NEW COLLEGE OF FLORIDA

New Degree Program Proposal:
Master’s in Marine Mammal Science
FL BOG New Degree Program Proposal

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State University System of Florida Board of Governors
REQUEST TO OFFER A NEW DEGREE PROGRAM
In accordance with Board of Governors Regulation 8.011
(Please do not revise this proposal format without prior approval from Board staff)

New College of Florida
Institution Submitting Proposal

New College of Florida
Name of College(s) or School(s)

Research Methodology and
Quantitative Methods/Marine Mammal
Science
Academic Specialty or Field

45.0102
Proposed CIP Code (2020 CIP)

Fall 2024
Proposed Implementation Term

Marine Mammal Science
Name of Department(s)/Division(s)

Master's in Marine Mammal Science
Complete Name of Degree

Proposed Program Type
☒ E&G Program
☐ Market Tuition Rate Program
☐ Self-Supporting Program

The submission of this proposal constitutes a commitment by the university that, if the proposal is approved, the necessary financial resources and the criteria for establishing new programs have been met before the program’s initiation.

2/22/2024
Date Approved by the University
Board of Trustees

Debra A. Janka 2/27/24
Board of Trustees Chair’s
Signature

2/27/24
President’s Signature
Date

Provost’s Signature 2/27/24
Date

Form Updated March 2023
Projected Enrollments and Program Costs

Provide headcount (HC) and full-time equivalent (FTE) student estimates for Years 1 through 5. HC and FTE estimates should be identical to those in Appendix A – Table 1. Indicate the program costs for the first and the fifth years of implementation as shown in the appropriate columns in Appendix A – Table 3A or 3B. Calculate an Educational and General (E&G) cost per FTE for Years 1 and 5 by dividing the total E&G by FTE.

<table>
<thead>
<tr>
<th>Implementation Timeframe</th>
<th>HC</th>
<th>FTE</th>
<th>E&amp;G Cost per FTE</th>
<th>E&amp;G Funds</th>
<th>Contract &amp; Grants Funds</th>
<th>Auxiliary/Philanthropy Funds</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>10</td>
<td>10</td>
<td>$131,192</td>
<td>$1,311,920</td>
<td>$250,000</td>
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<tr>
<td>Year 2</td>
<td>24</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 3</td>
<td>39</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 4</td>
<td>48</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 5</td>
<td>62</td>
<td>50</td>
<td>$29,132</td>
<td>$1,456,590</td>
<td>$750,000</td>
<td>$400,000</td>
<td>$2,606,590</td>
</tr>
</tbody>
</table>

Programs of Strategic Emphasis Waiver *(for baccalaureate programs only)*

Does the program fall under one of the CIP codes listed below?

☐ Yes
XX No

If yes, students in the program will be eligible for the Programs of Strategic Emphasis (PSE) waiver. See Board Regulation 7.008 and the PSE Waiver Guidance for additional details.

<table>
<thead>
<tr>
<th>CIP CODE</th>
<th>CIP TITLE</th>
<th>CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.0101</td>
<td>Computer and Information Sciences</td>
<td>STEM</td>
</tr>
<tr>
<td>11.0103</td>
<td>Information Technology</td>
<td>STEM</td>
</tr>
<tr>
<td>14.0801</td>
<td>Civil Engineering</td>
<td>STEM</td>
</tr>
<tr>
<td>14.0901</td>
<td>Computer Engineering</td>
<td>STEM</td>
</tr>
<tr>
<td>14.1001</td>
<td>Electrical and Electronics Engineering</td>
<td>STEM</td>
</tr>
<tr>
<td>27.0101</td>
<td>Mathematics</td>
<td>STEM</td>
</tr>
<tr>
<td>40.0801</td>
<td>Physics</td>
<td>STEM</td>
</tr>
<tr>
<td>52.0301</td>
<td>Accounting</td>
<td>GAP ANALYSIS</td>
</tr>
<tr>
<td>52.0801</td>
<td>Finance</td>
<td>GAP ANALYSIS</td>
</tr>
<tr>
<td>52.1201</td>
<td>Management Information Systems</td>
<td>STEM</td>
</tr>
</tbody>
</table>

Additional Required Signatures

I confirm that I have reviewed and approved Need and Demand Section III.F. of this proposal.

Signature of Equal Opportunity Officer

Date: January 5, 2024
Introduction

I. Program Description and Relationship to System-Level Goals

A. Describe within a few paragraphs the proposed program under consideration and its overall purpose, including:
   - degree level(s)
   - majors, concentrations, tracks, specializations, or areas of emphasis
   - total number of credit hours
   - possible career outcomes for each major (provide additional details on meeting workforce need in Section III)

New College of Florida (NCF) is seeking approval for a Master’s degree program in Marine Mammal Science, our second master’s program. The Master’s in Marine Mammal Science (MIMMS) degree program will be offered on New College of Florida’s main campus in Sarasota. This will be a four-semester, two-year graduate program (48 credit hours total, 24 credit hours each year). The master’s degree will require a research thesis and be research focused, including experimental design, research methods, and quantitative analysis.

Our goal is to enroll an initial cohort in Fall 2024 of approximately 10 students. By year 5, Fall 2029, the entering cohort is planned to be 35 students. We will substantially increase recruiting efforts in the future to meet this goal. After year 5, the MIMMS degree will be ongoing.

Students trained in this program will have multiple options for next steps after graduation. The skills required to study marine mammals in an interdisciplinary way, the focus of this program, are broadly applicable to advances in science, technology and medicine. Talented New College undergraduates, working toward their New College of Florida B.A. degrees in a liberal arts environment that both challenges and permits them to pursue a highly individualized course of study, have chosen to develop skills in these methodologies and data analyses and have gone on to a wide swath of occupations (e.g., medical doctors, vets, lawyers, statisticians, park rangers, laboratory managers, conservation agency staff, non-profit staff, zoo and aquarium researchers and managers, etc.) after graduation. Today, research skills are as necessary a part of a good education as clear writing and reasoning skills. The MIMMS degree program provides individuals with the post-baccalaureate training needed to pursue careers in research design and data analysis, comparative psychology, conservation biology, ecology, and marine mammal husbandry and training.

B. If the proposed program qualifies as a Program of Strategic Emphasis, as described in the Florida Board of Governors 2025 System Strategic Plan, indicate the category.
   - Critical Workforce
II. Strategic Plan Alignment, Projected Benefits, and Institutional Mission and Strength

A. Describe how the proposed program directly or indirectly supports the following:
   - System strategic planning goals (see the link to the 2025 System Strategic Plan on the New Program Proposals & Resources webpage)
   - the institution's mission
   - the institution's strategic plan

NCF’s proposed MIMMS aligns with the following Florida University System Strategic Planning Goals:

- **GOAL: Strengthen Quality and Reputation of the Universities:** Improve the quality and relevance of the System’s institutions with regard to state, national, and international preeminence.
  - This will be the first master’s program in Florida to focus specifically on marine mammal science. This will improve the quality and relevance of Florida public institutions to state and national preeminence.

- **GOAL: Increase Research Activity and Attract More External Funding:** Increase research activities to help foster entrepreneurial campus cultures. Attract more research funding from external (includes federal and private) sources.
  - Research conducted by graduate students and faculty through the proposed marine mammal science program will immediately be supported in part by grants from the Office of Naval Research and a Human Frontier Science Program award. Future work is expected to attract external funding from these sources and potentially from awards related to Florida agencies, such as the National Oceanic Atmospheric Administration (NOAA) and the Fish and Wildlife Research Institute (FWRI), NSF, and industry support (e.g., zoos/aquariums). Graduate students will be encouraged to be entrepreneurial in searching for external funding.

- **GOAL: Increase Levels of Community and Business Engagement:** Increase faculty and student involvement in community and business engagement activities.
  - The proposed marine mammal science program will further cement community and business involvement with multiple zoos and aquariums in the state, e.g., Clearwater Aquarium, and other state, national, and international research organizations (e.g., FWRI).

- **GOAL: Increase Community and Business Workforce:** Increase the percentage of graduates who continue their education or are employed full-time.
  - The proposed marine mammal science program will develop internships
and pathways to full-time jobs for its graduates. It will also provide pathways for New College BA earners to pursue further education that will lead to full-time employment.

The New College Mission is:

New College of Florida prepares intellectually curious students for lives of great achievement. It offers a liberal arts education of the highest quality in the context of a small, residential public honors college with a distinctive academic program which develops student intellectual and personal potential as fully as possible; encourages the discovery of new knowledge and values while providing opportunities to acquire established knowledge and values; and fosters the individual’s effective relationship with society.

MIMMS aligns with the mission by:

- being of the highest quality,
- being distinctive (unique in the nation),
- fully developing intellectual and personal potential of each graduate student,
- encouraging the discovery of new knowledge through the research thesis, and
- fostering an effective relationship with society through career preparation.

MIMMS directly and indirectly supports the NCF Strategic Plan by contributing to three goals in the Strategic Plan: recruit more students who will thrive at NCF, keep them here for four years, and make their degree more valuable.

1. Recruit more students who will thrive at NCF
   a. Tell the New College Story
      
      iii. Enhance academic reputation - Promote curriculum and programs of distinction. **MIMMS will be distinctive. It will be the only program in Florida that focuses on marine mammal science. The only comparable program is University of St.-Andrews, in Scotland.**

2. Keep them here for four years
   
   b. Immerse students in curricula that inspires
      
      i. Develop attractive programs that are important to Florida. **The science of marine mammals is important to Florida.**

      iii. Engage students in high impact practices - Increase externally-funded faculty research involving students. **Master’s students and undergraduates will participate in faculty funded research, a high impact practice.**

3. Make their degree more valuable
   
   ii. Develop pathways to immediate employment and continuing education
- Enhance career-readiness, continuing education, and post-graduation programming (e.g., What’s Next?) with additional pathways and articulation agreements. **MIMMS will enhance career readiness through two classes** - Writing a Journal Article and Agencies: Research, Funding, Logistics, Professional Pathways.

- Develop pathways from NCF to graduate programs. **Biology and Psychology undergraduates will be recruited to be Marine Mammal Science graduate students.**

4. Make Sarasota an educational destination

  iii. Collaborate with research, artistic, medical organizations and businesses - Mellon Grant (connect arts and humanities in the local region) - Establish Local Global Center. **Through collaboration with the Sarasota Dolphin Research Program (SDRP), Marine Mammal Science will solidify Sarasota as a research and educational location for marine mammals. (In Spring 2023 NCF & SDRP collaborated with Museum Studies to produce an exhibition supported by Mellon on NCF’s campus.)**

  iv. Cultivate faculty networks with professional, scientific organizations - Enhance grant activities. **Marine Mammal Science faculty are well networked with professional and scientific networks. They often present their research at national and international conferences. Graduate students will expand the value of these networks by producing new knowledge through research.**

MIMMS builds on a foundation of both undergraduate and faculty research related to marine mammals. This includes faculty in Biology, Marine Biology, Psychology, Biopsychology, Animal Wellbeing and Conservation, and Neuroscience. The core faculty for MIMMS have published research about dolphins, manatees and sea lions, often engaging undergraduates in this research. NCF has a strong working relationship with SDRP, which has the longest running research of a wild dolphin population globally.

B. **Describe how the proposed program specifically relates to existing institutional strengths. This can include:**
   - existing related academic programs
   - existing programs of strategic emphasis
   - institutes and centers
   - other strengths of the institution

NCF is the smallest of the twelve universities in the State University System of Florida. The state’s designated public honor’s college, it serves exceptionally talented students in a residential, liberal arts environment that both challenges and permits students to pursue a highly individualized and interdisciplinary course of study. MIMMS’ degree program is the college’s second post-baccalaureate degree program. Half of the nation’s liberal arts colleges offer highly targeted graduate programs in areas of institutional strength, and this program will be a unique contribution to the U.S.’s offerings.
NCF’s unique strengths make Marine Mammal Science a particularly appropriate area for the college to offer as a graduate program on several counts: (1) Current faculty teaching in the B.A. programs are globally recognized for their research focused on marine mammals (manatees, bottlenose dolphins, sea lions). (2) NCF’s campus is on Sarasota Bay, the location of the longest studied population of wild dolphins in the world. (3) Florida is home to more manatees than anywhere else. (4) Florida has a large number of zoos and aquariums housing marine mammals. Due to these strengths, the creation of this program has been a goal of New College faculty for a dozen years, and funding is now attainable to make the program a reality.

In combination, Biology, Marine Biology, and Psychology (including Biopsychology, Neuroscience, Animal Wellbeing) produce a disproportionate number of BA degrees at New College, 33% of all BAs in 2023.

Biology, Marine Biology, and Psychology Academic Productivity AY 2022-23

<table>
<thead>
<tr>
<th># Course Enrollments 2022-23</th>
<th># Independent Study Projects 2022-23</th>
<th># Tutorials 2022-23</th>
<th># Theses 2022-23</th>
<th># Theses Collegewide 2022-23</th>
</tr>
</thead>
<tbody>
<tr>
<td>522</td>
<td>70</td>
<td>205</td>
<td>42</td>
<td>127</td>
</tr>
<tr>
<td>% of 2023 BA Graduates With Biology and Psychology Faculty members as Thesis Sponsor</td>
<td>33%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NCF has strong undergraduate programs in Psychology, Biopsychology, Animal Wellbeing and Conservation, Neuroscience, Biology, and Marine Biology. We also have the Pritzker Marine Biology Lab, and a dock with a boat lift on Sarasota Bay. We have the Limbatus, a teaching and research vessel for Sarasota Bay. The waterfront program also offers a rescue boat, numerous sailboats, kayaks, and paddleboards.

