRACEP</i> | \$2,612,896.88 |
| University of Florida* | \$1,539,141.00 |
| University of South Florida* | \$2,192,544.00 |
| University of Central Florida* | \$660,019.00 |
| University of Miami | \$624,152.44 |
| Mote Marine Lab | \$364,432.00 |
| Nova Southeastern University | \$321,672.64 |
| Florida International University* | \$319,816.15 |
| University of West Florida* | \$319,162.21 |
| Florida State University* | \$317,080.57 |
| Sanibel-Captiva Conservation Foundation | \$233,334.34 |

In October, FIO hired Dr. Nicole Raineault to serve as Chief Scientist of FLRACEP. Dr. Raineault was recruited from Ocean Exploration Trust (OET), where she served as Chief Scientist and Vice President of Exploration and Science Operations. She earned her bachelor’s degree in marine science from the University of Maine, her master’s degree in oceanography from Rutgers University, and her doctorate in geological science from the University of Delaware, after which she was a postdoctoral fellow at the University of Rhode Island’s Graduate School of Oceanography.

Research Grants

Remotely Operated Vehicle Design and Build: Phase 1

Defense University Research Instrumentation Program (DURIP), ONR- \$1.48M

This grant will fund the design and build of a state-of-the-art deep-sea remotely operated vehicle (ROV) to provide a research and sensor test and development platform for scientists and engineers in the Gulf of Mexico, U.S. Caribbean, and southeastern Atlantic region.

Workshop to Build Collaboration and Participation Across DEI Programs in Ocean Science

National Science Foundation: Improving Undergraduate STEM Education (IUSE), GEOPATHS- \$50K

FIO will organize and support a workshop that will bring together leaders and representatives of programs focused on improving Diversity, Equality and Inclusion (DEI) in ocean sciences to enhance awareness and involvement of existing DEI programs in ocean sciences and better define the potential opportunities and support for underrepresented minorities to navigate into ocean science.

Outreach & Communications

Social Media

FIO placed more emphasis on original content for social media during Fiscal Year 21/22. In years past, the organization had a number of unique pictures, videos, and articles but during FY 21/22, FIO's communications team made a concerted effort to ramp up FIO-produced organic content and the effects were tremendously positive. The organization's efforts on social media are also contributing to more tagging and attribution from FIO members, which drive more students, professionals and the general public to FIO's content.

Closing out FY 21/22, FIO's Facebook account has 1,940 followers- an increase of nearly 200 users over the previous FY. FIO's posts and content were seen by an estimated 49,265 people- an increase of 21,000+ people over the previous year (Facebook Page Insights, n.d.).

FIO also has been utilizing Instagram as a great way to reach students enrolled or interested in Marine STEM as 55% of Instagram's users are between the ages of 18-34 (Statista Instagram Age Distribution, n.d.). Launched in March 2021, the @fio_stpete Instagram account is perfect for short videos and pictures as "stories" on users' daily feeds. At the end of FY 20/21, FIO's Instagram page had 152 followers and at the end of FY 21/22, the page has 438 followers.

Oceans Day 2022

Due to the COVID-19 pandemic and travel restrictions, FIO's exhibits for *Oceans Day 2022 – Restoring and Growing Florida's Blue Economy* were suspended in March. The organization has re-envisioned how it intends to engage with Florida legislators for Oceans Day 2023, which is tentatively scheduled for March 22, 2023. Beginning in 2023, FIO will kick off an annual Oceans Day Exhibits and Fish Fry on the South Plaza of the Florida Capitol grounds. With more space and hopefully more foot traffic, FIO's members will have a better opportunity to connect with the general public, visiting school groups, and Florida's representatives.

