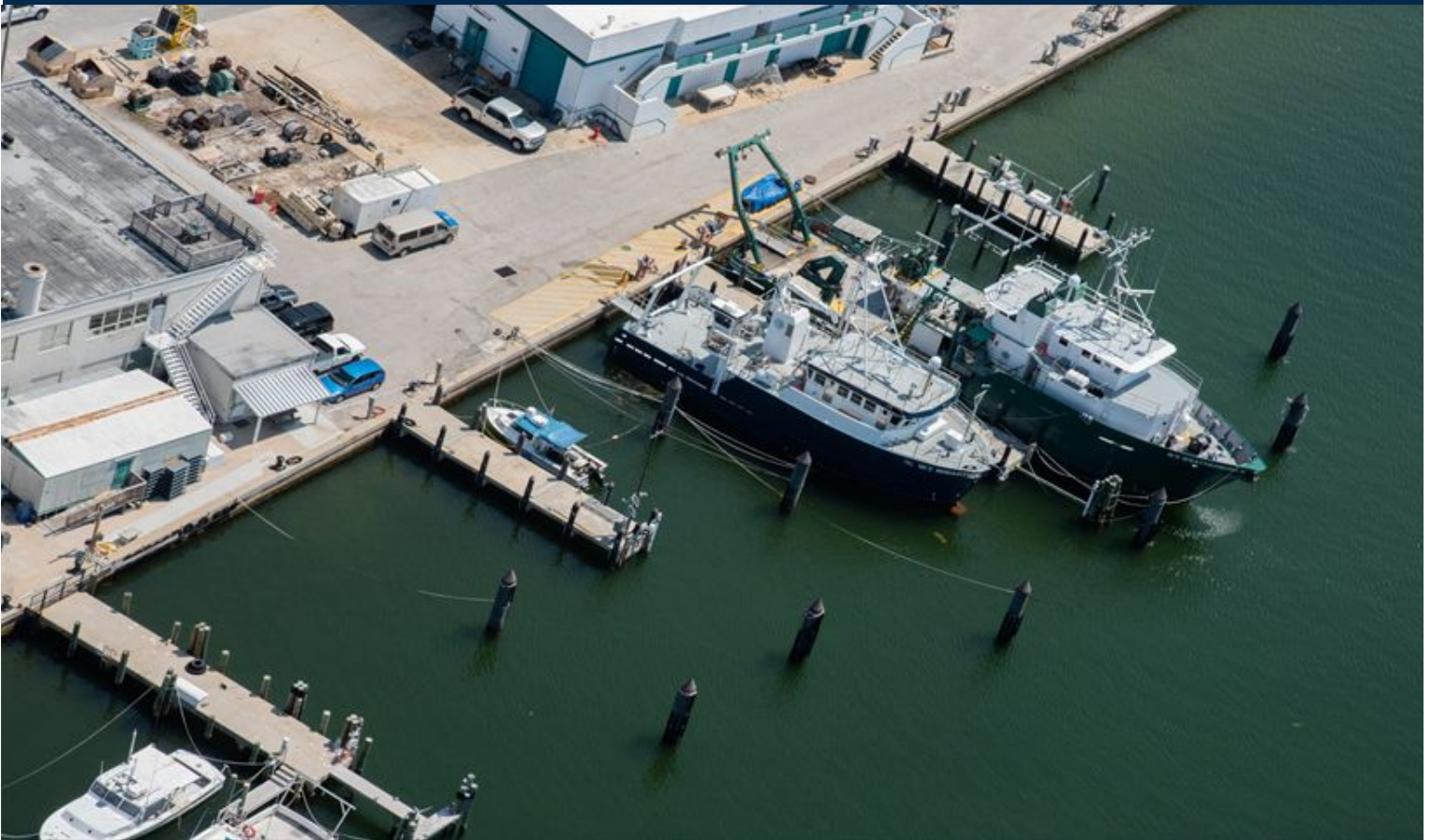




*2017-2018*

# FLORIDA INSTITUTE OF OCEANOGRAPHY

*Annual Report*



|  |                    |
|--|--------------------|
| Date of Submission to Chancellor, Florida Board of Governors | October xx, 2018   |
| Reviewed and Approved by Host Institution Board of Trustees  | September xx, 2018 |
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| Review by FIO Council  | August xx, 2018    |

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## Our Mission

“FIO will ensure the adequacy of infrastructure support to facilitate collaborative research and education in Florida’s ocean environment and serve as a coordinating body across academia, the state and federal agencies, ocean science organizations and the private sector in addressing new opportunities and problems of concern in coastal and oceanographic research and education. FIO is an enabler, a facilitator and a coordinator.”

## Director’s Message

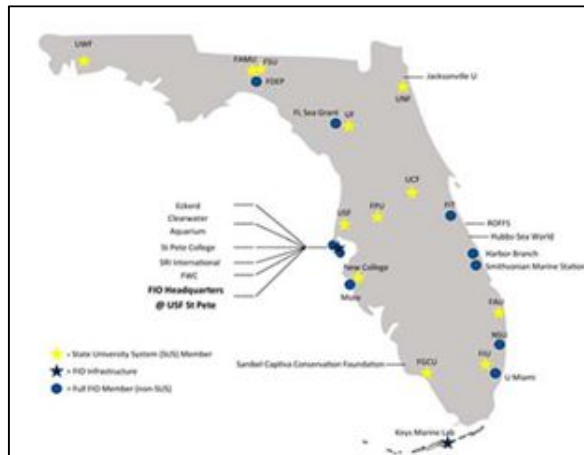
The need for FIO, its assets, and the collective research capacity from its member institutions to understand, predict and protect Florida’s marine and coastal environments is as great as it has ever been. As I write this note, a persistent red tide continues to kill fish and wildlife along Florida’s west coast with no end in sight. Massive microscopic green algae blooms are once again in Lake Okeechobee and being released into the Caloosahatchee and St. Lucia rivers and impacting nearshore coastal waters on both coasts. In the Florida Keys, a coral disease outbreak continues to move south decimating remaining stands of live coral in the middle and lower Florida Keys. Off northeastern Florida, record amounts of floating seaweed (Sargassum) are inundating and impacting Florida’s beaches- a relatively new (since 2011) but growing phenomenon. The trend towards multiple and more frequent problem outbreaks is of increasing concern. The stakes could not be higher. Florida’s one trillion dollar economy relies almost entirely upon its coasts and world-class resources to attract tourism, 2<sup>nd</sup> home owners, and businesses. Finding solutions to these problems and developing a proactive approach will require a change in mindset to move away from the current reactive approach towards longer-term predictive and preventative strategies. Scientists within the FIO member institutions have the expertise to provide statewide leadership in helping Florida’s citizens and policymakers understand these critical issues. FIO is also contributing by making our assets (ships, labs) available and supporting programs to facilitate research by our member institutes. However, more investment is needed particularly around expanding and strengthening environmental observing systems. For over a decade, FIO and its members have been recommending a robust State-wide observing system, high resolution mapping for coastal and marine areas, and extending long-term monitoring of water quality, critical habitats, and resources offshore. I am looking forward to exploring opportunities within FIO’s members to expand cooperative and collaborative research partnerships that could address these critical issues in the year ahead. As you will read in this annual report, FIO continues to make progress last year against it’s 2015-2020 strategic plan goals particularly with infrastructure (e.g., replacement of the r/V Bellows) and programs (expanding ship-time awards, FLRACEP grant opportunities). FIO remains a critical and valued asset for the State of Florida and the higher education imperative of the State University System but more needs to be done to help around addressing these recurring environmental problems for the benefit all Floridians.



1. 2018 red tide fish kill on Long Boat Key, FL

## EXECUTIVE SUMMARY

The Florida Institute of Oceanography is one of two Academic Infrastructure Support Organizations (AISO) established by the FL Board of Governors (BOG) and renewed in 2015 through 2020. FIO’s mission is to support Florida’s 12 State Universities in achieving excellence in marine science, technology, and education through providing infrastructure (vessels, field lab), programs, and information. FIO’s membership also includes 9 other full member institutions and 8 associate member institutions (30 total). Unlike many other marine consortium’s, FIO does not have its own faculty and only participates in research or teaching through involvement of its members. The FIO headquarters has been hosted at the University of South Florida on the St. Petersburg campus since 1978.



2. Florida Institute of Oceanography membership at a glance

FIO continues to make progress against its 2015-2020 strategic plan goals particularly in areas of infrastructure and programs. This has included expanding the assets FIO manages to include The Keys Marine Lab (KML) located in Layton, Florida- A marine field station with housing for up to 30 students and a fleet of small boats and full diving services. This year, FIO also welcomed in a new research vessel into its fleet to replace the 50 year old R/V Bellows. The R/V Hogarth is a 78’ steel coastal class research vessel built with State and SUS member funds to provide affordable oceanographic marine science in Florida for the next several decades. In addition, the R/V Weatherbird II continues to be the workhorse for undertaking scientific studies related to the Deep Water Horizon oil spill and, despite being over 35 years old, remains in working order with continual refits and upgrades to her systems. The size and value of FIO’s depreciable infrastructure assets (over \$7.5 M in vessels alone) is larger today than at any time in our 40 year history.

On the program side, FIO continued to provide ship time to its full members through its annual competitive proposal process, research grants through the FLRACEP program, and experiential learning for undergraduates through the flag-ship Summer Field Studies 5-week Course. This year FIO provided 77 sea days of awarded ship time to 20 proposals from 9 SUS institutions and 2 private University full members. FIO also provided 99 charter days at sea for our members at subsidized (at cost) ship time on our two vessels directly supporting over 40 million dollars in grant funding to our FIO member institutions. The FLRACEP program closed out the RFP I grants which have totaled \$2.6M to 10 institutions and is preparing to release the next RFP in January. This grant funding to FIO member institutions has generated 16 peer review submissions, to date with an additional 30 manuscripts in preparation or planned. The Summer Field Studies Course enrolled 17 students this year who complete the grueling 5-week/5 field labs course joining alumni, 50% who have pursued STEM related careers.

Funding to support the FIO operation comes mainly from the State of Florida through an annual appropriation which is supplemented with income generated from chartering the vessels and KML lab

fees. The 2017-18 fiscal year saw a \$1.2M reduction (30%) in FIO's operating budget due to a June, 2017 line item veto by the Governor's office. FIO responded to this set-back by (1) reducing costs including not hiring for the vacant FIO Associate Director position, (2) hiring temporary ship crew to fill vacancies, (3) postponing new programs to provide additional shiptime to FIO members (graduate student ship-time awards, and (4) skipping the winter dry dock haul out for the R/V Weatherbird. In September, Hurricane Irma impacted FIO's Keys Marine Lab causing extensive flooding and damage to some of the buildings. FIO filed insurance claims (which are still being settled) and used carry-forward funds to repair the damage over a three month period to get the lab into a safe state and open again to its members (In contrast, it took 4 years to rebuild KML after hurricane Wilma in 2005). In the Spring, the bow-thruster on the Weatherbird II experienced seawater intrusion when it's main seal failed requiring a haul out and complete rebuild at a cost of over \$100,000. Thus, despite cutbacks, FIO's expenses remains high around maintaining its infrastructure in good working order necessary for reducing risks around student safety.

The 2.1M in current annual Legislative support for FIO's operation (a 30% reduction from 2016-17 fiscal year) is inadequate for the organization to meet its mission. Without an increase in operational support, FIO will slip back into a state where budgetary challenges will jeopardize safely operating FIO's assets while also maintaining the programs such as ship-time grants to our members. In comparison to other University marine consortiums (LUMCON, Dauphin Island, Moss Landings), FIO stands out as having the **largest** area of State coastal waters, the **largest** number of enrolled students for its public Universities it is expected to serve (undergraduate and graduate), yet also has the distinction of receiving the **lowest** level of State current support (Figure 32). FIO can continue to operate next year with current cut-backs but will have to begin scaling back its operations and programs without an increase in operational support.

One area where FIO needs to make more progress towards its 5 year strategic plan goals is how it functions as a consortium. Members are the lifeblood of any consortium and the expertise, programs, and assets (field stations, equipment) within FIO make it one of the largest and talented in the world. Yet, the engagement and involvement of the FIO membership is not uniform. For the past eight years, The University of South Florida has been the most actively engaged of the SUS institutions both in terms of writing grant proposal that include the use FIO assets (supporting over 50% of the chartered ship time) and producing publications, thesis, and dissertation that utilize FIO resources. Larger Public University members that have a strategic emphasis on marine science research (FSU, FIU, FAU, UF) need to be more actively engaging with FIO than they currently are. Partnerships and collaborations need to be expanded to include greater diversity of ship and lab users for grants, courses, and programs that involve FIO and consortium members in some capacity. Some progress has been made this past year on increasing involvement beyond just ship-time. FIO organized a State-wide Florida Marine Science Symposium (FMSS) featuring 31 speakers from the FIO membership with over 95 attendees and several hundred on-line viewers. FIO has also developed an initial databases on marine science capacity within the FIO consortium (tenure track faculty, research faculty, researchers) which can be used to increase collaboration, identify gaps, and develop strategic initiatives for research and educational grant opportunities. In addition, FIO has developed a first draft of an infrastructure and equipment inventory across the FIO membership to facilitate sharing and utilization of assets. There are also opportunities for FIO to enhance its member Universities marine science curricula with engagement in skill-based, field-based courses at Keys Marine Lab and FIO's research vessels. Strengthening how FIO operates as a consortium will continue to be a major focus of the FIO Director with an emphasis on increasing visibility and engagement at the higher levels of the FIO membership (Presidents, Provosts, Vice Presidents of Research, BOG).

**STATE OF FIO’S INFRASTRUCTURE:**

For most of its 40 year history, the core of the FIO Consortium has been the physical infrastructure that is maintained and provided by FIO to its membership to facilitate and support scientific research and hands-on educational opportunities for students. FIO maintains a large fleet of safe and capable large research vessels for the FIO membership along with a marine field station in the Florida Keys (Keys Marine Lab). These assets facilitate access to coastal and offshore areas to faculty in support of grants and accredited undergraduate and graduate courses. Running large vessels is an expensive endeavor. One that most Florida Universities cannot afford to do on their own. The costs of crewing them with qualified personnel and the annual outlays for maintenance and repairs can easily exceed two million dollars per year. After working for years to replace the Bellows, this year finally saw the new Research Vessel, the R/V Hogarth come on line. With this new addition, the combined FIO vessel market value is around \$7,500,000 not counting assets at Keys Marine Lab and more

capable than at any other time. Paid charter usage of the assets through grants and other sources is essential to help pay for the annual operating and maintenance costs through our auxiliary accounts. An area of weakness continues to be the small number of paid users across the FIO membership that have grants to pay for the vessels and KML. In addition, several of the large grant programs that have provided ship funds to members (e.g., GOMRI, NFWF) over the past number of years are winding down. Diversifying and increasing ship and KML will be necessary for FIO to maintain is low rates and continue to be able to award subsidized ship time. Detailed summaries of each of the vessels and KML for the year are summarized below.