Marine Mammal Science will collaborate with Applied Data Science on statistical training for graduate students. In 2023, Fortune Magazine ranked the program #25 in Best Master's in Data Science Programs nationwide. Also in 2023, the Applied Data Science program finalized a grant agreement totaling nearly $100K from the United States Department of Agriculture that will support internships for its students, which marks the second time the USDA has sponsored internships for New College graduate students.

We are concurrently submitting a request to the BOG to establish a state of Florida SUS institute, the Florida Institute of Marine Mammal Science (FIMMS), in which NCF and the Aquatic Animal Health Program in the University of Florida's College of Veterinary Medicine partner to support marine mammal science related to teaching, research, service, and the conservation of marine mammals in Florida.

C. Provide the date the pre-proposal was presented to the Council of Academic Vice Presidents Academic Program Coordination (CAVP ACG). Specify any
concerns raised and provide a narrative explaining how each concern has been or will be addressed.

The pre-proposal was presented to the CAVP ACG on September 13, 2023. Members of the ACG had no formal concerns, although they provided useful feedback that helped shape this proposal including clarifying our reasons for choosing this CIP code. We chose a CIP code highlighting Research Methodology and Quantitative Methods because our interdisciplinary program highlights methodology and analysis across lab and field practices in multiple areas (behavior, ecology, neuroscience, cognition, acoustics) related to marine mammal science. (Review section IV to see how this CIP code integrates curriculum and learning outcomes.) They also suggested that we engage with related programs at other universities and institutions, a suggestion on which we have followed up in multiple ways including conversations with personnel at USF’s College of Marine Science, USF Sarasota-Manatee, UF’s Aquatic Animal Health Program, Eckerd College, FWRI, US Fish and Wildlife Service (FWS), NOAA, and Florida zoos and aquariums.

D. In the table below provide an overview of the institutional planning and approval process leading up to the submission of this proposal to the Board office. Include a chronology of all activities, providing the names and positions of university personnel and external individuals who participated.

- If the proposed program is at the bachelor’s level, provide the date the program was entered into the APPRiSe system, and, if applicable, provide a narrative responding to any comments received through APPRiSe.

- If the proposed program is a doctoral-level program, provide the date(s) of the external consultant’s review in the planning table. Include the external consultant’s report and the institution’s responses to the report as Appendix B.

**Planning Process**

The planning process formally began in May of 2023. However, Dr. Harley had been working on creating MIMMS for several years prior to the start of this iteration of planning. In June of 2023, MIMMS was included in NCF’s Accountability Plan. In July of 2023, New College prepared and submitted an LBR to support MIMMS. In September of 2023, a pre-proposal was prepared for CAVP review. In December of 2023, we submitted a New Program Proposal to SACSCOC.
E. In the table below, provide a timetable of key events necessary for implementing the proposed program following approval of the program by the Board office or the Board of Governors through to the addition of the program to the State University System Academic Degree Program Inventory.

### Events Leading to Implementation

<table>
<thead>
<tr>
<th>Date</th>
<th>Implementation Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-25-23</td>
<td>NCF Educational Policy Committee discussion and review of MIMMS</td>
</tr>
<tr>
<td>11-8-23</td>
<td>Faculty meeting presentation and discussion of MIMMS</td>
</tr>
<tr>
<td>12-21-23</td>
<td>Submit New Program Proposal to SACSCOC</td>
</tr>
<tr>
<td>2-6-24</td>
<td>Draft full proposal completed, begin discussions with BOG staff, revisions</td>
</tr>
<tr>
<td>2-22-24</td>
<td>NCF BOT approves full proposal</td>
</tr>
<tr>
<td>2-28-24</td>
<td>Submit full proposal to BOG staff</td>
</tr>
<tr>
<td>3-26/27-24</td>
<td>BOG approval of MIMMS</td>
</tr>
<tr>
<td>4-2-24</td>
<td>Submit revisions to SACSCOC</td>
</tr>
<tr>
<td>7-1-24</td>
<td>MIMMS program opens</td>
</tr>
</tbody>
</table>

### Institutional and State-Level Accountability

#### III. Need and Demand

A. Describe the workforce need for the proposed program. The response should, at a minimum, include the following:

- current state workforce data as provided by Florida's Department of Economic Opportunity

Given the interdisciplinary course of study, the proposed MIMMS prepares graduates for a diverse mix of occupations including but not limited to science, policy, research, and education jobs. According to current state workforce data, there is a workforce need for
all occupations directly linked to the program with a projected growth for 2023-2031 ranging from .5% to 36.4%. For example, the 8.6% projected increase in job openings for Natural Sciences Managers indicates a demand for individuals with managerial expertise, making the program beneficial for those aspiring to lead marine mammal research initiatives or conservation projects in the state. Additionally, the 5.5% increase in job openings for Conservation Scientists underscores the importance of preparing professionals who can address the unique challenges of marine conservation in Florida and guide government policy and industry. Furthermore, the significant 36.4% increase in job openings for Statisticians highlights the growing need for data-driven decision-making across all industries, and through the proposed program, graduates will be prepared to address this crucial aspect specifically for marine mammal science including but not limited to analyzing population trends, habitat data, human-animal interactions, human/animal behavior, and other research outcomes.

Overall, considering Florida’s reliance on its coastline and the ocean as important contributors driving economic activity, it will be critical for the state to develop and maintain healthy ecosystems and robust marine mammal life. Therefore, this program will prepare graduates for jobs in management, research, conservation, education, and data analysis, related to marine science, likely aligning well with the evolving needs of the workforce in the state and its blue economy.

- current national workforce data as provided by the U.S. Department of Labor's Bureau of Labor Statistics

The proposed MIMMS program is well-aligned with the national workforce needs based on the projected percentage increase in job openings from 2022 to 2032. The data indicate a consistent demand for skilled professionals across various fields related to marine mammal science. The 4.80% increase in job openings for Natural Sciences Managers suggests a need for individuals with leadership and organizational skills in marine mammal research and conservation. Additionally, the 3% increase in job openings for Zoologists and Wildlife Biologists underscores the relevance of specialized training in marine mammal science to address the growing demand for experts in the field. The program could cater to the 4.10% increase in job openings for Conservation Scientists, preparing graduates to contribute to marine conservation efforts. Furthermore, the substantial 31.60% increase in job openings for Statisticians highlights the importance of statistical expertise in marine mammal research, emphasizing the program’s potential to produce professionals well-equipped to analyze and interpret complex data in this domain.

Overall, the proposed MIMMS program appears to address national workforce needs, providing a comprehensive approach to training professionals who can contribute significantly to the management, research, conservation, and data analysis aspects of marine mammal science in the coming decade.

- requests for the proposed program from agencies or industries in the university's service area

We have met with representative agencies, zoos and aquaria, and research organizations to assess the needs of those groups and align our program with those needs. With Florida’s extensive coastlines (8,436 miles of shoreline, as calculated by NOAA), marine
mammals are a focus of many groups across sectors. We found a need for marine mammal-oriented employees with interdisciplinary knowledge, strong research skills (quantitative analysis, research design, data collection), and strong communication and professional skills. The proposed MIMMS has been designed to prepare students to meet all of these needs. Specifically, from FWRI we met with Andy Garrett at the Manatee Necropsy Lab and Director Gil McRae. From the NOAA, we have met with Elizabeth Fetherston the Marine Mammal Restoration Coordinator and Laura Engleby the Branch Chief for the Southeast Regional Office Marine Mammal Branch. From the FWS Office, we met with Larry Williams, State Program Supervisor, and Gianfranco Basili, Deputy State Supervisor. On January 31, we met with David Mann, CEO of Loggerhead Instruments. In 2017 and 2018, Harley attended the Association of Zoos and Aquariums conferences and interviewed people from many institutions on their needs and interests in curriculum to prepare future zoo/aquarium researchers and managers. These meetings informed the curriculum. We found a high level of interest in future graduates from the proposed program and we will continue to work closely with these groups to best prepare our graduates.

- any specific needs for research and service that the program would fulfill

Florida’s waters are home to a wide range of marine mammal species including manatees, dolphins, and whales. This includes threatened and endangered species like state marine mammal the Florida manatee. Marine mammals are important to the state of Florida from an ecological perspective, as sentinel species for ecosystem health, and also economically. Marine mammals are a major attraction for visitors, contributing to the tourism sector, a substantial part of Florida’s economy. This impact includes visits to the state’s approximately 50 zoos and aquaria, boat tours, and snorkeling/diving. Florida has acknowledged the value of marine mammals to the state by not only enforcing national protections such as the Marine Mammal Protection Act and Endangered Species Act, but also by creating state protections such as the Florida Manatee Sanctuary Act. The proposed MIMMS program will help protect the state’s marine mammals and the value they bring to the state.

For example, marine mammals face many threats in Florida including loss of seagrass, red tide, and boat strikes. The drastic loss of the majority of seagrass in the Indian River Lagoon region has created an ongoing Unusual Mortality Event (UME) in which over 1,000 Florida manatees have died (Florida Fish and Wildlife Conservation Commission, FWC, 2024; Morris et al., 2022). Red tide, a form of algal blooms that produce toxins, not only have serious health effects for humans but can also be lethal to marine mammals. A red tide in late 2017–early 2019 resulted in the deaths of more than 200 manatees and more than 200 bottlenose dolphins (FWC, 2024; Mote Marine Laboratory, 2019). Mortality from boat strikes impact dolphins, manatees, and the critically endangered North Atlantic Right Whale with an approximate population size of 360 (NOAA, A, 2024). Florida is home to a calving ground for North Atlantic Right Whales and boat strikes; a third of North Atlantic Right Whale mortalities with an identifiable cause is attributed to boat strikes (NOAA, B, 2024). These threats, and many more, require an interdisciplinary approach to address them effectively (Harley, Cook, & Bauer, in press).

The proposed MIMMS program will prepare students to tackle problems like these both during their time in the program through research and outreach as well as beyond.
graduation as they enter Florida’s workforce. The proposed program will provide students with interdisciplinary knowledge and skills including research design, measurement of variables, data analysis, modeling, statistics, project management, collaboration, boat handling, photo ID, learning and cognition, acoustical analysis, interpreting brain images, and oral and written communication for multiple audiences. Additionally, we will provide ample opportunities for students to apply these skills and knowledge through conducting their own publication-quality research, methodological-focused courses, and internship/practicum experiences. As described above, we have met with representative agencies, aquaria, and research organizations to collaborate on research projects and best prepare our students to contribute to these groups after they graduate. The graduates of the proposed program will be well-prepared to join a Doctoral program or a wide range of occupations including research scientist, veterinarian (with additional training), laboratory manager, statistician, conservation agency staff, zoo and aquarium researchers and managers, conservation policy, and wildlife manager. Example potential agency employers include NOAA, FWC, US Geological Survey, and State Parks.


National and Florida Workforce Demand

In the table below, provide occupational linkages or jobs graduates will be qualified to perform based on the training provided for the proposed program that does not currently appear in the most recent version of the Search by CIP or SOC Employment Projections Data Tool provided periodically by Board staff.

Occupational Linkages for the Proposed Program
<table>
<thead>
<tr>
<th>SOC Code</th>
<th>Occupation Title</th>
<th>Source / Reason for Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-9121</td>
<td>Natural Sciences Managers</td>
<td>Graduates’ training in marine mammal science prepares them well to become managers of a range of aquatic and/or animal habitats, exhibits, and/or environments. Examples include but not limited to Natural Resource, Wildlife, Fisheries, Hatchery, and/or Aquarium Managers.</td>
</tr>
<tr>
<td>19-1023</td>
<td>Zoologists and Wildlife Biologists</td>
<td>Graduates will be trained to demonstrate an integrated understanding of key concepts in biology, ecology, cognition, and neuroscience as applied to marine mammals. Furthermore, equipped with the skills to clearly and effectively communicate marine mammal science to scientific and non-scientific audiences, graduates can easily transition into specialist biologist positions in a range of institutions including but not limited to government agencies, aquatic preserves, zoos, aquariums, universities, and non-profit research facilities.</td>
</tr>
<tr>
<td>19-1031</td>
<td>Conservation Scientists</td>
<td>With advanced studies in marine mammal science, graduates will understand how to manage, improve, and protect the environments in which marine mammals live. This knowledge is transferable to jobs related to policy-making, consulting, and sustainability.</td>
</tr>
</tbody>
</table>

Complete the table below and summarize its contents in narrative form. Include data for all linked occupations, including those in the table above. Use data from the Search by CIP or SOC Employment Projections Data Tool provided periodically by Board staff.
## Labor Market Demand, CIP Code 45.0102

<table>
<thead>
<tr>
<th>Occupations</th>
<th>Percent Change in Job Openings</th>
<th>Annual Average Job Openings</th>
<th>Total # of New Jobs</th>
<th>Education Level Needed for Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Scientists and Related Workers, All Other</td>
<td>7.1%</td>
<td>169</td>
<td>121</td>
<td>600</td>
</tr>
<tr>
<td>Social Sciences Teachers, Postsecondary All Other</td>
<td>11.6%</td>
<td>87</td>
<td>91</td>
<td>1100</td>
</tr>
<tr>
<td>Statisticians</td>
<td>39.4%</td>
<td>2075</td>
<td>587</td>
<td>11200</td>
</tr>
<tr>
<td>Managers, All Other</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>78400</td>
</tr>
<tr>
<td>Survey Researchers</td>
<td>5.6%</td>
<td>42</td>
<td>24</td>
<td>700</td>
</tr>
<tr>
<td>Sociologists</td>
<td>6.3%</td>
<td>8</td>
<td>5</td>
<td>200</td>
</tr>
</tbody>
</table>

B. Provide and describe data that support student demand for the proposed program. Include questions asked, results, and other communications with prospective students.