Keys Marine Laboratory Open House

KML once again hosted their annual Open House in March 2022 (cancelled in 2021). More than 200 people eagerly engaged with KML science staff and the various displays onsite to learn more about KML's role in the scientific community. Coral reef restoration was the main focus of the event, showcasing the opening of the new FWC Coral Reef Restoration Seawater System (CRRSS). Displays were staffed by key reef restoration collaborators including FWC Coral Rescue & Restoration Ecology teams, Florida Keys National Marine Sanctuary (FKNMS), Islamorada Conservation and Restoration Education (I.CARE), Coral Restoration Foundation (CRF), and the Guy Harvey Ocean Foundation (GHOF). Many guests participated in a guided tour of KML's state-of-the-art seawater systems interspersed with question-and-answer sessions.



Open House at KML (credit: T. Duong)

St. Petersburg Science Festival 2022

The St. Petersburg Science Festival was virtual again in October 2021, due to in-person restrictions stemming from the COVID-19 Pandemic. FIO hosted a full vessel tour of the R/V *Weatherbird II* and talked about recent mission highlights and "life at sea." The presentation lives on the St. Pete Science Fest website- <https://stpetescifest.org/kids-2021/track-b-florida-institute-of-oceanography-2021/>.

GOMCON

FIO was proud to be a sponsor of the Gulf of Mexico Conference (GOMCON) 2022. GOMCON is a merger of the annual Gulf of Mexico Alliance (GOMA) All Hands Meeting, the annual Gulf of Mexico Oil Spill and Ecosystems Science (GOMOSSES) Conference, and the triannual State of the Gulf Summit. With a focus on the intersection of scientific research and the management of human and natural systems of the Gulf of Mexico, the 4-day conference in Baton Rouge, Louisiana, was a success. Connecting marine science professionals from around the Gulf of Mexico, the conference organized critical science exchanges, presentations, research effort highlights, and networking opportunities. In addition to being a sponsor, FIO was a host, presenter, exhibitor, and attendee of GOMCON 2022.

Targeted Legislator Outreach

In an effort to engage more with Florida's state legislation and educate new legislators on FIO's strategic use of taxpayer dollars in addition to topical and timely coastal issues, FIO communications has developed an internal policy regarding legislator outreach. When SUS members are awarded (state) sponsored ship or lab time and engage in educational efforts onboard FIO's research vessels or at KML, a directed email is sent out to each state legislator, in both the congress and senate, that represents the SUS member. The letters are designed to spotlight FIO's members' coastal educational efforts with constituents in the legislators' district(s) and how FIO is maximizing the state of Florida's (and taxpayers') investment.

FIO In the News

FIO was featured in a number of articles and media reports:

- Duong, Tiffany. “From Habitual Hooker to Keys Kritter – A Keys (Sea Turtle) Success Story.” *Keys Weekly*, 13, Sept. 2021, <https://keysweekly.com/42/from-habitual-hooker-to-keys-kritter-a-keys-sea-turtle-success-story/>
- Bay News 9 News Broadcast. “Jellyfish Species Named After USF Professor, FIO Director.” 2 Oct. 2021
- Mohr, Olivia. “Danville Grad Has Jellyfish Species Named After Him.” *The Advocate-Messenger*, 22 Oct. 2021, <https://www.amnews.com/2021/10/22/danville-high-grad-has-jellyfish-species-named-after-him/>
- “RDSEA’s Pic of the Week.” *Marine Technology News*, 9 Nov. 2021, <https://www.marinetechnews.com/news/rdsea-615030>
- ABC 7 News Broadcast. *FGCU Student-Scientists and Florida Institute of Oceanography Explore the Gulf* [Video file]. 11 Feb. 2022, <https://www.youtube.com/watch?v=kMoeWJDLbSE>
- Lojewski, Amanda. “FGCU Student-Scientists and Florida Institute of Oceanography Explore the Gulf.” *ABC 7 News*, 15 Feb. 2022, <https://abc-7.com/news/environment/2022/02/11/fgcu-student-scientists-florida-institute-of-oceanography-explore-the-gulf-to-collect-ecosystem-data/>
- Duong, Tiffany. “March 5th Keys Marine Lab Open House to Feature New Seawater Systems.” *Keys Weekly*, 1 Mar. 2022, <https://keysweekly.com/42/march-5th-keys-marine-lab-open-house-march-to-feature-new-seawater-systems/>
- “Coral Reef Restoration Seawater System to Aid Coral Rescue Efforts in South Florida.” *EIN Newswire*, 5 Mar. 2022, https://www.einnews.com/pr_news/564765427/coral-reef-restoration-seawater-system-to-aid-coral-rescue-efforts-in-south-florida