**FIO Vessels**




**225 days at sea**

**99 days supporting FIO member grants**

**77 Awarded subsidized ship days to SUS Members**



A New Research Vessel Joins the FIO Fleet  
 Construction and final fitting out of the FIO's newest research vessel, the R/V W.T. Hogarth, was completed during the summer and fall and she was formally turned over to FIO service by the end of the 2017. The \$6.2 million dollar vessel was constructed on time and on-budget by Duckworth Steel Boats located in Tarpon Springs, FL- a 3<sup>rd</sup> generation family-owned Florida boat building company. A list of financial contributors and breakdown of costs for the Hogarth is shown in tables 1 and 2. The vessel features accommodation for up to 10 scientists with separate quarters for crew that are located on the 01



4. Christening ceremony with FIO members for FIO's new research vessel, the R/V Hogarth, in May, 2017.

| Contributors     | Amount             |
|------------------|--------------------|
| USF              | \$540,000          |
| UWF              | \$520,000          |
| FAU              | \$180,000          |
| FGCU             | \$140,000          |
| UNF              | \$120,000          |
| UF               | \$100,000          |
| FIU              | \$60,000           |
| FAMU             | \$40,000           |
| UCF              | \$20,000           |
| FSU              | \$20,000           |
| FIT              | \$100,000          |
| Eckerd           | \$80,000           |
| NSU              | \$40,000           |
| State of Florida | \$3,000,000        |
| FIO              | \$1,000,000        |
| City of St. Pete | \$250,000          |
| <b>Total</b>     | <b>\$6,210,000</b> |

deck to provide better nighttime capability. The vessel cruises efficiently at 10 knots with EPA compliant tier 4 600 HP diesel engines, 2 55Kw generators, water maker, air conditioning, and an advanced sanitation treatment system. Her endurance is expected to be 7 days with a full complement.

| <u>New Vessel Construction Expenditure Summary</u>                 |                    |
|--|--------------------|
| Duckworth Steel Boats (construction contract, change orders, bond) | \$4,539,974        |
| Scientific equipment   | \$1,055,015        |
| Risk Management  | \$27,935           |
| Boska Marine Design  | \$264,617          |
| Outfitting (tender, bedding, safety equip. filters, spares, etc..) | \$183,512          |
| FY18-19 Hogarth operating auxiliary                                | 138,947            |
| <b>Total</b>   | <b>\$6,210,000</b> |

The vessel was also designed with spacious wet and dry labs and is equipped with excellent scientific capabilities for a ship of her size (computer room, dynamic positioning, EK-80 sonar system, 200 Khz

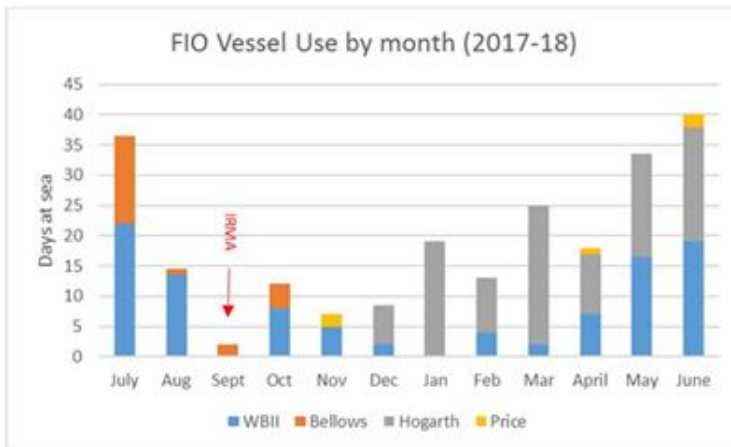
ADCP, dual head multibeam, ROV, dedicated CTD J-frame and winch, A frame with 1800m of winch wire). During sea trials in the Winter and Spring she undertook voyages to Jacksonville and Pensacola facing a variety of conditions including seas up to 8 feet. She has received positive reviews for her roominess, stability, and sea-stateness. Sea trials also identified issues which have been addressed by the Shipyard but some of these will require a haul-out in December. In addition, sea trials revealed some shortcomings in the design of some of the systems (sea chest AC cooling lines, J-frame and A-frame) which will be modified during her haul-out. The rate on the Hogarth is presently \$5500/day for FIO members which is a very competitive price for a vessel of this size and capability.



3. R/V W.T. Hogarth during sea trials in January, 2018.

### FIO Vessel Operations

Use of FIO assets was moderate this past year and similar in level to last year. FIO vessels spent a total of 225 days at sea with 99 of those days under charter in support of FIO member grants and 77 days awarded under FIO’s SUS ship-time program. An additional 49 days went towards R/V Hogarth sea trials on both the east and west Florida coasts. Severe weather, institutional cancellations, and rescheduling resulted in another 48 lost days. At the moment, FIO does not require a deposit to reserve the vessels nor a cancellation fee should the charter be cancelled which would reduce cancellations or provide some cost recovery in the event of cancellations.



5. FY '17-18 FIO vessel use by month

### R/V Weatherbird II

At 36 years old, the Weatherbird II remains FIO flagship vessel and is one of the most capable and reliable coastal class research vessels in Florida. She operated primarily in the Gulf for most of the 2017-18 fiscal year supporting several expeditions up to the Northern Gulf with USF and extensive seafloor mapping and fisheries science along the west Florida shelf from Key west to Apalachicola. She was a sea for a total of 96 days (slightly lower than previous years) which included 66 charter days and 30 SUS



6. R/V Weatherbird II at sea. June, 2018

subsidized days. In April, 2018, her water pump bow thruster experienced salt water intrusion through the main gearbox drive shaft seal that had been replaced in 2015 upon recommendations of the manufacturer. The repair will require hauling the vessel for several weeks this summer and removal and complete rebuilding of the bowthruster. Despite not having a working bowthruster, the WBII was still able to support a number of SUS educational cruises and several charter science expeditions in May and June. She also underwent a 36-day maintenance period in the winter that saw the rams of the A-frame rebuilt, a new anchor windlass installed, and new stainless steel railings fitted around the 02 deck. She will be getting her 5 year ABS inspection renewal in the winter of 2019 and is expected to continue to serve the FIO membership for the foreseeable future. A survey of her condition conducted by Redshaw Marine LLC found her to be a well-equipped vessel for her intended service, minor wear and tear

commensurate for a vessel of this vintage and service but well maintained. As such, she was considered in good condition for its type her estimated current market value is \$850,000.

R/V Bellows

The R/V Bellows, FIO’s 50 year old “floating laboratory”, continued to faithfully serve faculty and students during the first half of the fiscal year but ultimately only saw a total of 22 days at sea in her final year of service with FIO. Since January, 2018 she has been moored along side the Bayboro Harbor seawall at the end of our Peninsula . She underwent a complete in-water inspection by an independent surveyor (Redshaw Marine LLC) who found the Bellows to be an adequately equipped vessel showing wear and tear commensurate with its vintage and service appearing in need of preventive



7. Semester by the Sea students touring the Bellows in 2017

material maintenance. As such she is considered in fair condition with an estimated current market value at \$160,500. Since March, 2018 she has been listed on several boat brokerage websites but has received only a few inquiries to date. The plan is to continue to lower the price and try to sell her through December after which we might have to start looking into scrapping her if no buyer can be found. There will be a farewell ceremony for this stalwart little vessel at the fall FIO Council meeting in St. Petersburg.

R/V Price

The Price was acquired last year through a transfer from the USF College of Marine Science to FIO. This well equipped vessel is set up mainly for inshore survey work with side and bow pole mounts, a small crane, and generator for an interior workstation. FIO has spent much of the past year refurbishing the vessel with new electronics, trim tabs, dive tank racks, new continental trailer, and renewed fuel and wiring throughout. She has seen some use from FIO members during the past year mainly for short sampling trips to Tampa Bay or for offshore buoy maintenance. Her 2018-19 day rates will be all inclusive (dedicated captain and fuel) and are set

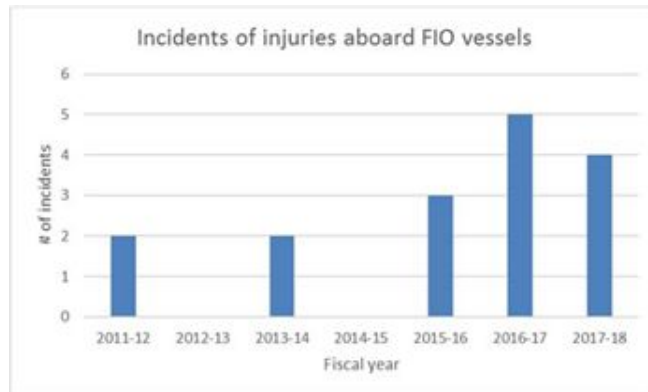


8. R/V Price is set up for nearshore survey work and diving

from \$350-800/day depending on the number of hours and distance. She can also be trailered easily almost anywhere in the state. She will also be capable of supporting mapping and ROV scientific capabilities in the coming year and use is expected to grow. Redshaw Marine LLC RV Price was found to be an adequately equipped vessel for her intended service. It presented negligible wear and tear from normal use, and appeared to be well maintained and valued her at \$22,500.

Vessel safety and crew turnover

Over the past two years, FIO has seen an increasing trend in the number of accidents occurring aboard its research vessels (figure 8). Nearly all of these incidents have involved FIO crew being injured but the increasing trend is cause for concern. Guidance for safety at sea that applies to FIO is provided by U.S. Coast Guard regulations, American Bureau of Shipping rules, and many other required regulations. As a member of UNOLS, FIO also strives to meet many of the UNOLS Research Vessel Safety Standards (RVSS) standards used by all UNOLS operators. However, FIO has never had any of its vessel audited by the UNOLS certified inspectors (JMS Naval Architects) to provide an independent evaluation of its ships and operation. Crew departures over the past two years is another area for concern. FIO has seen six departures (nearly 50%) and has been having to rely on temporary relief crew to keep the vessels sailing while trying to recruit replacement crew. FIO will have an outside review of its marine operations by a consultant to look at the incidents, departures, and vessel operations towards providing recommendations that can improve our overall operation. The review is expected to be complete in the fall of 2018 and may be followed with a more detailed and regular inspections by JMS naval architects in the future.



9. Yearly summary (since FY '11-12) of reported injuries aboard FIO vessels

Keys Marine Lab



10. Students using the advanced seawater flow through system at KML

Keys Marine Lab was damaged by Hurricane Irma in September, 2017. Storm surge flooded the science office building and classroom/wet lab building and driving rain damaged the marina dormitory, marine shop and the administration building. Strong winds also

removed portions of the roof on the bay house and toppled the fence and other outdoor structures. Surprisingly, the seawater well system only sustained minor damage to the shade structure, however, all of the live corals kept in the seawater tanks were lost. A safety inspection conducted as soon as staff were able to return the lab and mitigation of storm surge damage was completed within two weeks. KML staff led a massive clean-up process, including the removal of

**Keys Marine Lab**

**883 overnight stays**

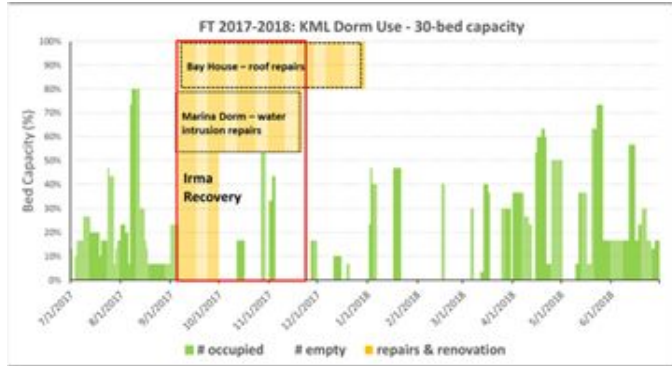
**473 dives**

**Used by 61 universities, agencies, schools, and institutions**

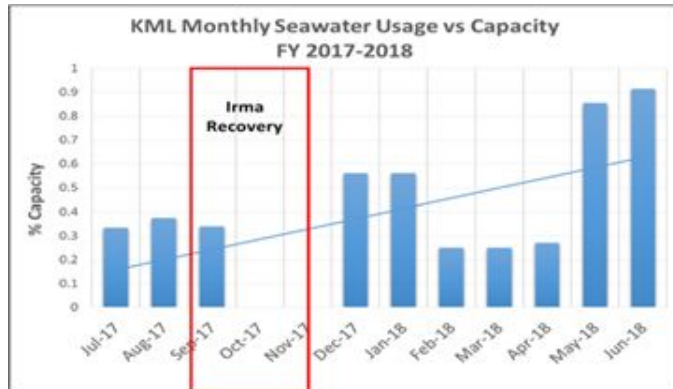
*Outstanding Staff Award for their efforts rebuilding the lab after Hurricane Irma*

damaged building contents, muck from buildings, and debris from the storm surge. Lab structures, including the fence, were repaired and replaced. Volunteers from Clemson University and the Florida Institute of Oceanography (FIO) assisted with clean-up, including the tide pool, shallows, and debris removal and distribution of new gravel. During the rebuilding, visiting groups were accommodated on a limited basis, beginning in October. Most scheduled users were able to reschedule their visit within the calendar year and those unable to reschedule were able to complete their class or research at Mote Marine Lab in Summerland Key. A final inspection of the lab in January determined that all the buildings and facilities were fully operational and safe for staff, students and faculty to occupy by early January, 2018. Compared to the four years that it took to rebuild KML after Hurricane Wilma in 2005, this recovery was fairly smooth. Investments made after hurricane Wilma have made KML less prone to hurricane damage. In addition, the hard work of the KML staff and volunteers to rebuild the facility while also dealing with their personal losses was recognized by USF which recognized KML staff with a 2018 Outstanding Staff Award (figure 4).