There are several lines of evidence that there is robust student demand for the proposed MIMMS program.

- NCF regularly has students enroll specifically to work with our faculty who have marine mammal expertise.
- Marine mammal-focused courses are popular with undergraduate students and commonly need to be capped for logistic and pedagogical constraints. Below are marine mammal-related courses from the Fall 2018–Fall 2023 period.
<table>
<thead>
<tr>
<th>Course name</th>
<th>Semester</th>
<th>Professor</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparative Brain Connectivity Laboratory</td>
<td>Offered every Fall 2017-2023</td>
<td>Cook</td>
<td>8-12</td>
</tr>
<tr>
<td>Marine Mammal Biology</td>
<td>Fall 2023</td>
<td>Rycyk</td>
<td>26</td>
</tr>
<tr>
<td>New Stories, New College: An Interdisciplinary Laboratory Showcasing New College/Community Sciences – WITH Introduction to Museum Studies (Mellon funded) &amp; SDRP</td>
<td>Spring 2023</td>
<td>Harley/Brion</td>
<td>20</td>
</tr>
<tr>
<td>Analysis of Florida Manatee Mortality Events</td>
<td>Spring 2022</td>
<td>Rycyk</td>
<td>10</td>
</tr>
<tr>
<td>Marine Mammal Biology</td>
<td>Spring 2021</td>
<td>Rycyk</td>
<td>16</td>
</tr>
<tr>
<td>Cognitive Laboratory: Parallel Approaches to Facilitating Wellbeing across Species</td>
<td>Spring 2020</td>
<td>Harley</td>
<td>7</td>
</tr>
<tr>
<td>Marine Mammal Biology</td>
<td>Spring 2019</td>
<td>Rycyk</td>
<td>14</td>
</tr>
<tr>
<td>Wellbeing of Humans and Other Animals: Welfare &amp; Emotions</td>
<td>Fall 2018</td>
<td>Harley</td>
<td>10</td>
</tr>
</tbody>
</table>

- Representative marine mammal-related tutorials include: HFSP-Funded research assistantship: Marine Mammal DTI Tractography + Histology, Marine Mammal Diffusion Tensor Imaging, Calculating Brain Region Volumes in California Sea Lions Using MRI, Advanced Analyses of Manatee Body Condition, Dolphin Acoustic Analysis, Marine Mammal...

- Representative marine mammal-related Independent Study Projects sponsored (our January term) include: Comparative Brain Connectivity in Sea Otters, Calculating Brain Region Volumes in California Sea Lions Using MRI, Pilot Study Testing Behavioral Flexibility of Wild Otters Solving a Puzzle, Behavior of Captive and Wild Antillean Manatees, Development of a Classification of Spatial Overlap in Algae and Vibrissa in Manatees, A Game of Situational Awareness of Manatees and Boats, Research Assistant for Dolphin Vocalizations/Behavior at Clearwater Marine Aquarium, and Ecological Dolphin Research in Sarasota Bay with SDRP.

- There is high demand for marine mammal research experience. In addition to meeting this need we create/facilitate research opportunities for undergraduate students that prepare them for graduate level work in this field. For example:
  - In the summer of 2020, Dr. Rycyk secured funding from the Environmental Discovery Awards Program and offered four paid undergraduate internships. The students worked with Dr. Rycyk created the first characterization of African manatee vocalizations and continued on the project after the summer. Their efforts resulted in co-authorship on a publication, and two students went on to join graduate programs related to bioacoustics.
  - Dr. Cook is one of four PIs on a $1.4 million international grant to examine the relationship between the behavior, ecology, neurobiology, and evolution of rhythmic communication in marine mammals, including cetaceans and pinnipeds. The grant runs through 2025, and is currently supporting two NCF paid research assistants doing pioneering work mapping the auditory and communication pathways in dolphin and whale brains. Both students are co-authoring related papers as they complete their theses, presenting their data at the Comparative Cognition Conference in April, and have applied competitively to masters and doctoral programs in Neuroscience.
  - Dr. Cook is also part of an ongoing consortium studying the effects of algal toxins on marine mammals, which periodically provides opportunities for NCF students. E.g., a 2022 thesis student used related neuroimaging data for her thesis, and then went on to attend veterinary school and coauthor a published longitudinal case study of a fur seal exposed to algal toxins.
  - Dr. Harley is one of 10 PIs on a multi-million dollar ONR Multi-University Research Initiative grant to learn more about how dolphins use echolocation to parse acoustic information neurally and recognize objects using echolocation. The grant supports New College students working at Clearwater Marine Aquarium and can support future graduate students in the proposed Master’s program.
  - Dr. Harley has worked in over a dozen marine mammal facilities, and her students and graduates have worked on projects at many oceanaria including Dolphins Plus, Dolphin Research Center, Mystic Aquarium, Clearwater Marine Aquarium, The Seas, The Mirage, Marine Mammal
Foundation, Gulf World, and more.

- Chicago Zoological Society’s SDRP - 5 student interns/researchers
- Clearwater Marine Aquarium - 5 student interns/researchers

- At NCF, undergraduate students must complete a thesis project to graduate. Students commonly tie their thesis topic to their intended post-graduation field of study. Below are marine mammal-related undergraduate theses from 2018–2023 period.
  - Brain Connectivity and Mechanoreception in Marine Mammals (2023)
  - The Underwater Vocal Repertoire of The North American River Otter (Lontra canadensis) (2020)
  - Case Study of Domoic Acid Toxicosis in A California Sea Lion: Diffusion Imaging Analysis of Anterior Thalamus and Connectivity (2022)
  - The Phenology of Humpback (Megaptera novaeangliae), Blue (Balaenoptera musculus), Fin (Balaenoptera physalus), Sperm (Physeter macrocephalus), And Killer Whales (Orcinus orca) Determined by Passive Acoustic Monitoring Near Barkley Canyon (2021)
  - Distribution Of the Bigg’s Killer Whale Ecotype in The Salish Sea with Regards to Seasonality And Pinniped Vulnerability (2021)
  - What Is Enriching for Bottlenose Dolphins (Tursiops truncatus) Across Enrichment Types and Contexts? (2020)
  - Characteristics Of Wild Florida Manatee (Trichechus manatus latirostris) Vocalizations in Different Sized Groups (2021)
  - Growth Patterns and The Effect of pH on The Florida Manatee (Trichechus manatus latirostris) Vibrissae (2021)
  - Salinity Discrimination in the Florida Manatee (Trichechus manatus latirostris)

- Marine mammal faculty often receive requests from students at other schools to work with us in graduate programs. Without a New College program to meet this need, we often suggest the St. Andrews University’s Master’s in Marine Mammal Science program. However, this program is a difficult option as it is in Scotland, has a 32% acceptance rate, and has a $34,000 cost/year. Additionally, the program is 1-year in length and the proposed New College program is more robust with 2 years.

- In a survey of NCF undergraduate students we asked, “If you are interested in the program, why are you interested? Please be specific about why you find this program to be a valuable addition.” Here is a sample of the of the responses:
  - I am very passionate about marine mammal life and would love to be able to get a master’s degree here at New College.
  - I am studying environmental engineering sciences, and am involved in research pertaining to the coastal environment of Sarasota Bay. I am also a musician with passions for light and sound science. This program seems to me like a beautiful bridge for me to dive deeper into behavior, neuroscience, and practical applications of engineering study
  - Marine mammals science is a popular field. I feel NCF could provide me with that hands-on edge of experience to break into it.
  - I am very interested in the program. I have wanted to do marine mammal science for as long as I can remember. I have some experience with
marine mammal research, with doing pilot whale and dolphin fin identification in the Canary Islands. Participating in this masters would allow me to gain valuable research experience with marine mammals that will let me gain admission into a top level Ph.D. program.

- I'm interested because I was hoping this would come to light and wished there was a master’s program, now there is! My wish literally came true!
- I love the professors involved, and I think this is a unique and exciting opportunity. Adding natural science programs would be highly beneficial for NCF for numerous reasons. The marine biology program is already very strong, so I think this is a good method of leveraging that to provide more learning opportunities and gaining new interest in the school.
- Sarasota is a very unique location for marine mammal science - and a specific master’s program here provides a wide breadth of research opportunities.
- As a recent graduate of New College of Florida, I am very excited for the possible Marine Mammal Science Master’s program. When looking for potential graduate programs in the field of marine biology, I was hoping to find one that utilized research-based and experiential learning as a part of a well-rounded and interdisciplinary approach. This program perfectly aligns with my scientific interests and goals, and it is certainly one of a kind.

With the interdisciplinary focus of the proposed program, there is a large pool of students in undergraduate fields of study that would prepare them for the proposed Master’s program. For example within NCF, the number of students who graduated with a major in Marine Biology, Biology, Biopsychology, Psychology, Environmental Studies, Neuroscience, Animal Wellbeing and Conservation was 38 in Spring 2023. When considering related majors within the SUS, there are approximately 10,000 SUS graduates per year as reported from 2017-2021. This pool grows when considering students from around the United States and International and would serve to draw talented students to the state.

C. Complete Appendix A – Table 1 (1-A for undergraduate and 1-B for graduate) with projected student headcount (HC) and full-time equivalents (FTE).

- Undergraduate FTE must be calculated based on 30 credit hours per year
- Graduate FTE must be calculated based on 24 credit hours per year

In the space below, explain the enrollment projections. If students within the institution are expected to change academic programs to enroll in the proposed program, describe the anticipated enrollment shifts and impact on enrollment in other programs.

Currently, NCF has one Master’s program (Applied Data Science). We do not expect students within the institution to switch from Master’s in Applied Data Science to MIMMS. We are projecting headcount and FTE of 10 students for the Fall 2024 to operationalize the program. By 2029, total enrollment of first and second year Master’s students will grow to a headcount of 62 and FTE of 50.

Faculty have already identified 10 students (NCF undergraduates and alumnae, agency and zoo/aquarium professionals, out-of-state students) who will form the first cohort of
graduate students for MIMMS. In year 2 we will add 7 students from other Florida universities and this will slowly increase in the following years. In year 3 we will add part-time students taking 6 credit hours each from industries and agencies in Florida. This will also slowly increase year by year. In year 4, as word spreads about the MIMMS, we will enroll our first foreign students.

**D. Describe the anticipated benefits of the proposed program to the university, local community, and the state. The benefits of the program should be described both quantitatively and qualitatively.**

This will be a unique program for the United States, integrating lab and field studies in an interdisciplinary academic setting. MIMMS will partner with world-class universities and experts including the highly esteemed SDRP conducting the longest study of wild dolphins in the world (Sarasota Bay) and colleagues at Woods Hole Oceanographic Institution, St Andrews University (Scotland), and more. The potential for increasing grant funding to New College is high. MIMMS will increase opportunities for undergraduate students at NCF to participate in lab and field research. MIMMS will produce trained scientists for conservation management, lab and field scientists, technicians, and qualified employees for zoos, aquaria, and non-profit organizations.

NCF will benefit from the Master’s program by bringing a worldwide eminent research and teaching program to our institution. As the only research-focused Marine Mammal Science Master’s in the U.S., we will attract bachelor degree earners from around the globe to enroll. In addition, our focus on Florida, national, and global partnerships will grow and expand, and NCF will be at the center of that movement. Current and future NCF undergraduates will have increased opportunities for classes, research, and attending an affordable graduate program as a continuum to their bachelor’s degree.

This program will also benefit our local Sarasota/Manatee community by formally integrating two beloved giants of the Sarasota Community—NCF and the Chicago Zoological Society’s SDRP. Bringing graduate students and their research to Sarasota Bay will further integrate NCF into the local community and provide data and conclusions concerning the state of Sarasota Bay and potential management and research priorities (see Appendix D, Letter of Support from Dr. Randy Wells, Director of CZS Program). Ongoing monitoring and research are vital to conserving our precious Bay and to bringing funding and focus to our area. The continued partnership of these two powerhouses will further increase the expertise and partnerships dedicated to studying our marine mammals and their ecosystem.

The program also brings value to our state. Florida has the longest coastline in the mainland U.S. and a plethora of marine mammals on both coasts and within our springs. Our federal and state partners both have strong marine mammal conservation management mandates, yet most of their staff are trained outside of the state. Having a prestigious program within Florida’s State University System will give graduates a greater appreciation of Florida’s specific ecology and needs.

**E. If other public or private institutions in Florida have similar programs at the four- or six-digit CIP Code or in other CIP Codes where 60 percent of the coursework is comparable, identify the institution(s) and geographic location(s).**
location(s). Summarize the outcome(s) of communication with appropriate personnel (e.g., department chairs, program coordinators, deans) at those institutions regarding the potential impact on their enrollment and opportunities for possible collaboration in the areas of instruction and research.