Membership Highlights

Key highlights from members utilizing FIO’s infrastructure in FY 21/22:

University of South Florida: First Ever Scientific Diving Course at KML

During two weekends in April, KML hosted USF for its first ever field-intensive scientific diving course. Taking advantage of the Florida Keys National Marine Sanctuary habitats, the course gave students the opportunity to gain proficiency in essential dive skills/safety, learn a variety of marine survey and underwater photography techniques, and enhance their marine species identification skills. After diving in the field each day, the students partook in instructional sessions led by USF instructors in KML’s classrooms. Sponsored laboratory time was awarded by FIO to support the important course.

Florida Gulf Coast University: Experiential Learning for Marine & Earth Science Undergrads on the R/V *Hogarth*

Three classes from FGCU utilized the R/V *Hogarth* in February to characterize organisms, profile onshore-to-offshore changes in water chemistry, collect samples for further classroom and laboratory analysis, and much more. The Oceanography, Biogeochemistry, and Advanced Biogeochemistry undergraduates were exposed to sampling techniques and marine operations on FIO’s vessel off the coast of Ft. Myers. The week of experiential learning-focused cruises were made possible with FIO’s Sponsored Ship Time program.

Florida Gulf Coast University: Marine Invertebrate studies and experiential learning at KML

Dr. Melisa May from FGCU was a first-time recipient of FIO Support in February 2022, for her Marine Invertebrates course (OCB-4930). Twenty undergraduate students immersed themselves exploring the various habitats of the Middle Keys, spending a full day snorkeling from KML's 30' Island Hopper, the R/V *Diodon*. Sponsored laboratory time was awarded by FIO to support this field opportunity.

Eckerd College: Scientists-at-Sea Program on R/V *Weatherbird II*

The Scientists-at-Sea Program was established to provide students with the opportunity to participate in their first oceanographic research cruises. In May, undergraduate students were offered the opportunity to investigate topics related to climate change and the lingering effects of the Deepwater Horizon oil spill on the R/V *Weatherbird II*. The students explored multiple science specialties on the cruise including ecology, fisheries, geochemistry, sedimentology, and communications and outreach. The Scientists-at-Sea program is in its infancy, but FIO is looking forward to supporting the project with Sponsored Ship Time in the coming years as the National Science Foundation (NSF) has funded it for at least the next two years.

University of West Florida: Marine Vertebrate Zoology Class Deploys Equipment off of R/V *Hogarth*

UWF's Marine Vertebrate Zoology course undergraduates used the R/V *Hogarth* in October to study and examine organisms in Pensacola Bay and the Gulf of Mexico. The cruise was designed to provide the students hands-on experience with a variety of oceanographic research techniques and at-sea operations. Students onboard were taught how to deploy a variety of oceanographic equipment provided by both FIO and UWF. The cruise was funded through the Sponsored Ship Time program.

Florida State University and Florida A&M University: Collaborative Educational Cruise on R/V *Hogarth*

A 4-day collaborative cruise between FSU and FAMU on the R/V *Hogarth* was an intensive educational and research mission aimed at both teaching students a variety of field-based techniques and also at collecting samples and data for an ongoing research grant (Evaluation of Historical Environmental Changes in Marine Ecosystems). Students learned geological, biological, and chemical sample collection and data management techniques using a variety of instruments including sediment grabs, a CTD carousel, and a multi-corer (which collects sediment samples from the sea floor). The ship days were awarded to both SUS members through FIO's Sponsored Ship Time program.