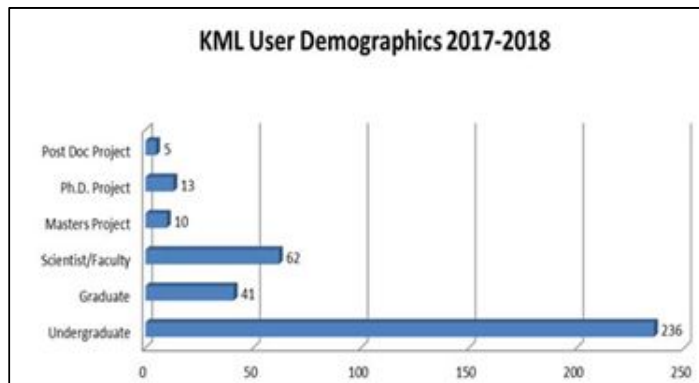
Use of KML picked up in the spring and has been high throughout the Summer. For the year, occupancy at KML included 883 overnight stays at the lab by 330 people. A total of 83 stays for the year, with approximately 40% of the bookings from the FIO membership and 60% outside including several international users. KML supported 19 projects from 11 institutions with diving. A total of 473 dives were undertaken by 38 AAUS divers during the year. The new seawater flow through system has also seen an increase in usage last year, particularly in the late spring when usage reached over 80% capacity.



12. Occupancy at KML during FY '17-18



13. Use of KML's advanced seawater flow through system, by month, for FY '17-18.



14. KML user demographic breakdown for FY '17-18

from

## CONTRIBUTIONS TO MARINE SCIENCE EDUCATION

FIO’s mission aligns with a number of SUS goals adopted by the BOG including (1) providing access to and production of degrees; (2) meeting statewide professional and workforce needs through providing opportunities for students to gain direct experience in marine research. FIO supports these goals by providing the infrastructure that supports marine science hands-on curriculum and student research opportunities that enhance their competitive positions for jobs in marine research and industry. Access to at-sea research facilities and a experiential learning opportunities in marine science enhances the recruitment and retention of high ability Bachelor’s, Master’s and PhD students and results in more degrees awarded in related high-demand, high-skilled and high-wage targeted areas. FIO also supports the BOG goal to increase the number of students in the STEM fields, provide knowledge, innovation and commercialization to boost productivity and growth in Florida’s businesses and industries, and efficient resource utilization and impact of teaching and learning leading to graduation and entry into the workforce. In particular, FIO’s flagship 5-institute summer field studies course (now in its 5<sup>th</sup> year) immerses students into hands on marine science and learning about Florida’s unique coastal environment. Over half of the students that have graduated from this course have gone on to pursue STEM related careers.


### Student Access and Curriculum

FIO’s vessels were used by 173 undergraduate students during the fiscal year along with 62 graduate students. KML facilities were utilized by 236 undergraduates and 41 graduate students and supported 10 Masters and 13 Ph. D. projects. Approximately 25% of the bookings for KML during the fiscal year were primarily for educational purposes while 16% were for a combination of education and research activities. FIO’s assets supported a total of 32 University courses (mostly public SUS institutions) this past year (both undergraduate and graduate).

*FIO Member Institutions’ academic courses that used FIO assets: FY ’17-18*

| Institution | Course                           |
|-------------|----------------------------------|
| Eckerd      | MS 342                           |
| FAU         | GLY 4500, 6934                   |
| FAU & USF   | BSC 6936 (FAU), ZOO 4454 (USF)   |
| FGCU        | OCE 3008, OCC 4002C              |
| FGCU        | ZOO 3205C, OCE 3008C             |
| FGCU & USF  | OCE 3008 & OCE 4284C             |
| FIT         | OCE 4911, 4912, 4913             |
| FIU         | BSC 4205C                        |
| FSU         | OCB 5264-1                       |
| New College | NCF 80027                        |
| UCF         | BSC 4312                         |
| UF          | FAS 4932, 5932                   |
| UNF         | CHM 4910, 4970 & BSC 4905        |
| UNF         | BSC 4905, 6972                   |
| USF         | OCE 6394 (pelagic ecology)       |
| USF         | GLY 6739, GLY 2100               |
| USF & FAU   | ZOO 4454L (USF) & BSC 6936 (FAU) |
| UWF         | OCB 4201, 5203                   |
| UWF         | ZOO 4254                         |

## Education Impact

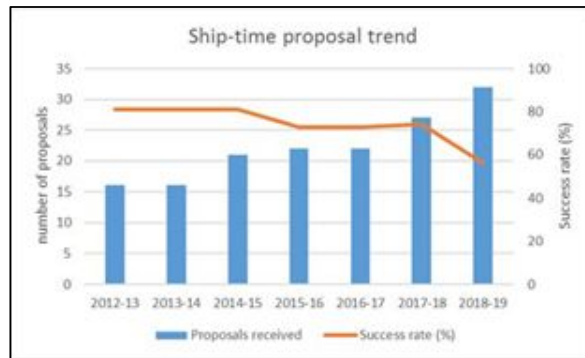


**409 undergraduates & 103 graduates supported by FIO Vessels and KML.**

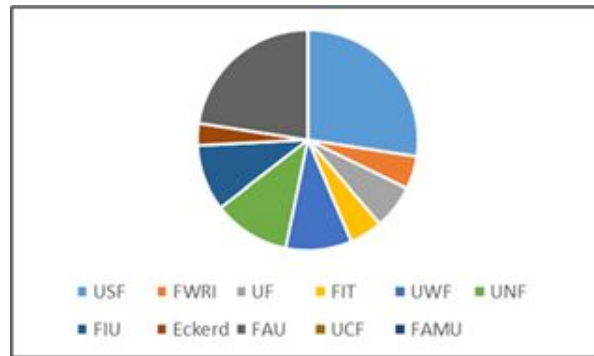
**32 university courses supported by FIO Assets.**

### Subsidized Ship-time Awards Program

One of FIO’s most popular and impactful programs remains the subsidized ship-time awards program open to full FIO members through a competitive grants process. Last year, a total of 72 at sea ship days were provided to 7 SUS and 2 private institutions with one award to FSU rescheduled into 2018-19. USF and FAU remain the two largest recipients of ship time and KML time. Demand for use of FIO assets through the awards program also grew this year continuing a seven year trend (figure 16). FIO received a record 32 proposals requesting over 140 ship-days. The FIO Ships Committee worked this year to develop a more standardized proposal scoring template that was used during the review process. Due to current financial constraints, FIO was only able to support 18 proposals for a total of 83 days at sea next year. The success rate for proposal was around 60% - the lowest it has been since FIO began tracking this in 2012. Efforts are also being made to improve access to Florida’s east coast. Next year, the schedule will have FIO vessels undertaking a fall trip to the East Coast of Florida up to Jacksonville and back. In the spring, the R/V Hogarth will travel up to Pensacola. Developing an standard annual rotation for FIO’s vessels to the far corners of the State should allow FIO members to coordinate adjoining cruises to these areas and also take advantage of the transit day savings.



15. Seven year trend in subsidized ship-time proposals received by FIO and funding success rate (%).



16. FY17-18 breakdown of subsidized ship time awards (days at sea) provided to FIO member institution: FSU also received a ship-time award but the cruise had to be rescheduled to 2018-19.

FIO Summer Field Course  
The FIO Field Studies Course, a 5-week field-intensive marine studies summer course, had sixteen undergraduate marine science students from the state of Florida attend this year (along with a graduate assistant from UNF). The 3 - 4 credit program (depending on institution) is a 5-and-a-half-week, field intensive course with structured lesson plans on marine ecology, biodiversity, geochemistry, chemical and physical oceanography.



17 & 18. FIO Summer Field Course students deploy a CTD on-board the R/V Weatherbird (left) and learn new seining techniques at Matanzas Inlet (right).

FIO worked with a consulting group- SmartStart Evaluation, to evaluate the program and survey previous years' course alumni. Since the course started in 2013, more than 50% of Marine Field Studies Course alumni have gone on to graduate school. 100% of them have used the knowledge and skills obtained in the FIO Field Studies Course in their academic classes, jobs, or research; 71% have continued to conduct research regarding marine science and/or ecosystems and the environment. Last year's surveyed group indicated they had increases in the following areas after taking the course: Knowledge, understanding of research, research skills, and preparation to attend graduate school and pursue a career in STEM.

The Marine Field Studies Course is a tightly organized joint effort around the state of Florida that's designed to expose students to various iconic marine habitats. In addition to UNF, Florida Atlantic University (FAU) hosts a week at FIO's Keys Marine Lab, Florida Gulf Coast University (FGCU) at their Vester Field Station, University of South Florida (USF) at their St. Pete Campus, and the University of West Florida (UWF) in Pensacola Bay. The course instructors are experts in various facets of marine science at FIO's member institutions and they lead the students in independent and cooperative research methods with habitat analysis, species identification, fishery studies and much more.

The students' experiences were detailed, with pictures, on the course's blog website:  
<http://marinefieldstudies2018.blogspot.com>



## CONTRIBUTIONS TO MARINE RESEARCH

FIO's mission related to marine research is mainly about facilitating and coordinate research amongst its member organizations where most of the actual research takes place. This "facilitate and coordinate" aspect of FIO separates it from most of the other University Marine Consortia which have faculty and scientists that actively pursue research (and teaching). Another distinction for FIO is that it manages an independent grants program for the state to further research on Florida Gulf coast related to the Deep Water Horizon under the Restore Act. In all of these aspects, FIO significantly strengthens the SUS' competitive position in securing higher levels of R&D investment from the federal government, foundations and industry. FIO supports the BOG goal to increase recognition for the SUS institutions to become national leaders in coastal oceanographic research and building world-class research capacity. FIO also supports interdisciplinary research and collaboration among member of the SUS and other members of FIO. By providing access with it's infrastructure and developing collaborative academic and research programs, FIO also helps create distinguished faculty, awards, and both attract and retain world class oceanographic and marine science talent.

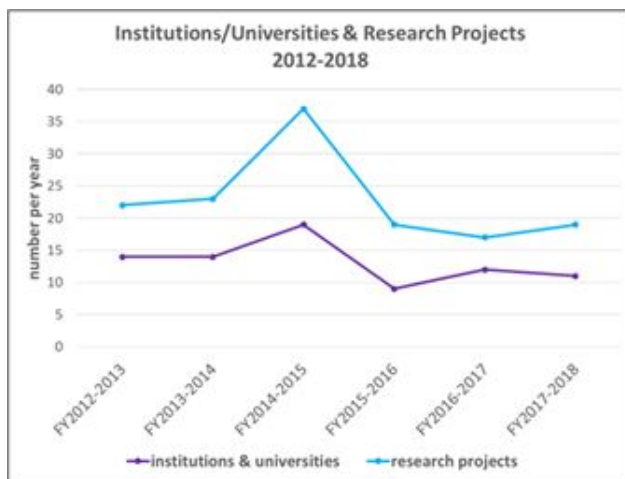
### Faculty/grants/projects supported

During the past year, FIO's assets provided support to over \$40 million dollars worth of grants to the FIO membership. The largest grant usage for the past several years has been USF-College of Marine Science and Florida Wildlife Research Institute. At this time, tracking of grants, amounts, and publications associated with FIO assets is not possible but continues to be an area of focus. FIO is working on a digital cruise plan with USF IT which should greatly improve tracking and reporting on FIO's research impact. KML was utilized 60% of the time primarily for marine research by some faculty and scientists last year working on 29 research projects. A total of 25 faculty/scientists utilized FIO vessels for research and 39 research projects were supported at KML.

### Research Support



**\$2.6M** granted under FLRACEP to  
**10** FIO Member institutions  
**16** peer-review submissions  
**30** manuscripts in preparation  
**39** projects supported at KML  
**\$40M** of research grants supported



19. KML supported institutions and research projects going back to FY '12-13.

### Florida Restore Act Centers of Excellence Program

As of June 218, the Florida RESTORE Act Centers of Excellence Program has awarded approximately \$3.6 million to Florida’s research scientist investigating different elements of marine fish and wildlife research and long-term fisheries monitoring. Plans are underway for another funding competition in 2019 that will include marine wildlife research, conceptual ecological modeling in estuaries, and habitat mapping on the West Florida Shelf. FLRACEP is also working on development of a long-term science plan to strategically guide future requests for proposals in the program’s eligible disciplines. The program anticipates issuing RFPs approximately every two years. The initial FLRACEP research grants are complete. Ten PIs from eight Florida institutions were awarded \$2.6 million in total, producing 46 submitted or planned papers, and supporting 57 students. Highlights from the first ten funded projects include:

University of Florida: Combination of integrated ecosystem modeling and comprehensive collection of field data led to simulations of lionfish colonization of the Gulf of Mexico system and their impact on small demersal reef fishes, density-dependent lionfish growth, and potential trophic cascades.



*Publications Submitted:*

- Harris, H.E., W.F. Patterson III, and M.S. Allen. Submitted. Assessing the efficacy of lionfish removals in the northern Gulf of Mexico: lionfish recolonization and the functional response of Red Snapper and Vermilion Snapper.

*Publications In Prep*

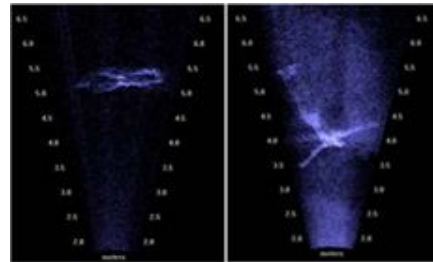
- Dahl, K.A., and W.F. Patterson. In Prep. Factors affecting diet shifts and generalism in invasive lionfish from the northern Gulf of Mexico.

- Chagaris, D., W.F. Patterson III, and M.S. Allen. In Prep. Invasive lionfish limit recovery of small reef fish in the Northern Gulf of Mexico following the Deepwater Horizon disaster. *Ecological Modeling*.

*Publications Planned*

- Chagaris, D., W.F. Patterson III, and M.S. Allen. Planned. Evaluating the regional effects of localized lionfish removals on reef fish communities using a spatially explicit food web model.

Florida International University: New method of identifying reef fish to species by analyzing and interpreting active acoustic data – a non-extractive method that can be deployed from a research vessel.



*Publications Submitted:*

- Boswell, K.M., G. Pedersen, S. Labua, W.F. Patterson III, and J.C. Taylor. Morphological variation and broadband scattering responses of reef-associated fishes from the Southeast United States. Submit to *ICES Journal of Marine Science*.