No public universities in Florida offer a Master’s degree in the 45.0102 CIP.

The curriculum of FAU’s Master of Marine Science and Oceanography focuses on ecology, finfish, geochemistry, remote sensing, and coastal hazards. There are no courses in common with the proposed New College MIMMs.

We reviewed 49 private, non-profit colleges and universities offering Master’s degrees in Florida, however none had the same CIP code. We used the College Navigator from the National Center for Educational Statistics. There are 4 private colleges/universities in Florida that offer a vaguely similar Master’s degree in Marine Biology and Biological Oceanography. University of Miami offers a Master of Professional Science (MPS) degree that requires 30 CH. The New College MIMMS is a 48 CH degree, and a research thesis is required.

Table 4: Similarity with Other Programs in the State of Florida (Private & Public)

<table>
<thead>
<tr>
<th>Institution Name</th>
<th>Public/Private</th>
<th>Location Program is Being Offered</th>
<th>CIP Code</th>
<th>Program Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida Atlantic University</td>
<td>Public</td>
<td>Ft. Lauderdale</td>
<td>30.3201</td>
<td>Master of Marine Science and Oceanography</td>
</tr>
<tr>
<td>Florida Institute of Technology</td>
<td>Private</td>
<td>Melbourne</td>
<td>26.1302</td>
<td>Marine Biology</td>
</tr>
<tr>
<td>Jacksonville University</td>
<td>Private</td>
<td>Jacksonville</td>
<td>26.1302</td>
<td>Marine Science</td>
</tr>
<tr>
<td>Nova Southeastern University</td>
<td>Private</td>
<td>Ft. Lauderdale</td>
<td>26.1302</td>
<td>Marine Science</td>
</tr>
<tr>
<td>University of Miami</td>
<td>Private</td>
<td>Coral Gables</td>
<td>26.1302</td>
<td>Marine Biology and Ecology: Marine Mammal Science Track</td>
</tr>
</tbody>
</table>

F. If the proposed program substantially duplicates a program at Florida Agricultural and Mechanical University (FAMU), a letter of support from FAMU must be provided. The letter must address whether the proposed program may adversely affect FAMU's ability to achieve or maintain student diversity in its existing program. The institution's Equal Opportunity Officer shall review this section of the proposal, sign, and date the additional signature page to indicate that all requirements of this section have been completed.
Not applicable.

IV. Curriculum

A. Describe all admission standards and all graduation requirements for the program. Hyperlinks to institutional websites may be used to supplement the information provided in this subsection; however, these links may not serve as a standalone response. For graduation requirements, describe any additional requirements that do not appear in the program of study (e.g., milestones, academic engagement, publication requirements).

Admissions: The following admission factors will be considered for applicants to the Master of Marine Mammal Science:

1. *Graduate Application for the MIMMS program.
2. Recent employment and/or academic experience (including fellowships, internships, research positions).
3. *Academic record (all post-secondary transcripts), with documentation of a bachelor’s degree (or a documented forth-coming degree) from an accredited US college or university (or the foreign equivalent, as determined by a NACES-member transcript evaluation service). Students with academic records from non-US colleges or universities should arrange for professional evaluation (and translation, if necessary) of their transcripts by a NACES-member service.
5. *Personal statement with preferred area of interest.
6. GRE, GRE Subject, or GMAT scores (preferred but optional).
7. Students who are not US citizens or US Permanent Resident Aliens, and whose first language is not English, must provide proof of English proficiency. Typically, recent scores (within the past two years) will be required, as follows:

   1. Test of English as a Foreign Language (TOEFL): score of 83 or better on the TOEFL ibT, or 560 on the Paper-Based TOEFL; or
   2. International English Language Testing System (IELTS): score of 6.5 or better; or
   3. Recent records (within the past two years) of successful academic or professional work in a setting where English is the primary language in use may be considered as a substitute for the testing requirement.

*Required for admission

The Marine Mammal Science Graduate Academic Program Committee is charged with reviewing candidate application files and selecting students to be offered admission. The Committee is composed of MIMMS’ Directors and 2-3
core faculty of the Marine Mammal Science program.

Following the practice established by our existing master's program, selection for an offer of admission to the Program requires the following:

1. Each member of the Committee has reviewed the candidate's file.
2. Each member of the Committee has certified that the candidate's file is complete.
3. Each member of the Committee has considered the candidate's course work and any information regarding relevant job experience with regard to demonstrated skills involving computation, mathematics and statistics.
4. Each member of the Committee has certified that the candidate satisfies the minimum admission requirements.

If any member of the Committee believes an applicant does not meet the minimum requirements, admission can only be offered on a provisional basis, through unanimous consent of the Committee. Provisional admission may be extended for the first semester, for example, if coursework and/or the bachelor's degree is still in progress at the time of review and the candidate can reasonably be expected to provide official transcripts to document meeting the requirement(s) before the second semester begins. If provisional admission is extended, the Committee will specify successful completion of the unmet requirement(s) as a condition required for enrollment after the first semester.

The Committee will determine two tiers of candidates eligible for admission. In determining the tiers, the Committee will acknowledge the importance of a widely representative distribution of skills.

GRADUATION REQUIREMENTS

- Successful completion of all credit and non-credit courses in the first and second year as outlined in “Curriculum” section of the academic program: 48 credit hours

- A minimum of 3.00 cumulative grade point average (GPA) by the end of the program

- Successful oral defense of the thesis to a committee of at least 3 MIMMS faculty

- Successful completion of a master's thesis
Once the MIMMS program is approved by SACS and the Board of Governors, the NCF 2024-25 Graduate Catalog will be revised to encompass both Master’s degree programs.

B. Describe the specific expected student learning outcomes associated with the proposed program and include strategies for assessing the proposed program's learning outcomes. If the proposed program is a baccalaureate degree, include a hyperlink to the published Academic Learning Compact and the document itself as Appendix C.

Learning Outcomes are listed below in relation to 6 areas of program emphasis: (1) Research Methods, (2) Quantitative Analysis, (3) Experimental Design and Data Collection, (4) Interdisciplinary Knowledge, (5) Communication, and (6) Professional Skills.

(1) RESEARCH METHODS (Interdisciplinary) GOAL: To offer hands-on experience in both field and laboratory settings, enabling students to apply theoretical knowledge in real-world contexts.
   ● SLO: Students understand and can critique application of methods across disciplines as well as applying theoretical knowledge to real-world scenarios.

(2) QUANTITATIVE ANALYSIS GOAL: To equip students with advanced skills in research methods, data analysis, statistics, and appropriate technical skills such as programming, brain imaging, and machine learning.
   ● SLO: Students exhibit proficiency in experimental design, advanced data analysis and statistics, and demonstrate competence in acquiring technical skills such as programming, brain imaging, and machine learning, through practical assignments and lab-based projects.

(3) EXPERIMENTAL DESIGN AND DATA COLLECTION GOAL: To develop proficiency in designing and conducting scientific research, interpreting data, and writing publication-quality scientific manuscripts.
   ● SLO: Students can design, conduct, and analyze scientific research in marine mammal science, and effectively write and present their findings in a format suitable for scientific publication.

(4) INTERDISCIPLINARY KNOWLEDGE GOAL: To provide an understanding of marine mammal science using an integrated approach that encompasses biology, ecology, cognition, and neuroscience.
   ● SLO: Students demonstrate an integrated understanding of key concepts in biology, ecology/behavior, cognition, and neuroscience as they apply to marine mammals.

(5) COMMUNICATION GOAL: Equip students with the skills to clearly and effectively communicate marine mammal science to both scientific audiences and the general public, emphasizing clarity and engagement.
   ● SLO: Students communicate complex marine mammal science topics effectively to scientific peers, undergraduates, and the general public.

(6) PROFESSIONAL SKILLS GOAL: To prepare graduates for diverse career paths in marine mammal science, including research, conservation management, policy-making, and education.
   ● SLO: Students are prepared to develop a professional network and
successfully manage activities such as collaborative field and laboratory projects in order to engage in diverse career paths in marine mammal science.

The new MIMMS program will be assessed separately from the undergraduate program, but will use the same methodology and follow an annual cycle. A full assessment of student learning will be conducted at the end of Academic Year 2024-25, by the Program Directors and the Marine Mammal Science Graduate Academic Program Committee.

The Marine Mammal Science program has developed a multi-faceted approach to program assessment that provides for uniform evaluation of student progress across the curriculum. All instructors evaluate student performance with respect to six core program student learning outcomes aligned with curricular requirements.

To assess student attainment of these program-level student learning outcomes, faculty in the Marine Mammal Science program have defined three levels of mastery (also see Rubric after Goals Table):

1. Fundamental: Student begins to demonstrate skills in choosing appropriate research methods, quantitative analysis, and designing experiments. Student demonstrates working as part of a team and communicates clearly, both orally and in writing.
2. Intermediate: Student fully demonstrates ability to choose appropriate research methods, quantitative analysis, and design experiments. Student communicates clearly, orally and in writing.
3. Mastery: Student is fully capable of functioning as a productive member of a Marine Mammal Science team assigned to use appropriate methods, experimental design, and quantitative analysis. Student demonstrates mastery of tools and skills required to communicate results to a variety of audiences.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Assessment Based On</th>
<th>Level of Mastery: Fundamental, Intermediate, Mastery</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESEARCH METHODS Student understands and can critique application of methods across disciplines.</td>
<td>Coursework in Research Methods and Directed Research. Thesis project</td>
<td>Assessed through evaluations of work in courses. Assessed via rubric for thesis project.</td>
</tr>
<tr>
<td>QUANTITATIVE ANALYSIS Student analyzes data aptly, uses some</td>
<td>Coursework in Statistics and Analyzing Data. Thesis project</td>
<td>Assessed through evaluations of work in courses. Assessed via rubric for</td>
</tr>
<tr>
<td>Skill Area</td>
<td>Coursework and Assessments</td>
<td>Goal</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Technology</td>
<td>EXPERIMENTAL DESIGN AND DATA COLLECTION: Student can design and critique experimental designs, and can successfully collect data through scientifically valid techniques.</td>
<td>Goal: To prepare graduates for diverse career paths in marine mammal science, including research, conservation management, policy-making, and education.</td>
</tr>
<tr>
<td></td>
<td><strong>Coursework in Research Methods, Directed Research, and January term.</strong></td>
<td><strong>Assessed periodically through evaluations of work in courses.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Thesis project</strong></td>
<td><strong>Assessed via rubric for thesis project.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>INTERDISCIPLINARY KNOWLEDGE: Student understands and can integrate the study of marine mammals from different disciplinary perspectives.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Coursework in Research Methods, Introduction to Marine Mammals, elective courses.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Thesis project</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Assessed through evaluations of work in courses.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Assessed via rubric for thesis project.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>COMMUNICATION: Student can present marine mammal science clearly, accessibly, and effectively to multiple kinds of audiences.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Assessed through evaluations of work in courses.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Assessed via rubric for thesis project.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>PROFESSIONAL SKILLS GOAL: To prepare graduates for diverse career paths in marine mammal science, including research, conservation management, policy-making, and education.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Coursework in Seminar in Marine Mammal Science. Work across all program activities.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Assessed periodically through evaluations of work in courses.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Assessed via rubric for thesis project.</strong></td>
<td></td>
</tr>
</tbody>
</table>
New College of Florida Master's in Marine Mammal Science

Milestones Rubric: Thesis Committee Assessment after Oral Defense

Student name_______________________________________________________

Date of oral exam____________________________________________________

Thesis committee:

Sponsor____________________________________________________________

Members___________________________________________________________________

Please circle the student’s level of mastery for each final goal stated below as: Fundamental (1 point), Intermediate (2 points), or Mastery (3 points)

<table>
<thead>
<tr>
<th></th>
<th>Fundamental</th>
<th>Intermediate</th>
<th>Mastery</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RESEARCH METHODS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrates a thorough understanding of research methods.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Effectively evaluates the application of research methods in others' work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Applies suitable research methods accurately in their own research.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>QUANTITATIVE ANALYSIS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrates the ability to appropriately analyze data.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Utilizes relevant software/programming languages effectively in analysis.</td>
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<td>EXPERIMENTAL DESIGN AND DATA COLLECTION</td>
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<td>Designs experiments that are scientifically valid and robust.</td>
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<td>Effectively and accurately collects data through valid techniques.</td>
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<td>Critically evaluates own and others' experimental designs.</td>
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<tr>
<th>INTERDISCIPLINARY KNOWLEDGE</th>
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<tr>
<td>Shows a deep understanding of marine mammals from various disciplinary perspectives.</td>
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<td>Integrates, applies, and explains interdisciplinary knowledge effectively.</td>
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<tr>
<th>COMMUNICATION</th>
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<td>Presents research clearly and in an accessible manner.</td>
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<td>Effectively engages and communicates with multiple kinds of audiences.</td>
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<tr>
<th>PROFESSIONAL SKILLS</th>
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<td>Demonstrates ability to develop a professional network.</td>
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<tr>
<td>Shows successful engagement in collaborative field and laboratory projects.</td>
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C. If the proposed program is an AS-to-BS capstone, provide evidence that it adheres to the guidelines approved by the Articulation Coordinating Committee for such programs, as outlined in State Board of Education Rule 6A-10.024. Additionally, list any prerequisites and identify the specific AS degrees that may transfer into the proposed program.