FWC's Fish & Wildlife Research Institute: Fisheries Independent Monitoring Program (FIM)

In September, FWC's FIM program partnered with NOAA to conduct standardized reef fish surveys in shelf waters of the Gulf of Mexico on the R/V *Hogarth*. Scientists from the FIM program deployed baited remote underwater video systems (or BRUV systems) equipped with digital stereo cameras to collect imagery of fish and habitats from 10 - 180 meters deep. Additionally, randomized mapping surveys using side-scan sonar, expanded the inventory of reef habitats to be sampled in future years. Data collected from the BRUV surveys were directly integrated into state and federal stock assessments for numerous reef fish species.

Florida International University: Coral Biologists Take Advantage of the KML Seawater System

A collaborative group of coral biologists from Florida International University and University of British Columbia found KML's Seawater Systems ideal for their manipulative studies involving the effects of nutrient

enrichment and thermal stress on coral bleaching. The group included several graduate students and their faculty advisors on site at KML from February to May 2022.

Work Plan

Marine Operations Planned Vessel Improvements and Operational Targets

For FY 22/23, FIO is targeting a total of 300 operating days for both vessels. This includes a combination of SUS, State, Federal, and private institutional days, with the SUS days carried out primarily on the R/V *Hogarth*, and the State, Federal, and private institution days carried out primarily on the R/V *Weatherbird II*. Both vessels will be utilized as necessary to ensure that all requested cruises are completed, regardless of vessel. Projected vessel use is 160–170 days at sea for *Hogarth* and 130–140 days for *Weatherbird*.

To further enhance vessel operations and to help achieve operational target goals, a number of planned improvements are in motion for the upcoming fiscal year (and beyond). These include:

- Pre-positioning the *Hogarth* at different locations around Florida to coincide with SUS institution academic schedules. The vessel will be pre-positioned this fall in Ft. Pierce (with a stop along the way in Ft. Myers to host FGCU); then in the spring in Carrabelle, Pensacola, Carrabelle, Key West, and again in Ft. Pierce. This pre-positioning will allow institutions without travel funding or logistical capabilities to access the vessel, while increasing the total number of students carried to sea as well as increasing access to underserved and underrepresented groups.
- Re-classifying crew positions and increasing salaries to improve retention and decrease crew turnover. Additional training is taking place across the entire department to enhance operational capabilities and further improve science and educational successes.
- Updating and replacing science equipment, as operational schedules allow, to further enhance scientific capabilities and make both vessels more competitive in the oceanographic research market. This will include a new CTD package for the *Weatherbird*, as well as the acquisition of additional scientific spares to reduce vessel operational downtime and improve scientific data accuracy.
- Continuing vessel improvements, to improve vessel reliability and increase vessel capabilities. This includes carrying out maintenance that was deferred during the pandemic, such as periodic engine and generator service on both vessels, electrical and other auxiliary machinery systems maintenance, and the completion and commissioning of both vessel's Dynamic Positioning Systems (DPS). Completing the DPS commissioning will allow both vessels to compete for contracts where the ability to sit on station continuously is a requirement.

KML Facilities Operational Targets and Infrastructure Projects

Keys Marine Laboratory has targeted scheduling 120 groups for FY 22/23 with the goal to increase SUS usage from 33% to 50% of total KML usage. Targeted revenue generated from KML's services is \$300,000 for next fiscal year, in addition to the \$105,000 revenue from the FWC contract agreement for operation of the Coral Reef Restoration Seawater System. The current KML operational rate structure, last revised in 2019, will be updated with an effective date of January 1, 2023, to reflect a 3-5% increase in KML services. The revised rates are necessary to more adequately cover increasing operational costs.