*Publications In Prep*

- Garner, S.B., J.A. Lewis, K. Boswell, and W.F. Patterson III. Reef fish community, trophic, and size structure at artificial versus natural reefs in the northern Gulf of Mexico. Submit to *Marine Ecology Progress Series*.
- Roa, C., K.M. Boswell, G. Pedersen, W.F. Patterson III, and J.C. Taylor. Classification-based discrimination of reef fishes derived from broadband target strength models. Submit to *Journal of Acoustical Society of America*.
- White, A., W.F. Patterson III, and K.M. Boswell. Distribution of fish biomass at natural and artificial reefs in the northeastern Gulf of Mexico estimated from acoustic surveys. Submit to *Fisheries Research*.

University of West Florida: Examination of the biological productivity of artificial and natural reef communities suggests that microalgae is a significant contributor to production in the Northern GOM region, and that shallow-water deployment of artificial structures has the potential to enhance recruitment of exploited species.



*Publications Submitted:*

- Cesbron, F., M.C. Murrell, M.E. Hagy, W.H. Jeffrey, W.F. Patterson III and J.M. Caffrey. Patterns in phytoplankton and benthic production on the shallow continental shelf in the Northeastern Gulf of Mexico. Submitted Continental Shelf Science

*Publications Planned*

- Brooks, K.K., F. Cesbron, W.F. Patterson III, J. M. Caffrey. Changes in primary production, nutrient fluxes, and rates of succession following the deployment of an artificial reef system in the Northeast Gulf of Mexico. Planned submission to Estuaries and Coasts
- Brooks, K.K., F. Cesbron, S.B. Garner, W.F. Patterson III, W.H. Jeffrey, J. M. Caffrey. Evaluating Ecosystem response following artificial reef deployment in the northeastern Gulf of Mexico. Planned submission to Estuaries and Coasts
- Garner, S.B., J.M. Caffrey and W.F. Patterson III. Reef fish recruitment and community development at following artificial reef deployment in the northern Gulf of Mexico. Planned submission to Marine and Coastal Fisheries

Florida State University: Deepwater community structure described, with a new shark species discovered, another re-discovered in the GOM, and a deepwater skate adult found when only a few juveniles had every been recorded. Deepwater shark and bony fish recovery from *Deepwater Horizon* oil and chemicals appeared to be complete until final year of sampling where toxicological indicators spiked.



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*Publications Submitted:*

- Pflieger, M., R.D. Grubbs, C.F. Cotton, T.S. Daly-Engel. In press. *Squalus clarkae*, sp. nov., a new dogfish shark from the northwest Atlantic and Gulf of Mexico, with comments on the *S. mitsukurii* species complex. *Zootaxa*
- Daly-Engel, T.S., I.E. Baremore, R.D. Grubbs, S.J.B. Gulak, M.P. Enzenauer, R.T. Graham. 2018. Resurrection of the bigeye sixgill shark *Hexanchus vitulus* (Hexanchiformes, Hexanchidae), with comments on its distribution in the northwest Atlantic Ocean. *Mar Biodiv.* <https://doi.org/10.1007/s12526-018-0849-x>
- Shipley, O.N., E.J. Brooks, D.J. Madigan, C.J. Sweeting, R.D. Grubbs. 2017. Stable isotope analysis in deep-sea chondrichthyans: recent challenges, ecological insights, and future directions. *Reviews in Fish Biology and Fisheries*. DOI 10.1007/s1160-017-9466-1
- Gaither, M.R., B. Violi, H.W.I. Gray, F. Neat, J.C. Drazen, R.D. Grubbs, A. Roa-Varon, T. Sutton, A.R. Hoelzel. 2016. Depth as a driver of evolution in the deep sea: Insights from grenadiers (Gadiformes: Macrouridae) of the genus *Coryphaenoides* *Molecular Phylogenetics and Evolution* 104: 73-82

*Publications In Prep*

- Grubbs, RD, CF Cotton, A Mickle, T Daly-Engel. In preparation. New data for three species of hagfishes (Myxinidae) from the northern Gulf of Mexico.

- Grubbs, RD, CF Cotton, J Gelsleichter. In preparation. Community and population level effects of the DwH oil spill on deep demersal fishes
- Jones, C, RD Grubbs, CF Cotton. In preparation. Redescription of the deepwater skate *Rajella purpuriventralis* in the Gulf of Mexico with notes on its ecology.
- Cotton, CF, B Keller, RD Grubbs. In preparation. Age, growth, and reproduction of *Squalus rnbensis* in the northern Gulf of Mexico
- Cotton, CF, B Keller, RD Grubbs. In preparation. Age, growth, and reproduction of *Squalus clarkae* in the northern Gulf of Mexico
- Cotton, CF, B Keller, S. Murawski. In preparation. Age and growth of *Ophichthus rex* in the northern Gulf of Mexico
- Cotton, CF, W Driggers III, RD Grubbs. In preparation. First evidence of pupping areas in the northern Gulf of Mexico for deep-water sharks

University of South Florida: Successful demonstration of underwater gliders as vehicles for integrating complimentary technologies for mapping fish distributions: tag telemetry, passive acoustic monitoring, and calibrated echosounder biomass.



*Publications Submitted:*

- Lembke, C., S. Lowerre-Barbieri, D. Mann, C. Taylor, “Using Acoustic Technologies to Underwater Gliders to Survey Fish”, Marine Technology Society. Submitted.

Publications Planned

- Lembke, C., D. Mann, C. Taylor, J. Gray, E. Hughes, A. Silverman, “Utilizing Gliders and Acoustics to Identify Fish Habitat Hotspots”, MTS/IEEE Oceans 2018 Presentation and Proceedings. In Preparation.

University of South Florida: Advancements in DNA barcoding permitted identification of newly spawned fish eggs to species, and led to theories about the egg dispersal strategies of shelf and pelagic species.

*Publications Submitted:*

Burrows, M., J.S. Browning, M. Breitbart, S.A. Murawski, E.B. Peebles (in review at Fisheries Oceanography). DNA barcoding reveals clear delineation between spawning sites for neritic versus oceanic fishes in the Gulf of Mexico.



University of Central Florida: First observations of little-understood transition from offshore to nearshore habitats for juvenile sea turtles. Comparison with passive drifters demonstrated active swimming and purposeful orientation.



Publications Submitted:

- Caillouet, Jr., C.W., S.W. Raborn, D.J. Shaver, N.F. Putman, B.J. Gallaway, and K.L. Mansfield. 2018. Did declining carrying capacity for the Kemp's ridley sea turtle population within the Gulf of Mexico contribute to the nesting setback in 2010-2017. *Chelonian Conservation Biology*, submitted August 2017; In press

Publications In Prep

- Mansfield K, Phillips K, Seney E, Putman N. in prep. Rethinking sea turtle ontogeny and early life history: A Gulf of Mexico case study. Target journal: *Bulletin of Marine Science*. In prep.

Publications Planned

- Inferring genetic stock of origin using particle simulation (Phillips et al., pending).
- Stock of origin and environmental variables influencing habitat use and transitions (Phillips et al., pending).
- Foraging ecology and stable isotope paper (in collaboration with Dr. Simona Ceriani, FWC; pending).
- Data synthesized in Gulf analyses (1) funded by National Academies of Sciences (NAS)—pending.
- Data synthesized in Gulf analyses (2) funded by National Academies of Sciences (NAS)—pending.

Nova Southeastern University: Satellite interpretation and groundtruthing fieldwork resulted in 1,263km<sup>2</sup> of new benthic habitats mapped on the West Florida Shelf.

Publications In Prep:

- Walker BK., Eagan S., Ames C., Keenan S, Baumstark R. Hardbottom Mapping and Benthic Community Characterization and Biogeography of the shallow (<20m) West-Central Florida Gulf Coast. *Bulletin of Marine Science*. In prep.

University of Miami: New methodology for combining biological and economic indicators of stock abundance and sustainability status for recreational fisheries to assist managers in determining sustainable recreational fishing levels and maximization of socio-economic benefits and services.

*Publications Submitted:*

- Ault, J.S., Smith, S.G., Bohnsack, J.A., Luo, J., Stevens, M.H, Bryan, D.R. 2018. Length- based risk analysis for assessing sustainability of data-limited tropical reef fisheries. Submitted to ICES Journal of Marine Science, in review. Submission date: March 31, 2018

*Publications In Prep*

- Smith, S.G., Ault, J.S., Bryan, D.R., Blondeau, J., Bohnsack, J.A., Stevens, M.H., Beerkircher, L., Acosta, A., Feeley, M. 2018. Comparison of fishery-independent and fishery-dependent population indices for reef-fishes in the Florida Keys: average length. Currently undergoing internal technical review by fishery scientists at NOAA SEFSC. Target journal: Fishery Bulletin US. Expected submission: June/July 2018.
- Smith, S.G., Ault, J.S., Bryan, D.R., Luo, J. 2018. Estimation of population indices from recreational fishing surveys in Florida's Gulf Coast, 1981-2016. In preparation. Expected submission: after acceptance of Paper #2, Fall 2018.
- Leeworthy, V.R., Schwarzmann, D., Smith, S.G., Ault, J.S. 2019. Estimation of the economic value of changes in bag limit/ size limits by recreational anglers on charter and private boats for spotted seatrout on Florida's West Coast: towards a bioeconomic model. In preparation. Accompanying technical review by economists at NOAA SEFSC. Expected submission: after acceptance/publication of Papers #1-3, Winter 2018-19.

University of Miami: New spatial distribution patterns of GOM species (fish, marine mammals, sea birds, sea turtles) derived from a large database of monitoring surveys and environmental drivers for species groups. These are essential inputs for ecosystem models and the assessment and management processes.



- Grüss A, Babcock EA, Sagarese SR, Drexler M, Chagaris DD, Ainsworth CH, Penta B, deRada S, Sutton TT (2016). Improving the spatial allocation of functional group biomasses in spatially-explicit ecosystem models: Insights from three Gulf of Mexico models. *Bulletin of Marine Science*, 92( 4): 473-496
- Grüss A, Thorson, JT, Babcock EA, Sagarese SR, Karnauskas M, Walter JF, Drexler MD (2017). Ontogenetic spatial distributions of red grouper (*Epinephelus maria*) and gag grouper (*Mycteroperca microlepis*) in the U.S. Gulf of Mexico. *Fisheries Research*, 193: 129-142.
- Grüss A, Thorson, JT, Babcock EA, Tarnecki JH (2018). Producing distributions maps for informing ecosystem-based fisheries management using a comprehensive survey database and spatio-temporal models. *ICES Journal of Marine Science*, 75(1): 158-177.
- Grüss A, Chagaris DD, Babcock EA, Tarnecki JH (2018). Assisting ecosystem-based fisheries management efforts using a comprehensive survey database, a large environmental database and generalized additive models. *Marine and Coastal Fisheries*, 10: 40-70.
- Grüss A, Drexler MD, Ainsworth CH, Babcock EA, Tarnecki JH, Love M (2018). Producing distribution maps for a spatially-explicit ecosystem model using large monitoring and environmental databases and a combination of interpolation and extrapolation. *Frontiers in Marine Science*, 5: 16.

*Publications In Prep*

- Grüss A, Drexler MD, Ainsworth CH, Roberts JJ, Carmichael RH, Putman NF, Richards PM, Chancellor E, Babcock EA, Love, MS (under review). Improving the spatial allocation of marine mammal and sea turtle biomasses in spatially-explicit ecosystem models. *Marine Ecology Progress Series*.
- Grüss A, Perryman HA, Babcock EA, Sagarese SR, Thorson JT, Ainsworth CH, Anderson EJ, Brennan K, Campbell MD, Christman MC, Cross S, Drexler MD, Drymon JM, Gardner CL, Hanisko OS, Hendon J, Koenig CC, Love M, Martinez-Andrade F, Morris J, Noble BT, Nuttall MA, Osborne J, Pattengill-Semmens C, Pollack AG, Sutton TT, Switzer TS (under review). Monitoring programs of the U.S. Gulf of Mexico: inventory, and development and use of a large monitoring database for mapping fish and invertebrate spatial distributions. *Reviews in Fish Biology and Fisheries*.
- Grüss A, Drexler MD, Chancellor E, Ainsworth CH, Gleason JS, Tirpak J, Love MS, Babcock EA (planned). Representing species distributions in spatially-explicit ecosystem models from presence-only data. *Fisheries Research*.



## FIO OUTREACH AND LEADERSHIP

One of FIO’s core areas is to provide leadership in the role of communicating scientific information about coastal and marine environments produced by members and promoting the importance of the FIO Consortium. FIO pursues its outreach and leadership objectives through a multi-prong approach that includes (1) FIO organized events and programs; (2) Attending meetings (national, international, local) to represent the FIO membership; (3) through its on-line and digital distribution; (4) media outreach efforts. FIO continues to experiment with its outreach efforts and is putting more emphasis into measuring its impact towards developing a more comprehensive marketing and outreach strategy.

### FIO Events/Programs

Organizing events such as workshops, symposiums, forums, and tours with FIO membership and partners fulfills FIO’s objectives outlined in its strategic plan to connect people, probe emergent problems, identify research needs, and promote the importance of marine science in Florida. During the 2017-18 fiscal year, FIO undertook organizing a number of high profile events to help meet our mission and strategic plan objectives. Below are highlights from several of these events.

### Florida Marine Science Symposium, October, 2017

The inaugural Florida Marine Science Symposium which was co-sponsored by FIO, FWC, and FLDEP featured expert presentations on the current state of Florida’s unique habitats, coastal ecosystem dynamics, and fish and wildlife populations, as well as panel discussions for cross-disciplinary synthesis of session topics. A total of 31 presentations covered a wide variety of topics including Irma's Impact on Florida's Coastal Areas, Florida's Critical Marine Wildlife, Marine Ecosystem Health and Prediction, Health and Status of Florida Marine Habitats, Science and Management of Florida's Fisheries. The day-long event was attended by 95 scientists and students from around the State of Florida and was also live streamed on FIO’s Youtube channel to an additional 200 viewers. It was decided at the Spring, 2018 FIO council meeting to not try to have the FMSS every other year with 2019 being the next one.