☒ Not applicable to this program because it is not an AS-to-BS Capstone.

D. Describe the curricular framework for the proposed program, including the following information where applicable:
   - total number of semester credit hours for the degree
   - number of credit hours for each course
   - required courses, restricted electives, and unrestricted electives
   - a sequenced course of study for all majors, concentrations, tracks, or areas of emphasis

MIMMS is designed to reflect NCF’s enduring strengths: (1) supporting intellectually motivated and adventurous students; (2) providing students with the opportunity to build strong academic and hands-on skills; (3) approaching learning through an interdisciplinary lens; (4) mentoring each individual student in a way that allows them to reach their self-determined goals; (5) enlisting the New College faculty’s and the state of Florida’s prowess in marine mammal science and the college’s location on the edge of Sarasota Bay, the home of the longest studied population of wild dolphins in the world. The Master’s is a 2-year, thesis-required program. The total number of credit hours required to earn a degree is 48.

Students will take the following courses (all are required unless noted as electives):

RESEARCH METHODS (Interdisciplinary)
- Research Methods: Cognition and Neuroscience (3 credits)
- Research Methods: Ecology, Acoustics, and Field (3 credits)

QUANTITATIVE ANALYSIS
- Statistics (3 credits)
- Analyzing Data (3 credits)

EXPERIMENTAL DESIGN AND DATA COLLECTION
- Directed Research (3 credits, every term)
- Seminar in Marine Mammal Science (1.5 credits, every term)

INTERDISCIPLINARY KNOWLEDGE
- Introduction to Marine Mammals (3 credits)
- Elective 1 (3 credits)
- Elective 2 (3 credits)

COMMUNICATION
- The Art of the Thesis Proposal (January term) (3 credits)
- The Art and Science of Writing a Thesis (January term) (3 credits)
- Writing a Journal Article (3 credits)

First Year (each course is 3 credit hours unless noted otherwise)

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<tr>
<th>Fall</th>
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<tr>
<td>Research Methods: Cognition and Neuroscience</td>
<td>The Art of the Thesis Proposal</td>
<td>Statistics</td>
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<tr>
<td>*Research Methods: Ecology, Acoustics, and Field</td>
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<tr>
<td>Directed Research</td>
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<tr>
<td>Seminar in Marine Mammal Science (1.5 credits)</td>
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* Maymester: Visiting Scholar Series (2-week, intensive Electives taught by visiting experts)

Second Year (each course is 3 credit hours unless noted otherwise)

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<th>Fall</th>
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<td>Elective (potentially in May)</td>
<td>The Art and Science of Writing a Thesis</td>
<td>Elective (potentially in May)</td>
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<tr>
<td>Analyzing Data</td>
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<td>Writing a Journal Article</td>
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<tr>
<td>Directed Research</td>
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<td>Directed Research</td>
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<tr>
<td>Seminar in Marine Mammal Science (1.5 credits)</td>
<td>Seminar in Marine Mammal Science (1.5 credits)</td>
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* SDRP: Sarasota Bay is home to the longest-studied population of wild dolphins in the world. The Chicago Zoological Society’s SDRP has now tracked six generations of bottlenose dolphins in the bay for more than 50 years and is committed to engaging in MIMMS (see Appendix D, Letter of Support from Dr. Randy Wells,
Director of CZS Program).

* Maymester: SDRP also draws marine mammal scientists from many disciplines from all over the U.S. and the world to participate in health assessments of the dolphins each May, during which time the dolphins may be recorded acoustically and visually, tagged and tracked, sampled, etc. The Master's program will take advantage of this influx of scientists to offer intense short (2-week, 60+-hour) courses in specialized topics taught by marine mammal world experts during a “Maymester”. (E.g., see Dolphin Communication in electives below.)

E. Provide a brief description for each course in the proposed curriculum.

Required Courses

Research Methods: Cognition and Neuroscience

In this introductory course, students will learn more about the theories and methods related to studying marine mammal cognition (Mod 1) and neuroscience (Mod 2). In Neuroscience, methods covered will include structural and functional MRI, electrophysiology, histology, and varied approaches to comparative anatomy and physiology. Students will have hands-on experience with marine mammal tissues and imaging datasets. Emphasis will be placed on understanding marine mammal nervous systems in terms of ontogeny and phylogeny, and their relationship to behavioral ecology and disease processes.

Research Methods: Ecology, Acoustics, and Field

In this introductory course, students will learn more about the theories and methods related to studying marine mammal ecology, acoustics, (Mod 1) and behavior, including field work in Sarasota Bay (Mod 2).

The ecology unit will cover common ecological methods such as mark-recapture analyses, population modeling, tagging and tracking, and prey surveys. In the acoustics unit, methods will include acoustic recording methods, sound visualization and analysis techniques, and passive acoustic population analyses. The behavior unit will include focal follows, photo identification, and behavioral sampling schemes.

Statistics

In this course, students will learn about methods to derive information from biological studies, including statistical approaches to interpret laboratory and clinical results. We will cover relevant background on descriptive and inferential statistics, study design and power estimation, hypothesis testing, survival analysis, and Bayesian inference. While some application is required, emphasis is placed on why and when to use each approach. We will give special attention to methods of inference where no underlying distribution is known -- a common case in biological research.

Analyzing Data

In this course, students will work on individualized approaches to data analysis and interpretation. Students will be guided through the process of identifying, conducting,
and interpreting data analyses that are specifically tailored to their research projects. Where appropriate, statistical software and programming languages will be utilized and advanced statistical techniques covered.

**Directed Research**

In this individualized tutorial, students work with faculty and other students to collect or analyze data in an area selected by the tutorial participants. Data collection will often be done off-site at a marine mammal facility or in the field.

**Seminar in Marine Mammal Science**

In this on-going seminar, faculty and students will meet weekly to discuss each other’s on-going scientific work as well as sharing and discussing peer-reviewed journal articles relevant to that work. Some meetings will include readings, talks by guest speakers, and consideration of hot topics in marine mammal science.

**Introduction to Marine Mammals**

In this course, students will delve into the world of marine mammals, including cetaceans, sirenians, pinnipeds, and mustelids. Key areas of study encompass life history, physiology, energetics, ecology, cognition, sensory biology, and reproduction. Further, we address the conservation and management challenges faced by these species. By the end, students will understand the classification of marine mammals, their aquatic adaptations, their ecological roles within marine habitats, and key conservation issues.

**The Art of the Thesis Proposal (January term)**

In this January-term seminar, each student will work with each other and their professors to draft a proposal for their thesis project. The seminar will provide guidance on building a well-constructed proposal including formulating a strong research question, developing a literature review, outlining methodology, drafting an analysis plan, and discussing possible outcomes. A focus will be placed on clear communication, demonstrating project feasibility, and thoughtful planning.

**The Art and Science of Writing a Thesis (January term)**

In this January-term seminar, each student will create a first draft of their thesis. The seminar will help students organize their findings, consider how their findings fit into the larger context of their field, and synthesize the literature they have reviewed. Additionally, guidance will be provided on the process of structuring and writing a thesis.

**Writing a Journal Article**

In this focused seminar, students will work to turn their thesis work into a journal article. The seminar will provide guidance on how to structure a manuscript, present data in a clear manner, and effectively communicate complex scientific ideas in writing. An emphasis will be placed on the importance of revision, seeking feedback, and conforming to journal expectations.
**Elective Courses - Sampling of Electives (each 3-credit hours) (These will expand over time with the Visiting Scholar Series.)**

**Acoustics**

This course begins with an introduction to underwater acoustic principles, focusing on sound propagation, reflection, absorption, and ambient noise in marine environments. Students will then explore the diverse vocal repertoires of marine mammals, including cetaceans, pinnipeds, and sirenians, emphasizing their functional significance in communication, navigation, and foraging. A pivotal component of this course is the introduction to passive acoustic monitoring techniques. These techniques allow for continuous and non-intrusive monitoring of marine mammals so we may learn about their behavior and ecology.

**Animal Learning and Cognition**

This seminar will focus on learning theory (e.g., classical and instrumental conditioning) and cognitive processes (e.g., perception, attention, memory, timing) in a variety of species as well as the methods used to study these topics. We will consider this work through multiple frameworks (e.g., ecology, philosophy, conservation). This will include contributions to behavioral flexibility in marine mammals and how cognition suits different species for dealing with different sorts of environmental/social problems.

Students will engage in assessment and design of studies as well as honing their communication skills.

**Animal Learning and Cognition Laboratory**

The substantial similarities in basic associative learning principles across vertebrates permits generalization of many learning characteristics from the study of just one species. In this lab, students will apply their knowledge of animal learning through training goldfish (Carassius auratus) as a representative species. The laboratory hands-on work will be supplemented with observations of training of marine mammal species (e.g., dolphins, manatees) and shadowing of marine mammal trainers. This course provides basic skills and foundation concepts for behavioral study of cognition.

**Neuroecology, Evolutionary and Genetic Neuroscience**

In this course students will examine theory and emerging empirical findings examining changes in marine mammal nervous systems as they speciated. We'll examine adaptations to aquatic environments and look at the impact of vastly different foraging and social ecologies in pinnipeds and cetaceans. We'll also consider sensory adaptations in sea otters and sirenians and examine the peripheral and central mechanisms for these. This course is integrative and will span all levels of Neuroscience (Molecular to Systems) and also include diverse concepts in behavioral and sensory ecology.
Dolphin Communication (Visiting Scholar Series)

Dolphins produce a remarkable number of vocalizations. In this time-compressed intensive seminar, we will investigate the structure, functions, and variety of these vocalizations with a specific emphasis on dolphin whistles. Students will explore how we study and what we know about these whistles, including hands-on experience with a local passive acoustic monitoring system set up in Sarasota Bay.

Agencies: Research, Funding, Logistics, Professional Pathways

This course will focus on the outsized role state and federal agencies play in conservation management from permitting to funding to conservation policy. Students will learn how these organizations operate, their impact on research and development, strategies for securing funding, how to navigate logistical challenges, and how to navigate career planning in these organizations.

F. For degree programs in medicine, nursing, and/or allied health sciences, identify the courses with the competencies necessary to meet the requirements in Section 1004.08, Florida Statutes. For teacher preparation programs, identify the courses with the competencies required in Section 1004.04, Florida Statutes.

XXX Not applicable to this program because the program is not a medicine, nursing, allied health sciences, or teacher preparation program.

G. Describe any potential impact on related academic programs or departments, such as an increased need for general education or common prerequisite courses or an increased need for required or elective courses outside of the proposed academic program. If the proposed program is a collaborative effort between multiple academic departments, colleges, or schools within the institution, provide letters of support or MOUs from each department, college, or school in Appendix D.

The only other graduate program at NCF is in Data Science. We do not expect to impact resources in Data Science. However, adding MIMMS has the potential to increase undergraduate enrollment at NCF.

Some undergraduate faculty are moving full-time to the Master’s program. Full-time replacements for these undergraduate positions have been approved.

H. Identify any established or planned educational sites where the program will be offered or administered. Provide a rationale if the proposed program will only be offered or administered at a site(s) other than the main campus.

The MIMMS program will be located on the main campus of NCF.

I. Describe the anticipated mode of delivery for the proposed program (e.g., face-to-face, distance learning, hybrid). If the method(s) of delivery will require specialized services or additional financial support, describe the projected costs below and discuss how they are reflected in Appendix A – Table 3A or 3B.
The mode of delivery will be face-to-face.

J. **Provide a narrative addressing the feasibility of delivering the proposed program through collaboration with other institutions, both public and private. Cite any specific queries of other institutions concerning shared courses, distance/distributed learning technologies, and joint-use facilities for research or internships.**

Although the Master’s program does not require the participation of any specific outside partner, we have fostered and will continue to foster partnerships with many organizations focused on marine mammal research and conservation. We provide examples of current and future collaborators below.

In 2020 New College of Florida and the Chicago Zoological Society signed a Memorandum of Understanding, initiated by NCF’s Prof Harley and the Sarasota Dolphin Research Program’s Dr Wells, to enhance collaboration between New College and the Sarasota Dolphin Research Program. That MOU was amended in 2022 to acknowledge the strengthened ties between the organizations through student training and resource sharing. Scientists from both organizations continue to meet regularly to discuss and confirm curricular and research partnerships.

Throughout fall 2023, Dr. Harley (NCF) & Dr. Iske Larkin (UF Veterinary College’s Aquatic Animal Health Program) met and corresponded about collaborations within NCF’s Master’s in Marine Mammal Program and UF’s Aquatic Animal Health Program, the potential creation of a state of Florida institute, and the initiation of a Manatee Research and Conservation Consortium. These collaborations include overlapping teaching, research, administrative, and service opportunities.

On August 18, 2023, Harley & Whittle met with Andy Garrett at the FWRI Manatee Necropsy Lab to discuss collaborations. In addition, they also met with FWRI’s Director, Gil McRae, to introduce the MIMMS program and future partnership. On the same day, Harley & Whittle also met with Robert Walker, Marine Operations Manager at the Florida Institute of Oceanography, to tour the RV Western Flyer, RV Weatherbird II, and RV W.T. Hogarth for MIMMS research suitability. Finally, they met with Dr. Thomas Frazer, the Dean of USF College of Marine Science (CMS). They discuss MIMMS and CMS and how the two programs could overlap. CMS has no marine mammal researchers, but does have other experts who overlap with their ecology (fish, seagrass, water quality). Dr. Frazer suggested a certificate for USF graduate students from MIMMS.