The NSF-funded infrastructure improvement project, including the new seawater system expansion, will be completed during the spring of 2023. NOAA funding will be pursued to support operational costs of the new system for Florida Keys National Marine Sanctuary restoration work. Other deferred maintenance projects requiring immediate attention in the coming fiscal year include:

- Repairs and upgrades to the main 320-amp electrical service to KML (\$15,000). This will further storm-harden the primary power source for the facility.
- All five main buildings are due for termite tenting this year and best scheduled during the fall and winter months (e.g., cooler weather to maximize effectiveness). Estimates for each building's treatment will be completed this fall.
- The KML seawall, constructed in 2008 after Hurricane Wilma, has several stress fractures visible along its bulkhead, exacerbated by each passing storm. Local engineers and construction companies will be contacted to determine repair solutions and estimates of repair costs.
- The Administrative Main Office floor and sub-flooring is deteriorating and in need of repairs and replacement. This project will be scheduled during off-peak use this fall/winter once repair options and estimates have been reviewed.

Research

FIO will publicly scope, release, and fund two research grant opportunities through FLRACEP. Request for Proposals (RFP) IV will be released in July and awarded in December. RFP V will follow with anticipated scoping in the fall, release in early 2023, and funds awarded mid-year. FIO will submit an application to the U.S. Treasury Department to fund the program for five years, including the aforementioned funding opportunities. The annual All Hands Meeting and Program Management Team (PMT) meeting will be held in early 2022 to bring together researchers funded under RFPs II, III and III.5.

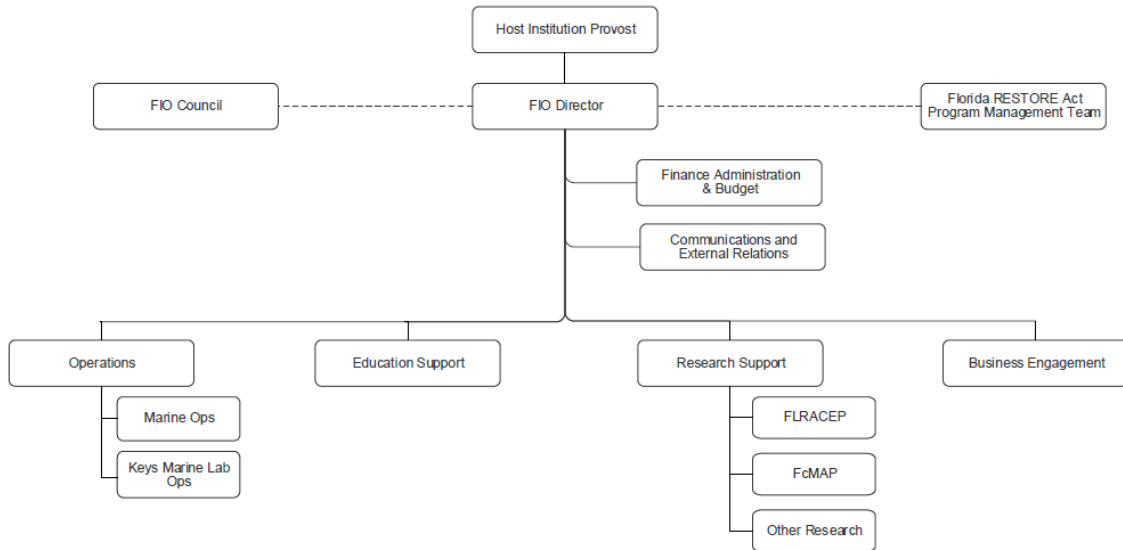
The Florida Coastal Mapping Program (FCMaP) expects to hold the Annual Community Summit in St. Petersburg in December to gather mapping practitioners and stakeholders from across the state. FIO is also co-sponsoring the MBC81 (Multibeam Mapping Course) in January. The week-long professional development course is taught by leaders in the mapping community and is being offered in Florida for the first time.