<https://www.fio.usf.edu/documents/programs/florida-marine-science-symposium-poster.pdf>

## Outreach



**391 K-12 students, 155  
undergrads, 81 graduates,  
191 faculty, & 567 general  
public toured FIO vessels.**

**32 media pieces  
featured FIO or KML.**



20. The inaugural Florida Marine Science Symposium, held at FWRI headquarters in St. Pete, was attended by 95 scientists and managers (professionals?) from around Florida

Florida Coastal Mapping Program (FCMaP) workshop - January, 2018



21. Breakout session during FCMaP workshop

FIO partnered with the US Geological Survey (USGS) to co-lead a workshop on the state of sea floor mapping across the State of Florida. A 3-day workshop was held to evaluate the state of coastal mapping in Florida, assess and prioritize gaps in coverage, and develop a ten-year strategy to complete high-resolution mapping of Florida coastlines and



22. Mapping sub-regions of Florida. Gap assessment shows less than 20% of Florida's seafloor has been mapped modern technology.

waters. institutions with participation from FL Department of Environmental Protection (FDEP), Fish & Wildlife Commission (FWC), National Oceanic and Atmospheric Administration (NOAA), US Army Corps of Engineers (USACE), Bureau of Ocean Energy Management (BOEM), and the Marine Exploration Center (MEC).. In addition, there have been on-going improvements in seafloor mapping technologies, infrastructure, and mapping server capabilities, all of which can increase options and bring costs down. A revitalized effort to examine the current state of Florida's coastal seafloor mapping is overdue and needed to help coordinate planned mapping efforts, reduce redundancy, help set priorities, and catalyze new seafloor mapping efforts to make Florida a national leader. Outcomes of the workshop are currently under review and will be released as a USGS special publication. Efforts are currently underway to do a pilot mapping demonstration in the Big Bend region and to organize prioritization workshops in each of the Florida subregions.

<https://www.fio.usf.edu/programs/florida-coastal-seafloor-mapping-program>

R/V Hogarth Ports Tour January-March, 2018

Recognizing the need to undertake sea trials with the newly constructed R/V Hogarth and the interest in FIO members to showcase the vessel to their faculty and students, FIO had planned to do a Ports Tour of the State. Originally planned for October, the tour had to be postponed so that the vessel could go back to the ship yard and have a larger diameter exhaust system installed.



23. Map of Florida showing planned stops during the 2018 Hogarth sea trials and Ports Tour



24. Students from local schools get a tour of the Hogarth during a 2-day stop at FAU Harbor Branch Oceanographic Institution in Fort Pierce.

Beginning in Mid January through late March, the vessel visited a total of 8 ports on the East and West Coasts of Florida. Each Port stop varied slightly but generally consisted of vessel tours for faculty, students, and K-12 groups, welcoming ceremonies, short science verification demonstrations. A total of 566 students, 191

faculty members, 367 members of the public toured the vessel as part of the Ports Tour. In additional 9 media articles and several TV and Radio stories were generated. Several of the planned stops (e.g., Fort Meyers and Cedar Key) were rescheduled to take place this year to coincide with other member-led activities in these ports.

Fl Oceans Day/Florida Ocean Economy Forum February, 2018

Florida Oceans Day was held on February 12th in the Tallahassee capitol building and featured an evening Florida Ocean Economy Forum event designed to highlight the important role oceans play in driving the coastal economy in Florida (the second largest coastal economy in the nation at over 800 billion dollars per year). This year’s forum centered on algae (micro and macro) and featured four panelists – innovations, scientific insights and relevance for food, energy, and water quality in Florida. FIO continues to seek ways to revitalize Oceans Day by featuring our members and marine issues that are critical to the Citizens of Florida. Next year, we will be aiming to combine the Forum with exhibits, FOA legislative luncheon, and Mote’s reception into a single day. FIO will be currently working on a concept suggested by FOA and FIO members to put on a FL legislative staffers “boot camp” around marine environmental issues next year at part of Oceans Day which will feature experts from the FIO membership and representatives from Industry.



25. Flyer circulated for Oceans Day Economic Forum that featured a panel of industry representatives and scientists from the FIO membership to discuss Algae

Meetings/visits attended by FIO staff

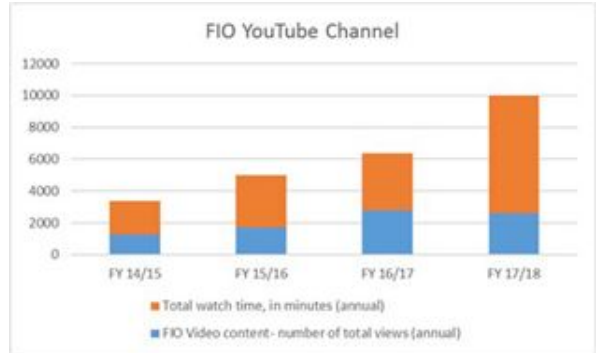
A major part of the job duties of the FIO Director and leadership of marine centers involves networking with academic, community, political, civic, industry, and sponsor- agency leaders. Communicating out FIO’s capabilities with and staying on top of new developments with the FIO memberships is not easy undertaking given the size of the FIO consortium. Thus far, the FIO Director has spent much of his outreach efforts getting to know FIO member institutions meeting with council member representative, faculty, and students. While there has been some networking interactions with member institutions Presidents and Provosts particularly around the Hogarth’s ports tour, this will increasingly be a focus in the year ahead. In addition, the FIO Director has been meeting civic, business and political leaders to generate support and revenues for the FIO Consortium. A summary of some of the meetings/events attended during the 2017-18 fiscal year by the FIO Director and/or senior FIO staff is included below:

- Florida Local Environmental Resource Agencies Meeting (speaker) – Aug 3, 2017
- U.S. Coral Reef Task Force Meeting (participant) – August 8-11, 2018
- American Fisheries Society Meeting, FLRACEP Centers of Excellence Session (organizer/presenter), FIO Booth/Exhibit in exhibit hall (exhibitor), R/V Bellows Tours (host)– Aug 24, 2017
- Florida Ocean Alliance strategy meetings Harbor Branch, FAU (August, 2017)
- University of Florida Cedar Key Biological Station Ribbon-Cutting (participant) – Sept 22, 2017
- Lionfish Fundraiser & Awareness Event (host/facilitator/organizer) – Oct 19, 2017
- Hogarth Homecoming Event (host/facilitator/organizer) – Oct 23, 2017
- Rookery Bay National Estuary Reserve site visit (with fall 2017 FIO council meeting)

- Florida RESTORE Act Centers of Excellence Program All-Hands Meeting (*host/facilitator/organizer*) – Oct 26-27, 2017
- National Academies of Science Gulf Restoration Program Advisory Committee meeting (*speaker*) – Nov 9, 2017
- Washington DC Capital Hill Legislative visits with FL delegation- November, 2017
- Sanibel Captiva Conservation Association marine lab site visit-Nov, 2018
- Nova Southeastern University Helmos Oceanography Center (*speaker for Explorers Club*)- Nov, 2017
- University of Florida Lionfish Workshop (*participant*) – Nov 15, 2017
- UNOLS Annual Fall Members Meeting (*participant*) – Nov 29-30, 2017
- University of Tampa marine lab site visit-December, 2017
- Mote Marine Lab Sarasota site visit-December, 2017
- North Florida Marine Science Symposium (*participant*) – Jan 25-26, 2018
- Harbor Branch Campus visit (*with Ports Tour*)-January, 2018
- Florida Keys College campus visit- January, 2018
- University of Miami/RSMAS Campus site visit- January, 2018
- Mote Elizabeth Moore International Center for Coral Reef Research site visit (*Keys*)- Jan, 2018
- Gulf of Mexico Habitat Mapping Workshop (*facilitator/organizer*) – Feb 5, 2018
- Gulf of Mexico Oil Spill and Ecosystems Conference (*speaker/organizer*) – Feb 6-9, 2018
- Florida Ocean Alliance legislative luncheon & annual board meetings (*February, 2018*)
- AGU Oceans Sciences meeting (*exhibitor*)- February 11-16, 2018
- FL Keys National Marine Sanctuary Advisory Council Meeting (*participant*) – Feb 20, 2018
- Coalition for Ocean Leadership (COL) Washington DC industry forum (*member*)- March, 2018
- Gulf States Marine Fisheries Commission Meeting (*speaker*) – Mar 15, 2017
- University of Florida campus visit and talk- March, 2018
- Florida State University campus visit and talk- March, 2018
- EPA Gulf Breeze laboratory site visit- March, 2018
- US-Mexico-Cuba Tri National Annual Meeting (*participant*) – Mar 29-30, 2018
- NOAA Gulf Habitat Monitoring and Mapping Workshop-Alabama (*participant*)- April, 2018
- Southern Association of Marine Labs Annual Meeting (*member*) – Apr 8-10, 2018
- University of West Florida campus visit and talk April, 2018
- Dauphin Island Sea Lab site visit, Alabama- April, 2018
- Florida Atlantic University main campus visit-May, 2018
- University of North Florida site visit (*with FIO Council meeting*)- May, 2018
- Gulf of Mexico Monitoring Community of Practice Workshop (*participant*) – June 11, 2018
- Gulf of Mexico Alliance All-Hands meeting (*participant*) – June 12-14, 2018
- Celebrating Florida's Beaches and Their Protection Panel Discussion (*speaker*) – June 27, 2018
- US Coast Guard Sectoral 7 meetings (*quarterly; attendee*)St. Pete Oceans Team (*quarterly, member*)
- St. Petersburg Chamber of Commerce Innovation District Meeting (*monthly, member*)
- St Petersburg Ocean Team (*member, quarterly meetings*)
- Gulf of Mexico University Research Collaborative (*Board member, monthly*)

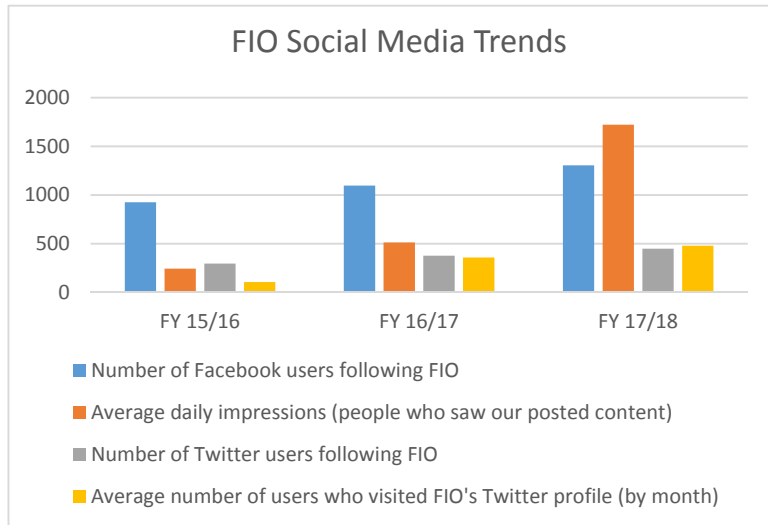
### FIO Web & Social Media Outreach

The FIO newsletter has historically been one of the main ways for FIO to communicate out. While FIO continues to produce these (mainly for our membership), we are investing more effort into growing our on-line presence. The FIO website saw over 13,800 visitors over the past year, with our highest month seeing 1,750 site visits. The site's most popular page was the R/V Hogarth page which featured FIO's newest research vessel. Internet users spent an average of 2 minutes and 30 seconds on the R/V Hogarth vessel page and users spent an average of 2 minutes and 2 seconds on the FIO site overall (down 51 seconds from last FY). FIO saw 9,975 "unique visitors" (first-time visitors) to our website this year.



26. 3-year trend in visits and views to FIO's YouTube channel

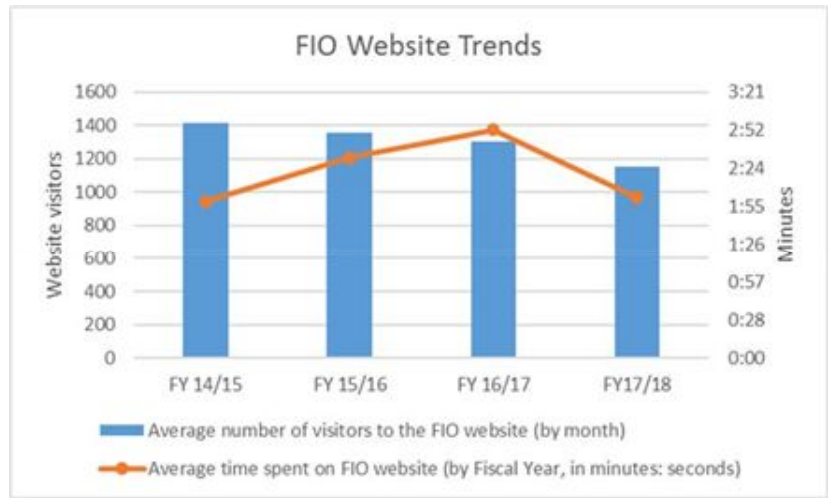
FIO focused on providing fresh, targeted and interactive content through its social media in 2018 in order to engage the public on a variety of mediums. Social media is a prime, no-cost resource to promote FIO's events, programs, collaborations, and member institutions' research with the approximately 2 billion users on Facebook, 1.8 billion users on Youtube and 350 million users on Twitter.



27. 3-year trend in visits to FIO's social media (facebook, twitter) feeds

The department utilized Youtube to stream a major conference that FIO hosted- the Florida Marine Science Symposium (FMSS). The streaming allowed users within the marine science industry to "remote in" to the presentations, panel discussions and poster sessions. FIO gained 15 new subscribers and added a total of 111 videos to the FIO Youtube channel. The Symposium videos reached 248 views for a total watch time of 4,692 minutes (or 78.2 hours). The total watch time for FIO Channel Youtube videos reached

7,385 minutes (or 123.1 hours) for the Fiscal Year 17-18. At the end of FY16/17, FIO had 1096 Facebook Likes (followers) with an average of 243 daily engagements (times our followers interacted with our posted content) and a total of 2,184 unique visitors to our Facebook Page; at the end of FY17/18, FIO had 1,304 Likes (an increase of 208 users- an increase of 37 followers gained over the previous FY) and an average of 512 daily engagements with a total of 4,806 unique visitors. FIO's Twitter presence was increased, as well, but didn't see the same spike as our Facebook page- over the past year, we picked up 68 new followers ( a decrease of 13 new followers picked up compared to FY 16-17) and increased our monthly profile visits from an average of 358 a month to 479 a month.