On November 9, 2023, Elizabeth Fetherston, the Marine Mammal Restoration Coordinator at NOAA NMFS, met Harley & Whittle at NCF to tour the facility and discuss MIMMS. On October 19, 2023, Whittle met with Elizabeth Fetherston & Laura Engleby, the Branch Chief for the NOAA Southeast Regional Office Marine Mammal Branch. NOAA is extremely interested in participating with our Marine Mammal Science Graduate Academic Program Committee, teaching adjunct classes in professional opportunities and skills, and partnering on grants.

On January 11, 2024, Harley & Whittle met with Dr. Paul Kirchman, the USF Sarasota-Manatee Dean of College of Arts and Sciences. They discussed MIMMS and the
potential opportunities for USFSM undergraduates (research, classes) and future graduate students.

On January 18, 2024, Rycyk and Whittle met with Larry Williams, State Program Supervisor for the FWS, and Gianfranco Basili, Deputy State Supervisor for the FWS. They discussed MIMMS and how to align with FWS priorities and current research and working groups.

K. Describe any currently available sites for internship and/or practicum experiences. Describe any plans to seek additional sites in Years 1 through 5.

☐ Not applicable to this program because the program does not require internships or practicums.

● Varied experiences and research opportunities through our partners
● focus on grant funding to expand opportunities

Currently, our undergraduate students have many opportunities for hands-on experience in Marine Mammal Science and we plan to extend those opportunities to the graduate students and expand those opportunities. Undergraduate students have engaged in internships, paid research assistantships, and analyzed data from local, state, national, and international groups. This experience has included agencies such as FWRI, zoos and aquariums like Clearwater Marine Aquarium, research institutions such as Chicago Zoological Society’s Sarasota Dolphin Research Program, and non-profit conservation organizations such as the African Marine Mammal Conservation Organization. Research produced from these opportunities has been published in peer-reviewed journals and has included student co-authors. Students have developed methodological skills across fields including, acoustics, ecology, cognition, and neuroscience and have studied whale, dolphin, manatee, sea lion, and otter species. We will build on these opportunities for the graduate students through collaborations and pursuing grants for funding. We have had discussions with FWRI, NOAA, FWS, and multiple aquariums about expanding opportunities.

V. Program Quality Indicators - Reviews and Accreditation

A. List all accreditation agencies and learned societies concerned with the proposed program. If the institution intends to seek specialized accreditation for the proposed program, as described in Board of Governors Regulation 3.006, provide a timeline for seeking specialized accreditation. If specialized accreditation will not be sought, please explain.

Not applicable.

B. Identify all internal or external academic program reviews and/or accreditation visits for any degree programs related to the proposed program at the institution, including but not limited to programs within the academic unit(s) associated with the proposed degree program. List all recommendations from the reviews and summarize the institution’s progress in implementing those recommendations.
The program most closely associated with this proposal is our only other graduate degree program, the Master of Science in Applied Data Science. While the Applied Data Science program has not sought specialized accreditation, the program was reviewed by SACSCOC. The SACSCOC committee reviewing the Applied Data Science program recommended New College:

1. develop a more detailed assessment plan to produce evidence that demonstrates the extent to which students are achieving the learning outcomes.
2. establish an advisory board for curriculum development and review

Faculty within the Applied Data Science program quickly developed a more detailed assessment plan and established an advisory committee, and SACSCOC approved the program with no additional requests for information.

This MIMMS program proposal was developed with these recommendations in mind:

1. This proposal includes a detailed assessment plan for the MIMMS program. The plan, similar to the methods of assessment employed by our Applied Data Science program, includes well-defined student learning outcomes, common definitions of levels of mastery, and assessments embedded within classes plus a thesis project.
2. This proposal outlines our efforts to develop an external Florida Institute in Marine Mammal Science / MIMMS Advisory Board to provide strategic advice and support to the program. This proposal includes objectives and responsibilities for this advisory board.

C. For appropriate degree programs, discuss how employer-driven or industry-driven competencies were identified and incorporated into the curriculum. Additionally, indicate whether an industry or employer advisory council exists to provide input for curriculum development, student assessment, and academic-force alignment. If an advisory council is not already in place, describe any plans to develop one or other plans to ensure academic-workforce alignment.

In 2017 and 2018, Harley attended the Association of Zoos and Aquariums conferences and interviewed people from many institutions on their needs and interests in curriculum to prepare future zoo/aquarium researchers and managers. These meetings informed the curriculum.

On August 18, 2023, Harley & Whittle met with Andy Garrett at the FWRI Manatee Necropsy Lab to discuss collaborations. In addition, they also met with FWRI’s Director, Gil McRae, to introduce the MIMMS program and future partnership.

On November 9, 2023, Elizabeth Fetherston, the Marine Mammal Restoration Coordinator at NOAA NMFS, met Harley & Whittle at NCF to tour the facility and discuss MIMMS. On October 19, 2023, Whittle met with Elizabeth Fetherston & Laura Engleby, the Branch Chief for the NOAA Southeast Regional Office Marine Mammal Branch. NOAA is extremely interested in advising our Marine Mammal Science Graduate Academic Program Committee, teaching adjunct classes in professional opportunities and skills, and partnering on grants.
On January 18, 2024, Rycyk and Whittle met with Larry Williams, State Program Supervisor for the FWS, and Gianfranco Basili, Deputy State Supervisor for the FWS. They discussed MIMMS and how to align with FWS priorities and current research and working groups. FWS is interested in NCF interns.

On January 31, Harley and Dr. David Mann met to discuss curriculum to prepare students for work at Loggerhead Instruments, an acoustic technology company. He is interested in hiring our graduates.

We are currently developing an external Florida Institute in Marine Mammal Science (FIMMS)/MIMMS Advisory Board with industry expertise to be used for MIMMS. The Advisory Board will provide strategic advice and support to the Master’s in Marine Mammal Science (MIMMS).

**Proposed FIMMS/MIMMS Advisory Board Objectives and Responsibilities**

**Objectives:**

- Consult on issues of materiality that may influence FIMMS/MIMMS;
- Assist in the development or expansion of the FIMMS/MIMMS network in order to help achieve its goals, including enrollment growth;
- Catalyze networks; improve opportunities for learning, understanding trends, and connecting with businesses, policymakers, and the broader community through speaking opportunities and strategic special events held at or in partnership with FIMMS/MIMMS; and,
- Advance and support the mission of FIMMS/MIMMS among known and new stakeholders alike, as well as other constituencies.

**Responsibilities:**

To assist FIMMS/MIMMS in achieving these objectives, Advisory Board members will focus on:

- Contributing input and expertise on the implementation of FIMMS/MIMMS’s strategic direction;
- Providing feedback and guidance on the development of competencies that align with organizational and programmatic objectives;
- Expanding the network of professionals and functions engaged in FIMMS/MIMMS activities to facilitate knowledge-sharing;
- Interacting with both staff members and stakeholders through mentorship, guest speaking, programmatic interactions, events, and fundraisers;
- Acting as a connector and advocate for potential grants and contractual opportunities;
• Securing funding opportunities that support FIMMS/MIMMS operations and/or project needs;

• Attending at least one Advisory Board meeting per year, whether in person or by telephone or video conference.

By focusing on these overall objectives, we envision the development of a lively and constructive platform for sharing of best practices and lessons learned across our many stakeholder areas with a focus on higher education and research.

VI. Faculty Participation

A. Use Appendix A – Table 2 to identify existing and anticipated full-time faculty who will participate in the proposed program through Year 5, excluding visiting or adjunct faculty. Include the following information for each faculty member or position in Appendix A – Table 2:

● the faculty code associated with the source of funding for the position

● faculty member’s name

● the highest degree held

● academic discipline or specialization

● anticipated participation start date in the proposed program

● contract status (e.g., tenure, tenure-earning, or multi-year annual [MYA])

● contract length in months

● percent of annual effort that will support the proposed program (e.g., instruction, advising, supervising)

This information should be summarized below in narrative form. Additionally, provide the curriculum vitae (CV) for each identified faculty member in Appendix E.

The program will have six full time faculty members, all with terminal degrees, with five joining the program in Fall 2024 and one in Fall 2025. All will contribute 60% effort to the program in Year 1, with disciplines in psychology, biology & marine science, zoology, and statistics. By Year 5, all will contribute 70% to the program. The rest of these faculty members’ effort will be related to NCF’s undergraduate program and the anticipated state of Florida center, the Florida Institute in Marine Mammal Science (FIMMS). Contract lengths are between 9-11 months.

B. Provide specific evidence demonstrating that the academic unit(s) associated with the proposed program has been productive in teaching, research, and service. Such evidence may include trends over time for average course load, FTE productivity, student HC in major or service courses, degrees granted, external funding attracted, and other qualitative indicators of excellence (e.g., thesis, dissertation, or research supervision).

Teaching

Full Term undergraduate enrollment remained steady 2016-17 for 3 years through 2018-19. Overall NCF enrollment dipped for 2019-20 and 2020-21 and so did undergraduate Psychology and Biology enrollment. In 2021-22 and 2022-23 Psychology
and Biology undergraduate enrollments rebounded, exceeding the 2016-17 levels. A similar pattern occurred for # Undergraduate of Theses Sponsored.

Undergraduate Teaching Productivity for Biology, Marine Biology, Neuroscience, and Health.

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</table>

Undergraduate Teaching Productivity for Psychology.

Summary of Cook, Harley, and Rycyk teaching over last 5 years
Research

Summary of Cook, Harley, and Rycyk peer-reviewed publication and conference presentation authorship over the last 5 years. First authorship indicated in parentheses.

<table>
<thead>
<tr>
<th>Peer-reviewed publications</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference presentations</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Awarded grants in past 5 years

- **Cook, Peter**: PI Human Frontier Science Program Grant: The Social Origins of Rhythm, $1.4 million 2022 - 2025
- **Harley, Heidi**: ONR MURI Grant, Subaward Principal Investigator, Learning from Hearing: Neurobehavioral, Physiological, and Computational Processes of Auditory Object Learning in Mammals, 2022-2025, $3.5 million 2022-2025 with 2-year renewal option.
- **Rycyk, Athena**: Environmental Discovery Awards Program: Acoustics analysis of aquatic, sound-producing organisms, Financial support for interns, $8,500, 2020
- **Rycyk, Athena**: Environmental Discovery Awards Program: Sarasota Bay Dolphin Acoustics, Financial support for interns, $14,985, 2021

Service

Summary of Cook, Harley, and Rycyk New College of Florida service within the last 5 years.

**Dr. Peter Cook**

- Member, Student Academic Status Committee
- Board Member, New College Child Care Center
- Chart Your Course (General Education Requirements) Steering Committee
- Environmental Studies Steering Committee
- Neuroscience Area of Concentration Steering Committee

**Dr. Heidi Harley**

- Director of the Environmental Studies program at NCF
- Environmental Studies Steering Committee
- Provost’s Advisory Committee (oversees the process of faculty review, retention, tenure, and promotion)
- Search committees for faculty positions
- Animal welfare committees: Bishop Museum, Lemur Conservation Foundation, Walt Disney World, Clearwater Marine Aquarium

**Dr. Athena Rycyk**

- Director of the Quality Enhancement Program (a requirement for accreditation with SACSCOC) for NCF
VII. Estimate of Investment

A. Use Appendix A – Table 3A or 3B to provide projected costs and associated funding sources for Year 1 and Year 5 of program operation. In narrative form, describe all projected costs and funding sources for the proposed program(s). Data for Year 1 and Year 5 should reflect snapshots in time rather than cumulative costs.

MIMMS will employ 9 FTE positions (60% MIMMS effort for faculty and directors in Yr 1 and 70% MIMMS effort in Yr 5). These include: 1 Faculty Research Director, 1 Science Administration Director, 4 Faculty Members, 1 Grants Administrator, 1 Institute Coordinator, 1 Lab Tech, several Adjuncts, and fringe benefits for 9 FTE (33%). The total amount budgeted for personnel and fringe benefits will be $1,016,120 in Yr 1 and $1,280,790 in Yr 5.

Additional equipment needed includes computers, printers, lab equipment, maintenance for equipment, and consumables. The amount budgeted for equipment is $25,000. The $10,000 budget for supplies includes printing and office supplies.

The budget includes $10,000 to contract with a vendor for marketing.

There is a $70,000 budget for vehicles, and vehicle maintenance.

Year 1, AY 24-25, E&G expenditures will be $1,311,920 (which includes $120,000 in non-recurring start-up funds). The total Year 1 budget will be $1,661,920. In Year 5, AY 29-30, E&G expenditures will be $1,456,590; the total budget will be $2,606,590.

Thanks to the support from the Governor and the legislature, NCF has been appropriated increased funding for financial aid. Tuition scholarships for 20 students have been budgeted. The NCF Foundation will support $100,000 in Year 1 scholarships and $400,000 in Year 5. These seem like conservative projections, as the NCF Foundation raised $250,000 in 2023 for graduate programs.