The Inclusive Training & Mentoring Program for ocean STEM development will formally begin in the summer of 2022 with an in-person meeting. Program scoping will continue through the fall and include an NSF-sponsored community workshop in early 2023.

APPENDIX A: FIO Organizational Chart

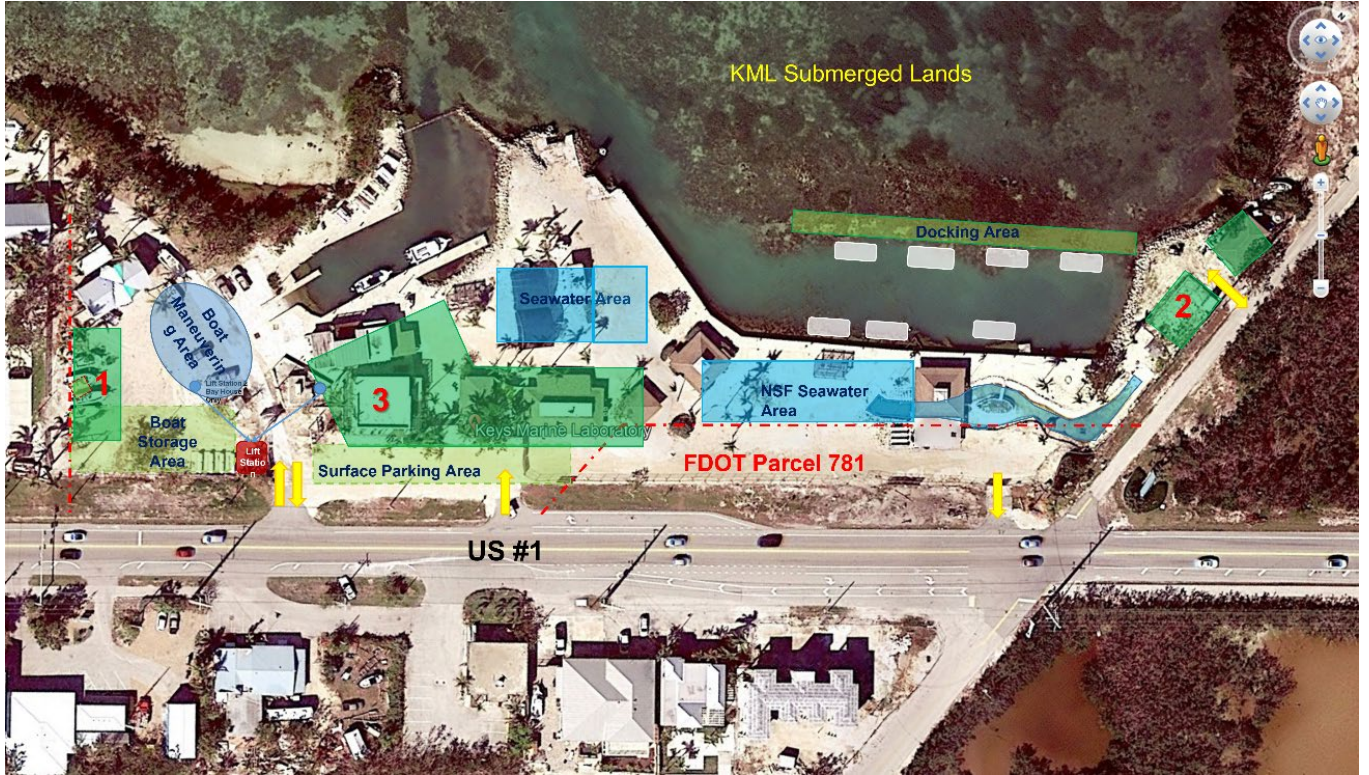


Hosted by the University of South Florida



Propose Organizational structure
2021-2025

APPENDIX B: KML Site Plan Draft





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