28. 3-year trends in FIO website traffic. Note that this year, the FIO website was migrated to an entirely new platform which caused many older links to no longer function

#### FIO in the News

Communicating through media outlets about FIO and the scientific information and educational activities of the FIO member consortium is an important component of outreach efforts. There has not been an effort to quantify the number of stories that mention FIO but this is increasingly easy to do with media tracking services. This past year, the launching of the new research vessel and the Ports Tour generated quite a bit of media interest that appeared in multiple outlets (newspaper, television, radio). Below is a sampling of some of the media stories about FIO and the activities of its members.

**Sarasota Herald Tribune:** <http://www.heraldtribune.com/news/20170727/higher-learning-sarasotas-shark-week-had-no-need-for-hyperbole>

**Hernando Sun:** <https://www.hernandosun.com/Cole-Kolasa-kayaking-from-Pensacola-to-Everglades-for-conservation>

**Florida Trend:** <http://www.floridatrend.com/article/22868/southwest-florida-newswire--august-2017>  
<http://www.floridatrend.com/article/23294/floridas-new-state-of-the-art-research-vessel-rv-w-t-hogarth-arrives-in-st-petersburg>

**WTSP CBS 10:** <https://www.wtsp.com/article/entertainment/television/programs/great-day-tb/getting-the-dish-on-lionfish/483939034>

**WFLA NBC 8:** <https://www.wfla.com/news/hillsborough-county/invasive-lionfish-turn-out-to-be-tasty-meal/995038179>

**WUSF:** <http://wusfnews.wusf.usf.edu/post/usf-florida-welcome-new-research-vessel>

<http://wusfnews.wusf.usf.edu/post/taste-science-connects-scientists-and-curious-public>

**WJCT:** <http://news.wjct.org/post/1232018-wt-hogarth-teen-suicide-prevention-generous-pours-mapping-our-past>

**Florida Times-Union:** <http://www.jacksonville.com/news/metro/2018-01-25/unf-marine-science-students-check-out-state-s-brand-new-ocean-research-vessel>

**Action News Jax CBS 47 & Fox 30:** <https://www.actionnewsjax.com/news/local/university-of-north-florida-to-research-marine-life-from-78-foot-boat/689414092>

**USA Today Florida Today:** <https://www.floridatoday.com/videos/news/2018/01/22/research-ship-port/109716832/>

**First Coast NBC/ABC News:** <https://www.firstcoastnews.com/video/news/unf-improving-marine-life-on-the-first-coast/77-2897955>

**Florida Politics:** <http://floridapolitics.com/archives/254649-pinellas-lawmakers-want-answers-proposed-usf-consolidation>

**Sun Sentinel:** <http://www.sun-sentinel.com/local/broward/fort-lauderdale/fl-reg-marine-research-vehicle-20180126-story.html>

**WSVN 7 News:** <https://wsvn.com/news/local/new-ship-for-local-marine-research-sets-sail-from-fort-lauderdale/>

**USA Today News-Press:** <https://www.news-press.com/story/news/2018/02/16/fgcu-student-scientists-get-use-hogarth-new-florida-marine-research-vessel/316190002/>

**UWF Newsroom:** <http://news.uwf.edu/uwf-to-celebrate-research-vessels-visit-to-pensacola-with-reception/>

**Sanibel Captiva Islander:** <http://sanibel-captiva-islander.com/page/content.detail/id/583040/So-Much-To-Discover--National-Shell-Museum-given-opportunity-to-study-inhabitant-of-islands--favorite-shell.html?nav=5047>

**WUWF:** <http://wuwf.org/post/new-research-vessel-docks-pensacola-first-time>

**Phys.org:** <https://phys.org/news/2018-04-deepwater-horizonthe-impact-america-largest.html>

**FIU News:** <https://news.fiu.edu/2018/05/students-embark-on-research-trip-at-sea/122999>

**St Pete Catalyst:** <https://stpetecatalyst.com/agencies-begin-high-resolution-coastal-mapping/>

**Creative Loafing:** <https://www.ctampa.com/arts-entertainment/travel-leisure/article/21010883/celebrate-florida-beaches-at-the-florida-aquarium-in-tampa>

**PRINT:** TCPalm in Martin and St. Lucie Counties

### ***Keys Marine Laboratory in the News***

**Keys Weekly:** <https://keysweekly.com/42/new-coral-disease-spreading/>

**Sarasota Herald Tribune:** <http://www.heraldtribune.com/news/20180513/coral-scientists-create-gene-bank-for-endangered-pillar-coral>

**Clemson Newsstand:** <http://newsstand.clemson.edu/mediarelations/clemson-scientists-students-leading-hurricane-relief-efforts/>

**News Deeply:** <https://www.newsdeeply.com/oceans/articles/2018/05/16/scientists-race-to-decode-disease-devastating-florida-coral-reefs>

**Keys News:** <https://keysnews.com/article/story/coral-killer-continues-to-spread-along-reef/>

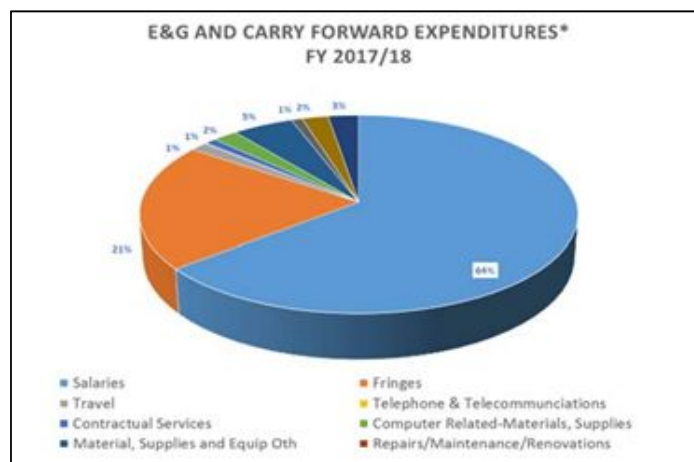


## FINANCIAL SUMMARY 2017-18

FIO started FY2017.18 with an operating budget of \$4.67M that included \$2.2M in recurring funding and \$2.1M in carry forward funding from the previous year. FIO also continues to maintain the \$250K mandated reserves for the Keys Marine Lab and has added an additional \$150K to this for the FIO vessels and has largely used carry forward funding and insurance settlements to cover the cost of rebuilding KML after hurricane Irma. Operating expenses for the year are expected to total \$3.26 M, over a million dollars lower than the previous year but still well above the current level of operational support FIO receives from the Legislature. In addition, major mechanical repairs and maintenance for the R/V Weatherbird will begin this summer and extend into the new calendar year with potential yard bill of \$800K. At 36 years in age, the Weatherbird II will have her 5-year ABS inspection in January requiring an extended yard period to fix and replace any weak portions of her hull. With these added obligations, FIO carry forward balance is expected to be \$614K.

: 2017-18 E&G Balance Summary.

| Florida Institute of Oceanography<br>E&G Fund Balance Summary<br>FY 2017/2018 |                    |
|---|--------------------|
| <b>E&amp;G Beginning Balance</b>  |                    |
| E&G Operating   | \$2,194,875        |
| CF Operating  | 2,081,203          |
| 00HOLD Required Reserves*   | 400,000            |
| <b>Total E&amp;G Beginning Balance</b>  | <b>4,676,078</b>   |
| Less: Projected Expenditures  | (3,261,213)        |
| Less: Obligations   | (800,000)          |
| <b>Total Operating Expenditures</b>   | <b>(4,061,213)</b> |
| <b>TOTAL E&amp;G FYE BALANCE**</b>  | <b>\$ 614,865</b>  |



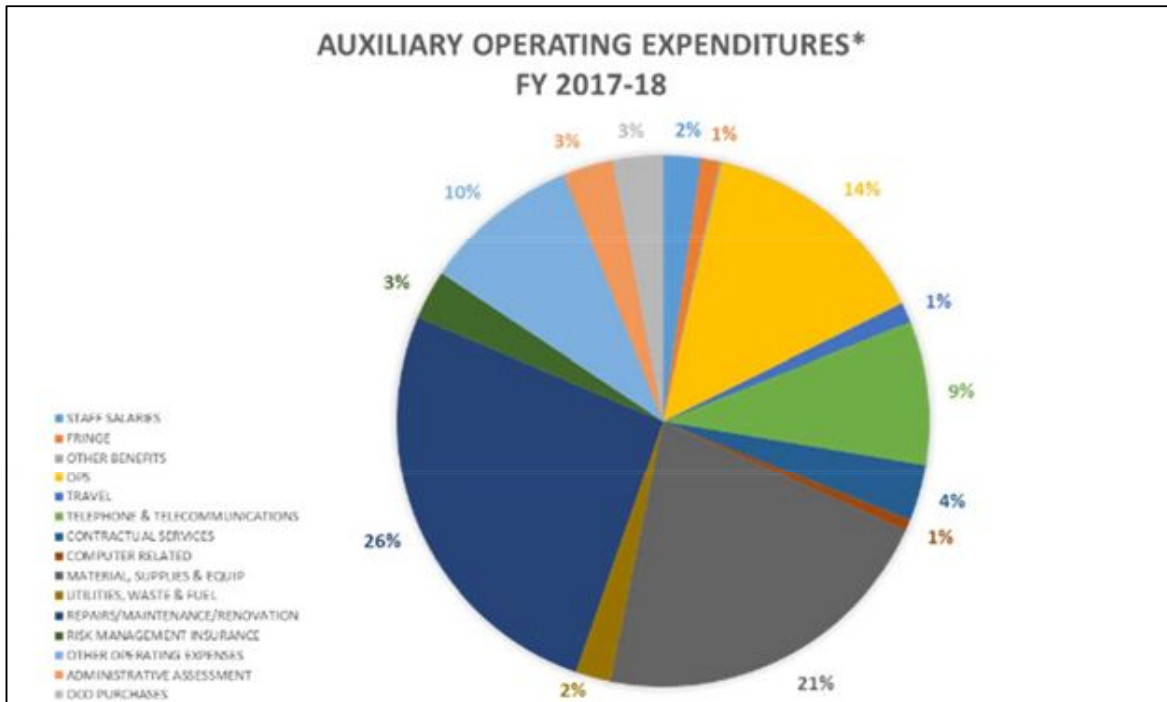
32.

29. Operating breakdown of annual operating expenses by major category

FIO’s auxiliary accounts which include mostly non-salaried operating expenses for the assets (Weatherbird, Hogarth, Price, KML) remain in fairly good shape with projected revenue (\$1.06M) slightly below projected expenses (\$1.2 M). The largest amount of FIO revenue continues to be from chartering of its vessels.

2017-18 Auxiliary Balance Summary.

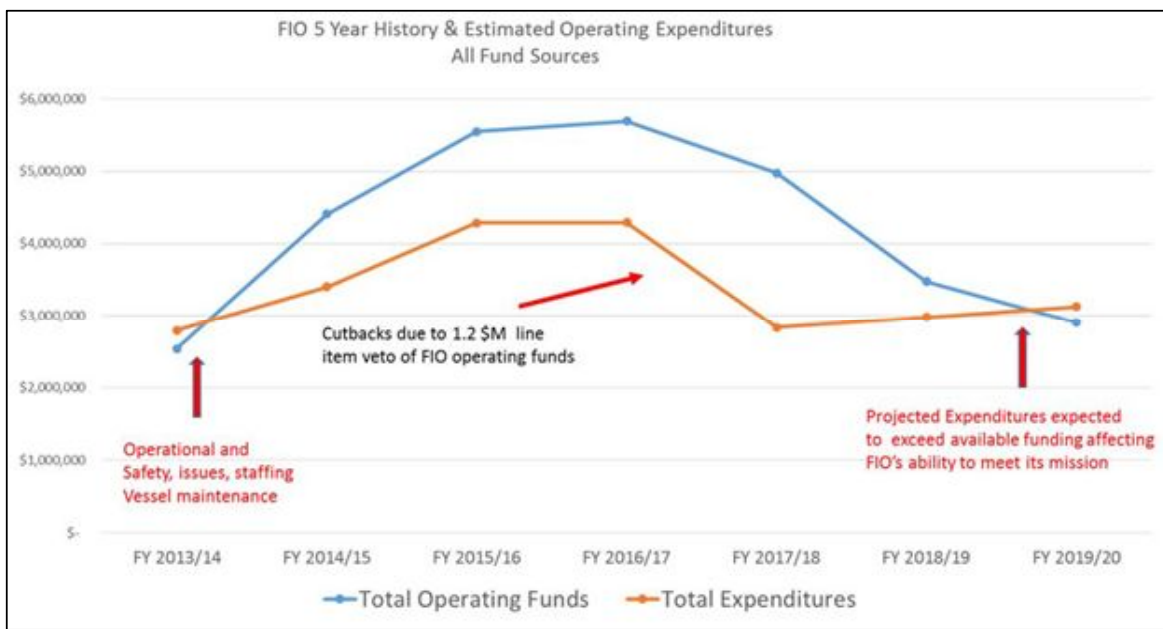
| All Auxiliary Balance Summary<br>FY 2017/2018 |                    |
|---|--------------------|
| <b>Fund Balance Available</b>                 |                    |
| Balance Forward                               | \$ 376,980         |
| Current Revenue                               | 750,133            |
| Projected Revenue                             | 410,000            |
| <b>Total Fund Balance Available</b>           | <b>1,537,113</b>   |
| Current Expenditures                          | (928,429)          |
| Encumbered Expenditures                       | (306,601)          |
| <b>Total Operating Expenditures</b>           | <b>(1,235,030)</b> |
| <b>Total Auxiliary FYE Balance*</b>           | <b>\$ 302,083</b>  |



30. Spending breakdown of annual auxiliary expenses by major category

Depreciable assets on the University books now stand in excess of 9 million dollars. Market value surveys of the three older vessels (Bellows, WBII, Price) value them collectively at less than \$1.2M. The longer term financial outlook for FIO continues to be an area of concern. Carry forward funds have allowed FIO to continue to provide ship time and pay for rebuilding KML and major vessel repairs this past year but projections suggest that with existing cut-backs, FIO's operating expenses will exceed revenue by 2019/2020 fiscal year. As occurred before 2013/14, FIO will fall back into a position where it struggles to meet the mission of providing safe, advanced, and well-maintained assets for its members.