Research Assistantships will be supported through grants and partnerships. In the last 15 years, the marine mammal faculty have brought roughly $600,000 in overhead to the college—more than any other group.
B. Use Appendix A – Table 4 to show how existing Education & General (E&G) funds will be reallocated to support the proposed program in Year 1. Describe each funding source identified in Appendix A – Table 4, and justify below the reallocation of resources. Describe the impact the reallocation of financial resources will have on existing programs, including any possible financial impact of a shift in faculty effort, reallocation of instructional resources, greater use of adjunct faculty and teaching assistants, and explain what steps will be taken to mitigate such impacts.

Recent increases to NCF E&G budget have allowed us to grow the faculty and we are currently searching for 37 undergraduate faculty positions. These hires are based on student enrollment demand, therefore all staffing needs for current undergraduate programs will be met.

C. If the institution intends to operate the program as self-supporting, market tuition rate, or establish a differentiated graduate-level tuition, as described in Board of Governors Regulation 8.002, provide a rationale and a timeline for seeking Board of Governors’ approval.

☒ Not applicable to this program because the program will not operate as self-supporting, market tuition rate, or establish a differentiated graduate-level tuition.

D. Provide the expected resident and non-resident tuition rate for the proposed program for both resident and non-resident students. The tuition rates should be reported per credit hour unless the institution has received approval for a different tuition structure. If the proposed program will operate as a continuing education program per Board of Governors Regulation 8.002, describe how the tuition amount was calculated and how it is reflected in Appendix A – Table 3B.

Tuition and fee charges will match New College’s current graduate tuition and fee schedule. The resident tuition rate will be $474.33 per credit hour; the non-resident rate will be $1,169.47 per credit hour.

The program will not operate as a continuing education program.

E. Describe external financial and in-kind resources available to support the proposed program and explain how this amount is reflected in Appendix A – Table 3A or 3B.

In the last 15 years, the marine mammal faculty have brought roughly $600,000 in overhead to the college—more than any other group. The NCF Foundation raised $250,000 in 2023 for graduate programs. $250,000 in grant funds in Yr 1 and $750,000 in grant funds in Yr 5 will be secured to support the program. Philanthropic funds are estimated to be $100,000 in Yr 1 and $400,000 in Yr 5.

VIII. Self-Supporting and Market Tuition Rate Programs

Note: Skip this section If the proposed program will not operate as a self-
supporting or market tuition rate program.

Proposed Program Type
☐ Market Tuition Rate Program
☐ Online
☐ Continuing Education
☐ Self-Supporting Program
☒ N/A

A. Provide supporting documentation in a separate attachment that serves as evidence that the new program will not supplant any existing similar or equivalent E&G degree offering. Describe the evidence in narrative form below. Note that Board Regulation 8.002 considers a program similar if it is offered under the same CIP code as one funded under the E&G budget entity.

B. If the proposed self-supporting or market tuition rate program will be a track under an existing E&G program or has a similar existing E&G program, provide a side-by-side tuition and fee comparison in the table below. Provide a link to the university’s website that provides students with information about financial assistance and obligations for repayment of loans for these programs.

☒ Not applicable because the program will not be a track under an existing E&G program or is not similar to an existing E&G program.

<table>
<thead>
<tr>
<th>Tuition and Fee Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>E&amp;G Track or Program</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

C. Explain whether the program leads to initial licensing or certification in occupational areas identified as a state critical workforce need. If so, which licenses and certifications will graduates receive upon completion, and explain why implementing the program as self-supporting or market tuition rate is the best strategy to increase the number of graduates in the state.

Note: Questions D – M pertain only to market tuition rate programs. If the proposed program will be self-supporting, skip to Section IX.

D. Explain the process used to determine the proposed market tuition rate and provide the tuition of similar programs offered by other SUS institutions and private institutions as appropriate so that the tuition of at least five similar
programs is provided. If the proposed tuition rates differ for resident and non-resident students, explain why.

E. Explain how offering the proposed program at a market tuition rate is aligned with the university's mission. If the program qualifies as a Program of Strategic Emphasis, provide additional justification for charging higher tuition for the proposed program.

F. Provide a declaratory statement that offering the proposed program at the market tuition rate does not increase the state's fiscal liability or obligation.

G. Explain any proposed restrictions, limitations, or conditions to be placed on the program.

H. Explain how the university will ensure sufficient courses are available to meet student demand and facilitate program completion.

I. If applicable, provide a baseline of current enrollments, including a breakout of resident and non-resident enrollment in similar courses funded by the E&G budget entity.

J. Describe any outcome measures that will be used to determine the program's success.

K. List the campuses and/or sites at which the proposed program will be offered. If the program is only offered online, indicate that, and provide the location from which the program will be managed.

L. Provide an estimate of the total and net annual revenue the university anticipates collecting for Years 1 and 5 if the proposal is approved. This information should be consistent with the data provided in Appendix A – Table 3B, which is required as a part of this proposal.
M. Describe how revenues will be spent, including whether private vendors will be utilized and for what purpose. Additionally, identify all budget entities used for the program.

IX. Non-Faculty Resources

A. Describe library resources currently available to implement and/or sustain the proposed program through Year 5 below, including but not limited to the following:
   - the total number of volumes and serials available in the discipline and related disciplines
   - all major journals that are available to the university's students

The Library Director must sign the additional signatures page to indicate they have reviewed Sections IX.A. and IX.B.

NCF’s library provides faculty and students immediate access to more than 110,000 scholarly journals representing a broad range of disciplines. Of particular relevance to this proposal, NCF’s library holds more than 1000 journals and more than 8000 monographs related to Marine Mammal Science including the most applicable databases for this program (Web of Science, Science Direct, PsycInfo, JSTOR) and many of the most relevant journals (e.g., Marine Mammal Science, Aquatic Mammals, Animal Cognition, Conservation Biology, Behavioural and Brain Sciences).

Perhaps more importantly, modern library technology combined with collaborative agreements between NCF’s library and the libraries at other state-funded colleges and universities provide our students and faculty excellent tools to search for and request library resources from other state-funded institutions, including Florida’s Research 1 universities: University of Florida, Florida State University, Florida International University, University of South Florida, and the University of Central Florida. Journal articles requested from other Florida libraries by NCF students and faculty are delivered electronically within 48 hours, and frequently arrive only a few short hours after being requested. Books are typically available to patrons 3 to 5 days after being requested, effectively offering NCF’s researchers access to a world class research collection.

B. Discuss any additional library resources needed to implement and/or sustain the program through Year 5. Describe how those costs are reflected in Appendix A – Table 3A or 3B.

☒ Not applicable to this program because no additional library resources are needed to implement or sustain the proposed program.

The institution provides (a) student and faculty access and user privileges to its library services and (b) access to regular and timely instruction in the use of the library and other learning/information resources. The new MIMMS program does not need to modify how NCF provides access and user privileges to library services, or the access the College provides to regular and timely instruction in the use of library and other learning/information resources. NCF offers appropriate library and learning/information
NCF already has the search databases most applicable for this program (e.g., Web of Science, ScienceDirect, PsycInfo, JSTOR), as well as the most relevant journals (e.g., Marine Mammal Science, Aquatic Mammals, Animal Cognition, Conservation Biology, Behavioural and Brain Sciences). The library has budgeted for and is in the process of acquiring additional journal packages relevant to this program, including the PsycArticles package and Elsevier’s ScienceDirect Freedom Collection of journals. As noted in Section IX.A, strong working relationships with the libraries at other SUS institutions and a reliable infrastructure ensures timely and efficient access to materials not in the NCF library.

C. Describe any specialized equipment and space currently available to implement and/or sustain the proposed program through Year 5.

Describe the adequacy of physical facilities which will support the change. The MIMMS program will be housed in the historic Caples Mansion. The mansion has been empty for several years due to major HVAC upgrades, which were recently completed. NCF has a boat dock with 9 slips that can accommodate 7 more vessels in support of the program. Additionally, the Caples Carriage House is functional and will be utilized for a lab space. Current facilities are sufficient for the program.

New furniture, computers, appliances, a vehicle, and lab and teaching equipment will need to be purchased. Computers, lab equipment, boats, and other miscellaneous items will be available to the program. We already have specialized equipment for brain imaging, acoustic recording and analysis, data analysis, behavioral analysis and partnerships with other facilities for field work and other needs.

The Caples Mansion is currently not occupied and there is capacity available at the dock. The Marine Mammal Science Program will not have any significant negative impact on existing programs and services.

D. Describe any additional specialized equipment or space needed to implement and/or sustain the proposed program through Year 5. Include any projected Instruction and Research (I&R) costs of additional space in Appendix A – Table 3A or 3B. Costs for new construction should be provided in response to Section IX.E. below.

☐ Not applicable to this program because no new I&R costs are needed to implement or sustain the program through Year 5

Existing space will be used for the program.

E. If a new capital expenditure for instructional or research space is required, indicate where this item appears on the university's fixed capital outlay priority list. Appendix A – Table 3A or 3B includes only I&R costs. If non-I&R costs, such as indirect costs affecting libraries and student services, are expected to increase due to the program, describe and estimate those expenses in narrative form below. High enrollment programs, in particular,
are expected to necessitate increased costs in non-I&R activities.

☐ Not applicable to this program because no new capital expenditures are needed to implement or sustain the program through Year 5.

F. Describe any additional special categories of resources needed to operate the proposed program through Year 5, such as access to proprietary research facilities, specialized services, or extended travel. Explain how those projected costs of special resources are reflected in Appendix A – Table 3A or 3B.

☐ Not applicable to this program because no additional special categories of resources are needed to implement or sustain the program through Year 5.

G. Describe fellowships, scholarships, and graduate assistantships to be allocated to the proposed program through Year 5 and explain how those are reflected in Appendix A – Table 3A or 3B.

☐ Not applicable to this program because no fellowships, scholarships, and/or graduate assistantships will be allocated to the proposed program through Year 5.

Thanks to the support from the Governor and the legislature, NCF has been appropriated increased funding for financial aid. Tuition scholarships for 20 students have been budgeted. The NCF Foundation will support $100,000 in Year 1 scholarships and $400,000 in Year 5. Research Assistantships will be supported through grants and partnerships. Teaching Assistantships in the NCF undergraduate program will also be available to support graduate students.

X. Required Appendices

The appendices listed in tables 1 & 2 below are required for all proposed degree programs except where specifically noted. Institutions should check the appropriate box to indicate if a particular appendix is included to ensure all program-specific requirements are met. Institutions may provide additional appendices to supplement the information provided in the proposal and list them in Table 2 below.

Table 1. Required Appendices by Degree Level

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Appendix Title</th>
<th>Supplemental Instructions</th>
<th>Included Yes/No</th>
<th>Required for Degree Program Level</th>
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<tbody>
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<td>A</td>
<td>Tables 1-4</td>
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<td>B</td>
<td>Consultant’s Report and Institutional Response</td>
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<td>Academic Learning Compacts</td>
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<td>Description</td>
<td>Details</td>
<td>Required for</td>
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<td>D</td>
<td><strong>Letters of Support or MOU from Other Academic Units</strong></td>
<td>Required only for programs offered in collaboration with multiple academic units within the institution</td>
<td>X</td>
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<tr>
<td>E</td>
<td><strong>Common Prerequisite Request Form</strong></td>
<td>This form should also be emailed directly to the BOG Director of Articulation before submitting the program proposal to the Board office for review.</td>
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<td>F</td>
<td><strong>Request for Exemption to the 120 Credit Hour Requirement</strong></td>
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<td><strong>Request for Specialized Admissions Status</strong></td>
<td>Required only for baccalaureate degree programs seeking approval for specialized admissions status</td>
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<td><strong>Attestations for Self-Supporting and Market Tuition Rate Programs</strong></td>
<td>Required only for self-supporting or market tuition rate programs</td>
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<td></td>
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<tr>
<td>I</td>
<td><strong>Faculty Curriculum Vitae</strong></td>
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Appendix A

Tables 1-4
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<th>Year 1 FTE</th>
<th>Year 2 HC</th>
<th>Year 2 FTE</th>
<th>Year 3 HC</th>
<th>Year 3 FTE</th>
<th>Year 4 HC</th>
<th>Year 4 FTE</th>
<th>Year 5 HC</th>
<th>Year 5 FTE</th>
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<td>3</td>
<td>7</td>
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<td>8</td>
<td>4</td>
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<td>0</td>
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<td>Individuals who have recently graduated from preceding degree programs at this university</td>
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<td>Individuals who graduated from preceding degree programs at non-public Florida institutions</td>
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<td>Other (Explain)***</td>
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<td><strong>Totals</strong></td>
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<td><strong>62</strong></td>
<td><strong>50</strong></td>
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</tbody>
</table>

* List projected annual headcount of students enrolled in the degree program. List projected yearly cumulative ENROLLMENTS instead of admissions.
** If numbers appear in this category, they should go DOWN in later years.
*** Do not include individuals counted in any PRIOR category in a given COLUMN.
# APPENDIX A Table 2  Anticipated Faculty Participation

<table>
<thead>
<tr>
<th>Faculty Code</th>
<th>Faculty Name or “New Hire” Highest Degree Held Academic Discipline or Specialty</th>
<th>Rank</th>
<th>Contract Status</th>
<th>Initial Date for Participation in Program</th>
<th>Mos. Contract Year 1</th>
<th>FTE Year 1</th>
<th>% Effort for Prg. Year 1</th>
<th>PY Year 1</th>
<th>Mos. Contract Year 5</th>
<th>FTE Year 5</th>
<th>% Effort for Prg. Year 5</th>
<th>PY Year 5</th>
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<tbody>
<tr>
<td>A</td>
<td>Heidi Harley, Ph.D. Psychology</td>
<td>Professor</td>
<td>Tenured</td>
<td>Fall 2024</td>
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<td>Associate Professor</td>
<td>Tenured</td>
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<td>1.00</td>
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<td>A</td>
<td>Athena Ryczk, Ph.D. Biology &amp; Marine Science</td>
<td>Associate Professor</td>
<td>Tenure Earning</td>
<td>Fall 2024</td>
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<td>A</td>
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<td>Research Administrator</td>
<td>MYA</td>
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<td>C</td>
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<td>Tenure Earning</td>
<td>Fall 2025</td>
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<td>C</td>
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<td>Instructor</td>
<td>MYA</td>
<td>Fall 2024</td>
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<td>1.00</td>
<td>70.00</td>
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Total Person-Years (PY) 3.00 4.20

* Applied Data Science/Biology faculty will teach Statistics during year 1.