31. FIO Operating Expenses for past five years projected forward 2 more years.



## LOOKING FORWARD 2018-2019

### State of Marine Science in Florida

Interest in marine science across the FIO membership continues to grow with many smaller Universities and Colleges now offering curriculum and even degrees. Quantifying the actual number of marine science undergraduate and graduate degrees awarded through the FIO consortium remains work in progress. Preliminary estimates gathered for 2015 from a survey of published graduate data from all of FIO member institutions suggest that there are about 1,000 undergraduate a year receiving Bachelor's degrees directly related to marine science and about 400 Masters degrees and 30 Ph.D.'s. The year ahead will see a continued effort to drill down to get more detailed information on these educational metrics including what percentage of all graduates were involved with FIO and how their placement compares to students without FIO infrastructure opportunities. Getting a better understanding of curriculum will also continue being offered across the FIO membership will also be a focus. Preliminary analysis of all marine field-related courses across the FIO membership estimates some 179 courses are being offered from year to year the majority of which do not utilize FIO assets. Finally, we hope to finalize a detailed inventory of assets owned and operated by FIO members towards development of a more streamlined sharing system to improve efficiency and reduce redundancies.

### Infrastructure

Maintaining FIO's infrastructure in safe and good working order will remain a top priority next year with particular emphasis on getting dynamic positioning capability on at least one of FIO's vessels. The Hogarth will also undergo some modifications at Duckworth Steel Boats during the winter to address shortcomings identified during her first year of service including extending the back A-frame, increasing access to the two main water intakes to facilitate biofouling cleaning, improving CTD operations, and splitting the controls on both rudders. The marina dorm at KML will also get necessary architectural planning to renovate these spaces to convert some of the dorm space into small apartments. A larger site planning process for KML will also begin.

### Academic Programs

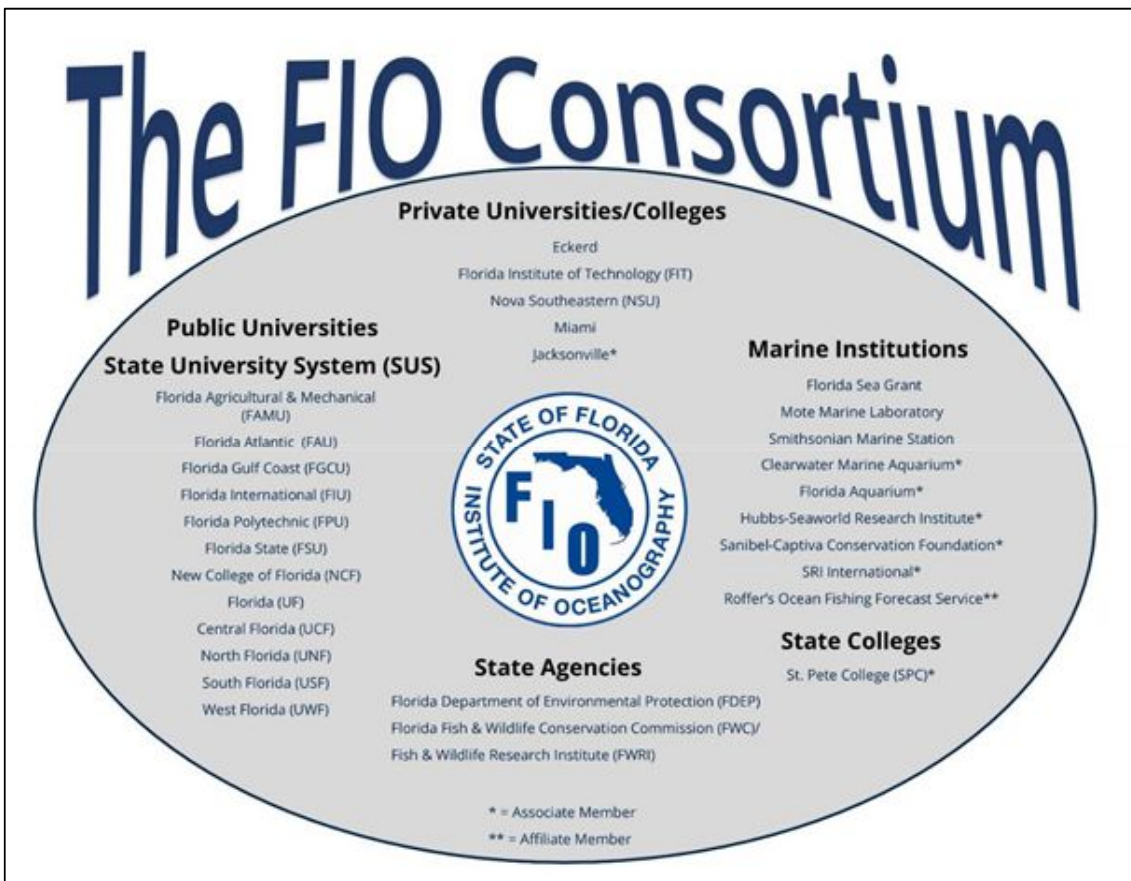
FIO will continue to support the 5-week field studies course next year and is also working with UF and several of the other SUS institutions to develop a graduate level multi-institute course for next year. Remote distance learning is also an area where FIO hopes to increase usage and reach of its assets. FIO continues to seek standing courses that could be taught at KML or on the vessels that could be promoted through the FIO Consortium. Adding telepresence hardware technology to our vessels that utilize the low-orbiting iridium satellites could provide much greater ship to shore academic learning programs than is presently possible.

### Research Programs

Facilitating research collaborations with members that utilize FIO assets will continue to be an area of focus with the goal of growing and diversifying charter use of the FIO vessels and KML. FIO will maintain its co-leadership role in the Florida Coastal Mapping Program (FCMaP) including seeking state and federal support to cover all of Florida's shelf area. The FLRACEP program will also be releasing a new request for proposals in January, 2019 with anticipated funding of several million dollars to be awarded through a competitive proposal process

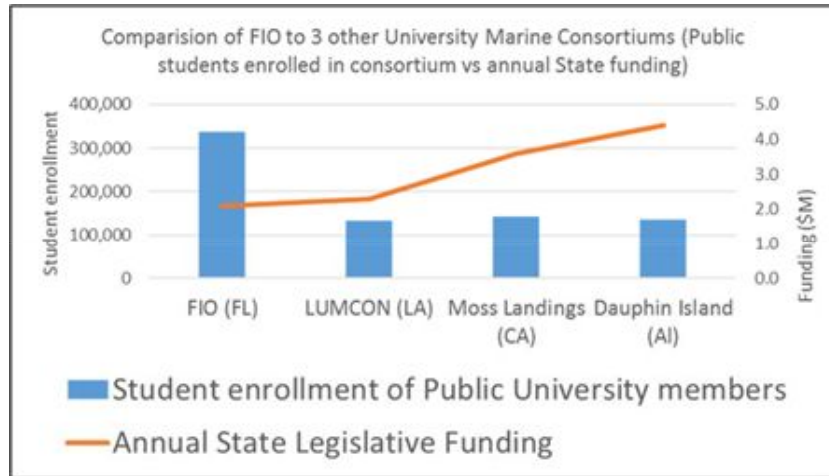
### Strengthening the FIO Consortium

The FIO consortium of 30 members remains the essential backbone of the FIO AISO and their involvement and use of the assets and collaborative educational and research programs is essential. While there have never been systematic measures to track and assess engagement or how the FIO consortium is performing as a whole, it is an area that can likely be improved. As it stands, many research proposals initiated by FIO member universities often do not include FIO as either a collaborator or facilitator even though they may be relying on FIO assets to undertake the research. As a consortium, FIO has never tried to systematically review and evaluate its collective strengths, identify gaps, or make strategic decisions (equipment, hires, curriculum, etc..) that fill those gaps.

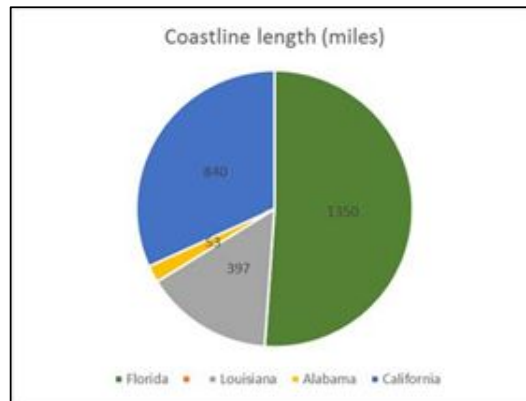


Moreover, membership in the FIO Consortium has not been reviewed in the past five years or systematically analyzed for strengths and weaknesses or what new members might bring. St. Petersburg College is the only Florida College that is a member of FIO but there is interest in joining from other Florida Colleges to increase collaborations around applied marine resource management degrees that they are now offering. The FIO membership committee has updated the new members invitation letter and begun discussions on membership levels and criteria for new membership categories. These discussions will occur over the coming year as part of the update for FIO's strategic plan for 2020-2025.

Compared to several other University Marine Consortium’s in California (Moss Landings), Louisiana (LUMCON), or Alabama (Dauphin Island), FIO stands out in a number of ways. It is the only Consortium to not have active research or teaching faculty. FIO is also the largest consortium but in terms of the number of members (30) but also with the number of enrolled students within its consortium (figure 33). The geographic area that the FIO Consortium covers is also by far the largest in the lower 48 States (figure 34). Budget wise, FIO also receives the lowest amount of annual support from any of the 4 State legislatures where University Marine Consortium’s exist (figure 33). Therefore, the next year will also require increasing FIO’s resources (rightsizing) to meet its mission or beginning the process to scale back its mission to a more narrow focus.



32. FIO’s potential reach to state university member’s students vs. state funding allocations to comparable state-wide consortiums



33. Florida’s coastline length compared to Gulf of Mexico states and California

Priority areas of focus for the coming year

**FIO Consortium**

- *Increase engagement with FIO member institution senior administration (on-going)*
- *Seek legislative support to close FIO's current operating gap (on-going)*
- *Complete FIO membership inventory of state-wide technical capacity/expertise/gaps (Winter, 2019)*
- *Complete asset/equipment inventory and sharing between participating FIO member institutes (Spring, 2019)*
- *FIO Council to review existing FIO membership, potential new members, membership levels, benefits, and by-laws (Winter, 2019)*
- *Update FIO strategic plan/AISO renewal process for 2020-2025 period (Spring, 2019)*
- *Standardize FIO metric reporting framework and complete digital cruise planning tools (Winter, 2019)*

**FIO Infrastructure/Operation:**

- *Undertake independent vessel safety and FIO marine operations review (August, 2018)*
- *Stabilize and complete hires for open FIO marine crew positions (Fall, 2018)*
- *Complete major yard periods for the R/V Hogarth and WBII for renewal of 5-year ABS (Winter, 2019)*
- *Update site plan for the Keys Marine Lab including remodel of dorms (Spring, 2019)*

**FIO Research Programs**

- *Release and implement FLRACEP RFP III grant program (January, 2019)*
- *Identify/facilitate grant/funding opportunities to FIO membership to use FIO assets (on-going)*
- *Continue support of Florida Coastal Mapping Program (FCMaP) to prioritize and identify funding for completing high resolution sea-floor maps for the entire state of Florida.*

**FIO Education Programs**

- *Continue FIO undergraduate summer field studies program and SUS subsidized ship time grants*
- *Facilitate development of multi-institute FIO graduate field course for 2019 (Spring, 2019)*
- *Identify/facilitate new FIO members courses/certificates programs utilizing FIO assets (on-going)*

**FIO Outreach**

- *Update and expand FIO website and digital media platforms (you-tube, facebook, twitter) (on-going)*
- *Develop comprehensive FIO marketing strategy (Spring, 2019)*
- *Plan and seek sponsorship for fall 2019 Florida Marine Science Symposium with FIO membership*



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ST. PETERSBURG, FL 33701



# FLORIDA INSTITUTE OF OCEANOGRAPHY

## *Annual Report 2017-18*



Philip Kramer, Ph.D.  
Director, Florida Institute of Oceanography



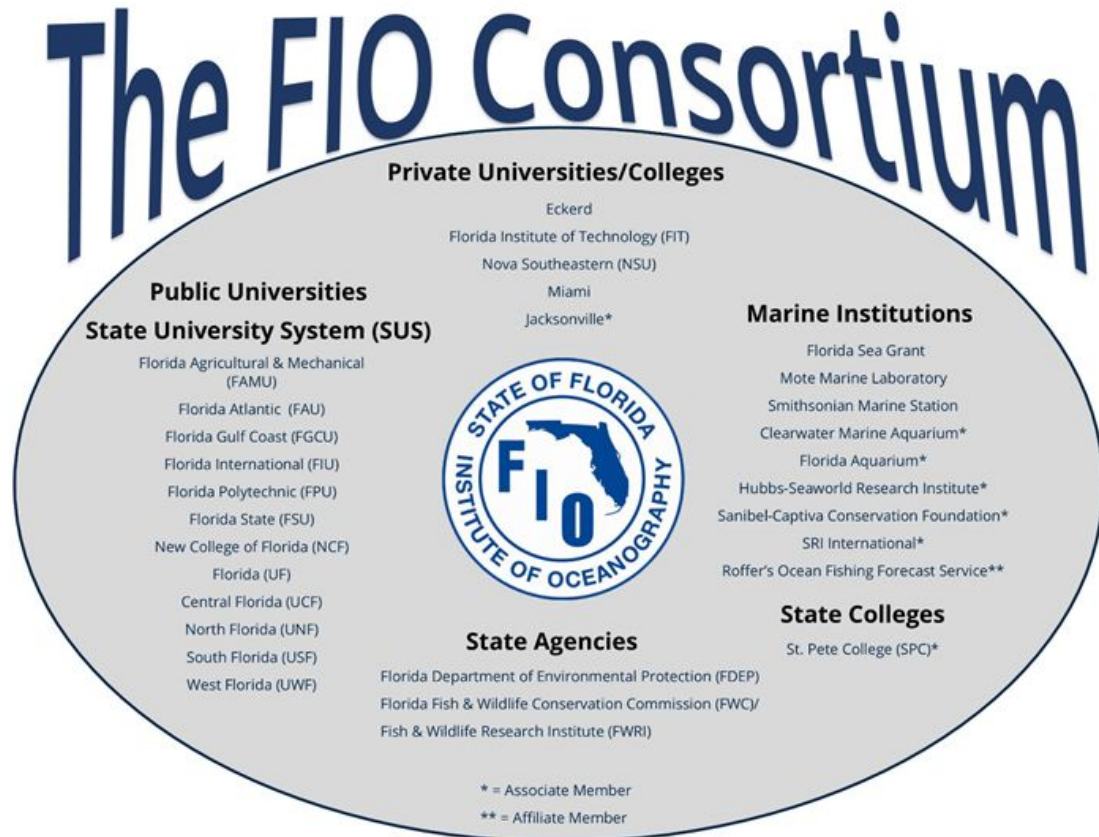
## Supporting Excellence in Marine Science, Technology and Education

### INFRASTRUCTURE, PROGRAMS, LEADERSHIP, PEOPLE

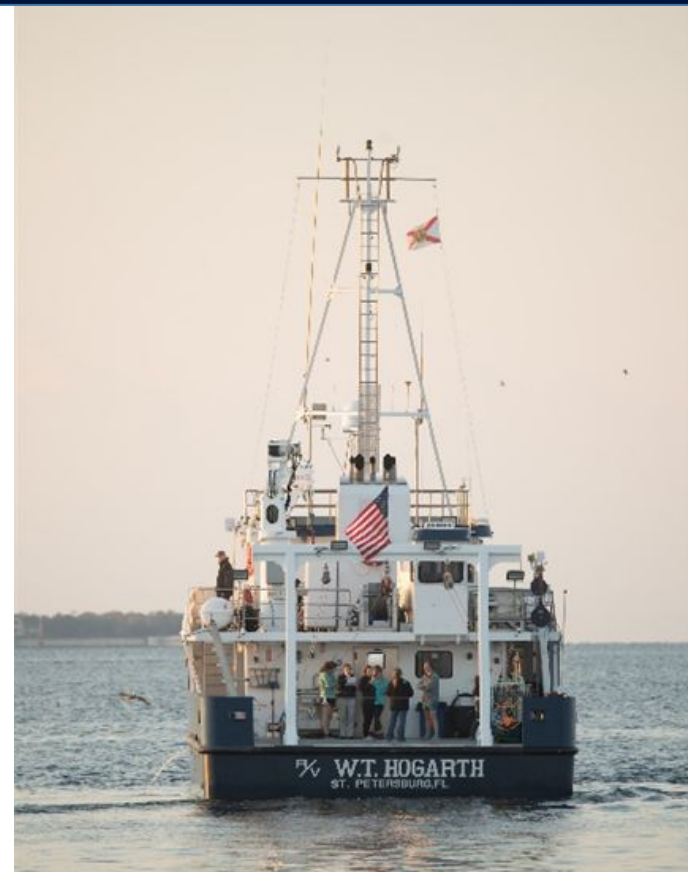


### FIO- MILESTONES:

- 1967-** FIO established for SUS
- 1977-** Hosted by USF
- 1980-** R/V Suncoaster joins R/V Bellows
- 1991-** KML acquired by FWC co-managed by FIO
- 2000** –FIO Membership expanded beyond SUS to include 9 other institutions
- 2009** –FIO designated as 1 of 2 Academic Infrastructure support organizations within SUS.
- 2012** –FIO Membership expanded to include Associate and Affiliate members
- 2013-** US Treasury designates FIO as coordinator for FLRACEP grants program (\$26M)
- 2015** FWC transfers KML to FIO
- 2018** R/V Hogarth commissioned



## 2017/18 FIO Accomplishments- INFRASTRUCTURE **Building a new Vessel in 2 years (*on time and on budget*)**



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## 2017/18 FIO Accomplishments- PROGRAMS/EDUCATION



Closing out of RFP 1 and 2 awards totaling \$3.65M for 11 projects at 8 institutions. 2<sup>nd</sup> audit by Treasury with only minor findings

*Obj 2.8: Continue to provide leadership for recovery in the Gulf of Mexico....*

*Obj 2.9 Grow and expand summer field studies course In marine science- one cohort this year*



FIO's vessels supported **173** undergraduate; **62** graduate students in 2017/18. KML facilities supported **86** faculty/scientists; **165** undergraduate; **17** graduate student degrees

*Obj 1.4 Ensure efficient utilization of ship and lab resources to the fullest extent...*

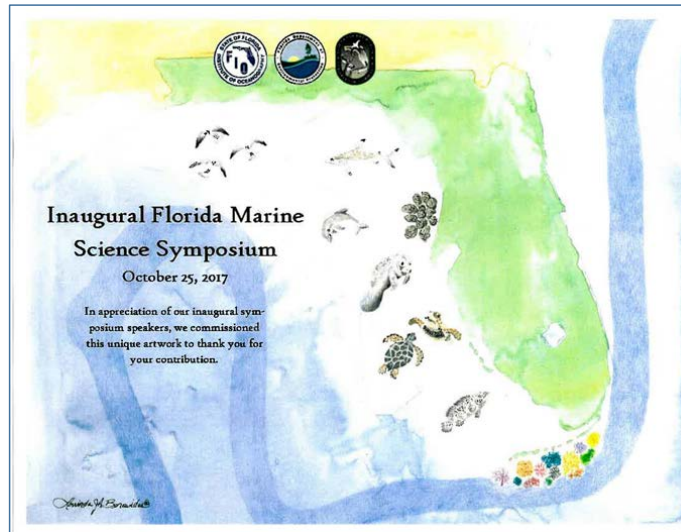
**FIO 2015-2020 Strategic Plan. Goal 2. PROGRAMS:** FIO will seek and provide resources and value-added opportunities for research and educational Programs for students at all levels, sustain and build existing programs, and partnership that expand FIO's role in marine science...

## 2017/18 FIO Accomplishments- INFORMATION/OUTREACH



Hogarth Florida Ports Tour; 566 students; 191 faculty; 367 public) 9 media articles generated

*Obj 3.3: FIO leadership will communicate with SUS staff on work and capabilities*



Inaugural Florida Marine Science symposium plenary talks; graduate lightning talks; digital streaming.

*Obj 3.5: FIO will convene workshops that connect people to probe emergent problems..*



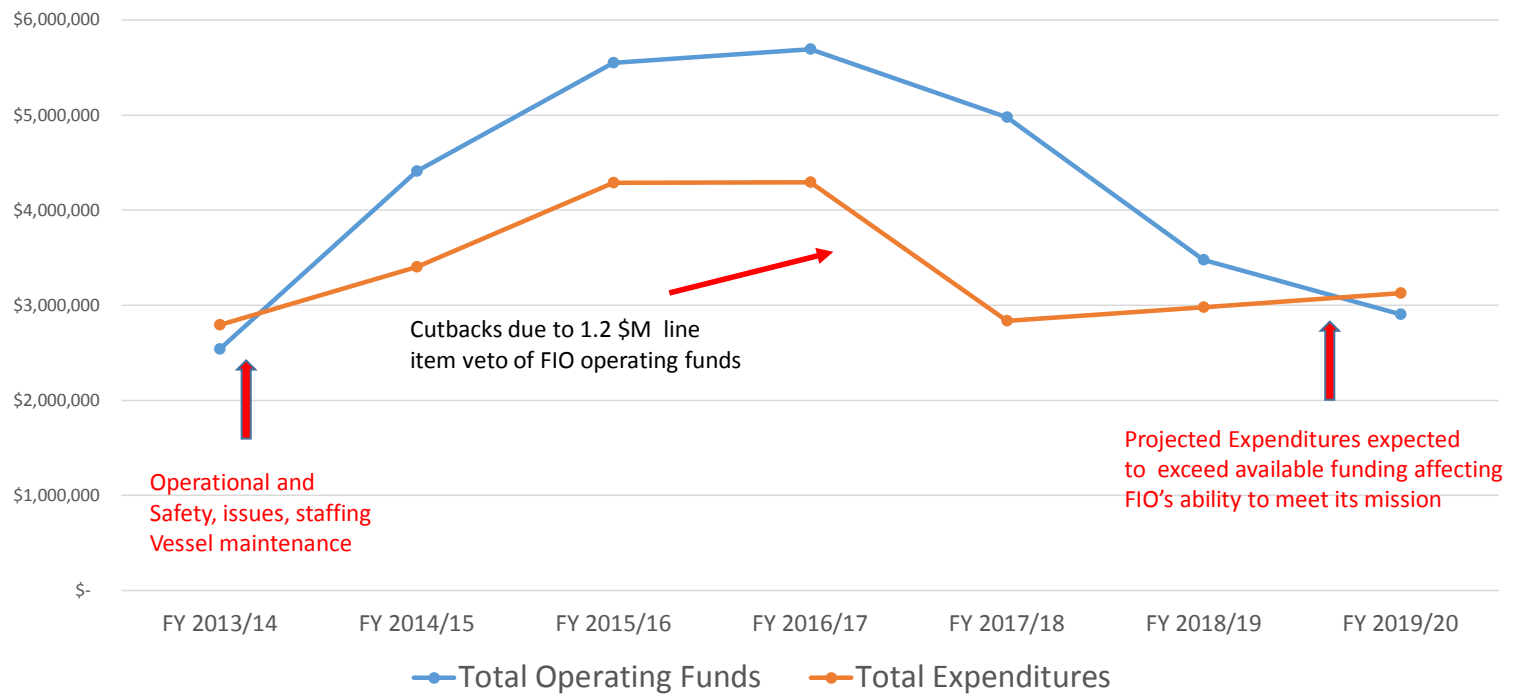
Inaugural Florida Ocean Economy Forum For Oceans Day in Tallahassee

*Obj 3.1: ...rethink FIO's role at Ocean's Day in Tallahassee*

**FIO 2015-2020 Strategic Plan. Goal 3. INFORMATION:** FIO will provide a leadership role in communicating scientific information about coastal and marine environments by member institutions to benefit the citizens of Florida

# CHALLENGES

FIO 5 Year History & Estimated Operating Expenditures  
All Fund Sources



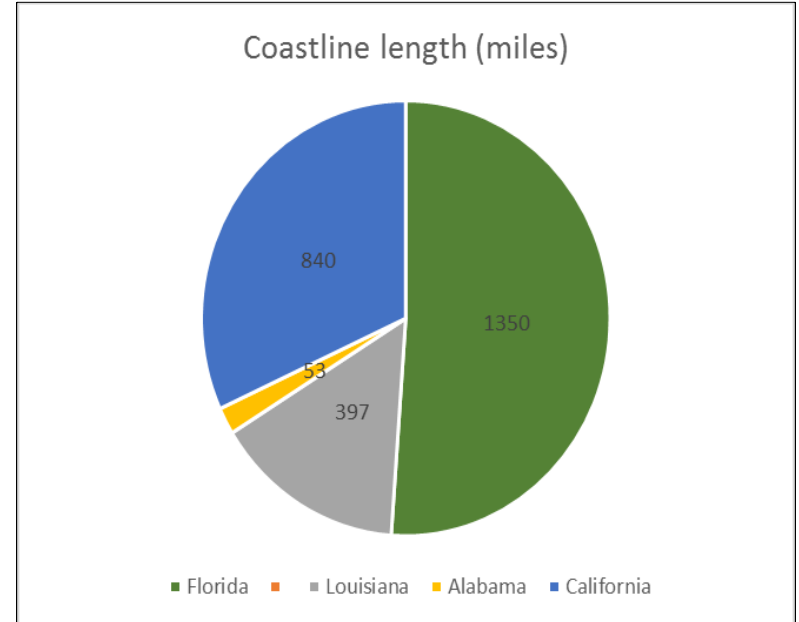
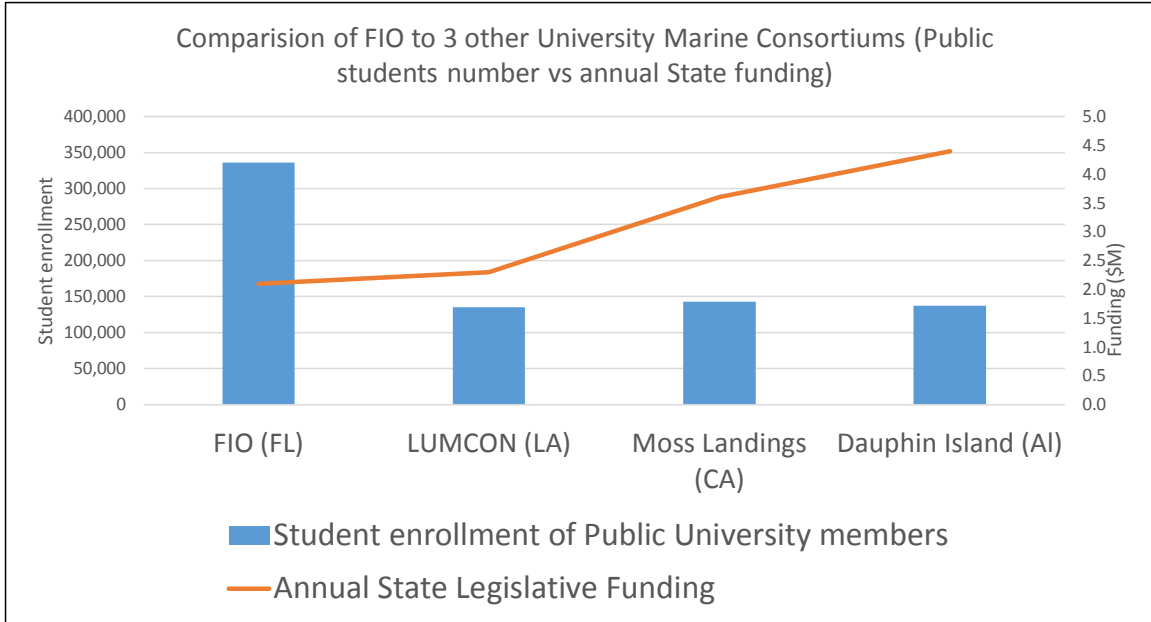
FY 2017-18-est. figures

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# Opportunities

**Compared to three other State University marine consortium's, FIO's has the lowest State operational support yet the most members, public students, and coastal area**



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## Looking Ahead



### **FIO PRIORITY 2018-19 GOALS**

CLOSE OPERATING GAP

MARINE OPERATIONS SAFETY REVIEW

INCREASE ENGAGEMENT OF FIO  
COSORTIUM (SHARED GOALS, EXPAND  
FIO ASSET USERS, NEW COURSES)

EXPLORE NEW OPPORTUNITIES WITH  
CONSOLIDATION, MEMBERSHIP, AND  
FUNDRAISING PARTNERSHIPS.

PREPARE FOR AISO RENEWAL BY 2020  
(UPDATE STRATEGIC PLAN, METRICS)

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