<table>
<thead>
<tr>
<th>Faculty Code</th>
<th>Code Description</th>
<th>Source of Funding</th>
<th>PY Workload by Budget Classification</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>Existing faculty on a regular line</td>
<td>Current Education &amp; General Revenue</td>
<td>2.40 Year 1</td>
</tr>
<tr>
<td>B</td>
<td>New faculty to be hired on a vacant line</td>
<td>Current Education &amp; General Revenue</td>
<td>0.00 Year 1</td>
</tr>
<tr>
<td>C</td>
<td>New faculty to be hired on a new line</td>
<td>New Education &amp; General Revenue</td>
<td>0.60 Year 1</td>
</tr>
<tr>
<td>D</td>
<td>Existing faculty hired on contracts/grants</td>
<td>Contracts/Grants</td>
<td>0.00 Year 1</td>
</tr>
<tr>
<td>E</td>
<td>New faculty to be hired on contracts/grants</td>
<td>Contracts/Grants</td>
<td>0.00 Year 1</td>
</tr>
<tr>
<td>F</td>
<td>Existing faculty on endowed lines</td>
<td>Philanthropy &amp; Endowments</td>
<td>0.00 Year 1</td>
</tr>
<tr>
<td>G</td>
<td>New faculty on endowed lines</td>
<td>Philanthropy &amp; Endowments</td>
<td>0.00 Year 1</td>
</tr>
<tr>
<td>H</td>
<td>Existing or new faculty teaching outside of regular/tenure-track line course load</td>
<td>Enterprise Auxiliary Funds</td>
<td>0.00 Year 1</td>
</tr>
</tbody>
</table>

Overall Totals for 3.00 4.20
Institutions should not edit the categories or budget lines in the table below. This table is specific to state-funded (E&G) programs, and institutions are expected to explain all costs and funding sources in Section VII.A. of the proposal. Detailed definitions for each funding category are located at the bottom of the table.

<table>
<thead>
<tr>
<th>Budget Line Item</th>
<th>Reallocated Base* (E&amp;G) Year 1</th>
<th>Enrollment Growth (E&amp;G) Year 1</th>
<th>New Recurring (E&amp;G) Year 1</th>
<th>New Non-Recurring (E&amp;G) Year 1</th>
<th>Contracts &amp; Grants (C&amp;G) Year 1</th>
<th>Philanthropy/Endowments Year 1</th>
<th>Other Funding Year 1 - Please Explain in Section VII.A. of the Proposal</th>
<th>Subtotal Year 1</th>
<th>Continuing Base** (E&amp;G) Year 5</th>
<th>New Enrollment Growth (E&amp;G) Year 5</th>
<th>Other*** (E&amp;G) Year 5</th>
<th>Contracts &amp; Grants (C&amp;G) Year 5</th>
<th>Philanthropy/Endowments Year 5</th>
<th>Other Funding Year 5 - Please Explain in Section VII.A. of the Proposal</th>
<th>Subtotal Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries and Benefits (Faculty)</td>
<td>750,120</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$750,120</td>
<td>1,014,790</td>
<td>0</td>
<td>0</td>
<td>100,000</td>
<td>0</td>
<td>0</td>
<td>$1,114,790</td>
</tr>
<tr>
<td>Salaries and Benefits (A&amp;P and USPS)</td>
<td>266,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$266,000</td>
<td>266,000</td>
<td>0</td>
<td>0</td>
<td>50,000</td>
<td>0</td>
<td>0</td>
<td>$316,000</td>
</tr>
<tr>
<td>OPS (including assistantships &amp; fellowships)</td>
<td>50,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$50,000</td>
<td>50,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$50,000</td>
<td></td>
</tr>
<tr>
<td>Programmatic Expenses***</td>
<td>245,800</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>250,000</td>
<td>100,000</td>
<td>0</td>
<td>$595,800</td>
<td>125,800</td>
<td>0</td>
<td>0</td>
<td>600,000</td>
<td>400,000</td>
<td>0</td>
<td>$1,125,800</td>
</tr>
<tr>
<td>Total Costs</td>
<td>$1,311,920</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$250,000</td>
<td>$100,000</td>
<td>$0</td>
<td>$1,661,920</td>
<td>$1,456,590</td>
<td>$0</td>
<td>$0</td>
<td>$750,000</td>
<td>$400,000</td>
<td>$0</td>
<td>$2,606,590</td>
</tr>
</tbody>
</table>

*Identify reallocation sources in Table 4.
**Includes recurring E&G funded costs ("reallocated base," "enrollment growth," and "new recurring") from Years 1-4 that continue into Year 5.
***Identify if non-recurring.
****include library costs, expenses, OCO, special categories, etc.

Faculty and Staff Summary

<table>
<thead>
<tr>
<th>Total Positions</th>
<th>Year 1</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty (person-years)</td>
<td>3.00</td>
<td>4.20</td>
</tr>
<tr>
<td>FTE (A&amp;P and USPS)</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Calculated Cost per Student FTE

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total E&amp;G Funding</td>
<td>$1,311,920</td>
</tr>
<tr>
<td>Annual Student FTE</td>
<td>10</td>
</tr>
<tr>
<td>E&amp;G Cost per FTE</td>
<td>$131,192.00</td>
</tr>
</tbody>
</table>

Table 3 Column Explanations

- **Reallocated Base** (E&G) | 1 | E&G funds that are already available in the university’s budget and will be reallocated to support the new program. Please include these funds in the Table 4 – Anticipated reallocation of E&G funds and indicate their source.
- **Enrollment Growth** (E&G) | 2 | Additional E&G funds allocated from the "Student and Other Fees Trust Fund" contingent on enrollment increases.
- **New Recurring (E&G)** | 3 | Recurring funds appropriated by the Legislature to support implementation of the program.
- **New Non-Recurring (E&G)** | 4 | Non-recurring funds appropriated by the Legislature to support implementation of the program. Please provide an explanation of the source of these funds in the budget section (Section VII.A.) of the proposal. These funds can include initial investments, such as infrastructure.
- **Contracts & Grants (C&G)** | 5 | Contracts and grants funding available for the program.
- **Philanthropy/Endowments** | 6 | Funds provided through the foundation or other Direct Support Organizations (DSO) to support the program.
- **Continuing Base** (E&G) | 7 | Includes the sum of columns 1, 2, and 3 over time.
- **New Enrollment Growth** (E&G) | 8 | See explanation provided for column 2.
- **Other** (E&G) | 9 | These are specific funds provided by the Legislature to support implementation of the program.
- **Contracts & Grants (C&G)** | 10 | See explanation provided for column 5.
- **Philanthropy/Endowments** | 11 | See explanation provided for column 6.
- **Other Funding** | 12 | Any funding sources not already covered in any other column of the table. Please provide an explanation for any funds listed in these columns in the narrative for Section VII.A. of the proposal.
APPENDIX A TABLE 4 ANTICIPATED REALLOCATION OF EDUCATION GENERAL FUNDS*

<table>
<thead>
<tr>
<th>Program and/or E&amp;G account from which current funds will be reallocated during Year 1</th>
<th>Base before reallocation</th>
<th>Amount to be reallocated</th>
<th>Base after reallocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>60901 - General Institutional Funds Each fiscal year, the College budgets funds towards general administrative costs; these costs have not been distributed as an administrative convenience. For 24-25, these recurring costs will be reallocated via a cost allocation model.</td>
<td>1,311,920</td>
<td>1,311,920</td>
<td>$0</td>
</tr>
<tr>
<td>Totals</td>
<td>$1,311,920</td>
<td>$1,311,920</td>
<td>$0</td>
</tr>
</tbody>
</table>

* If not reallocating E&G funds, please submit a zeroed Table 4
Appendix D

Letters of Support
March 1, 2024

Florida Board of Governors
State University System
325 West Gaines Street
Tallahassee, FL 32399

I write to confirm, as Director of the Applied Data Science (ADS) Master’s Program, my strongest support to my colleagues’ proposal to offer a Master’s in Marine Mammal Science (MIMMS). This is an excellent opportunity for the college, as New College of Florida enters into an exciting period of significant growth.

Currently NCF offers a single master’s program in Applied Data Science, and adding a second will only strengthen our graduate program standing overall within the FL SUS. Our programs target different student populations and therefore I do not anticipate any competition for applicants, but rather see us finding ways for our faculty and graduate students to collaborate.

In fact, Applied Data Science cannot exist in a vacuum and needs other scientists to not only supply data and give context to them, but also to generate context-specific hypotheses that we as data scientists can then act on. As a very specific case in point, our capstone course in the Applied Data Science program called “Practical Data Science” each year invites a partner from industry or academia to share a large dataset together with specific goals that the dataset is supposed to help answer. The students in this course then form groups and work all semester to answer those questions, culminating in a final presentation. I am already looking forward to inviting faculty, students and outside researchers affiliated with the Master’s in Marine Mammal Science program to share their datasets and ask us to help make sense and analyze their data.

I appreciate the hard work and great congeniality of my colleagues in putting together this proposal and congratulate them for designing such a strong program. Should I be of further help for your consideration of this proposal, please do not hesitate to contact me.

Bernhard Klingenberg, Ph.D.
Director, Applied Data Science Master’s Program
December 7, 2023

Dr. Heidi Harley  
New College of Florida

RE: Proposed Master’s in Marine Mammal Science program

Dear Heidi,

I am writing to confirm the Sarasota Dolphin Research Program’s intention to engage in student teaching and mentoring in New College of Florida’s planned Master’s in Marine Mammal Science program. We are excited to continue and expand the work we’ve been doing with New College over the last decades as outlined in our Memorandum of Understanding with the college. As you know, we have four scientists with PhDs in the marine sciences, all of whom have experience in supporting students at a variety of levels to participate in marine mammal research in the natural laboratory of Sarasota Bay. We look forward to working with you to help future generations learn to study dolphin behavior, health, ecology, and conservation, as we have been doing in Sarasota Bay for more than 53 years, across at least six generations of dolphins.

Sincerely,

Randall S. Wells, Ph.D.  
Chicago Zoological Society  
Vice President of Marine Mammal Conservation, and  
Director, Sarasota Dolphin Research Program
December 10, 2023

Dear Heidi,

I am writing to confirm my interest in participating in New College's proposed Master's in Marine Mammal Science program. As you know, I have been coming to Sarasota for many years to study the dolphins in Sarasota Bay, and I am excited about this new program directed towards Florida's marine mammals.

If opportunity allows, I would be interested in partnering with you, including through periodically offering an intensive short elective course on Dolphin Communication. I would also look forward to potentially assisting with supervision of student research on dolphin communication.

Please do not hesitate to contact me should you require any additional information.

Sincerely,

Laela S. Sayigh

Laela Sayigh
Research Specialist
MS #50, 266 Woods Hole Road, Woods Hole, MA 02543
Office:508-289-2977
lsayigh@whoi.edu   www.whoi.edu
Dear Heidi,

I am writing to confirm my interest in participating in New College's proposed Master's in Marine Mammal Science program. As you know, I have been coming to Sarasota for many years to study the dolphins in Sarasota Bay, and I am excited about this new program directed towards Florida's marine mammals.

If opportunity allows, I would be interested in partnering with you, including through periodically offering an intensive short elective course on Dolphin Communication.

I'm looking forward to seeing you this May in Sarasota.

All the best,

Vincent

Prof Vincent M. Janik
Scottish Oceans Institute
School of Biology
University of St Andrews
Fife KY16 8LB
UK

The University of St Andrews is a charity registered in Scotland : No SC013532
MEMORANDUM OF UNDERSTANDING

BETWEEN

NEW COLLEGE OF FLORIDA (NCF)

AND

UNIVERSITY OF FLORIDA (UF)

This Memorandum of Understanding (MOU) shall specify the purpose of the Florida Institute of Marine Mammal Science (FIMMS), the need and demand of NCF to be a state of Florida institute or center consistent with the Florida Board of Governors strategic plan, and funding resources.

1. The name of the institute or center.

Florida Institute of Marine Mammal Science

2. The identification of the host institution and participating institutions.

NCF will be the host institution and UF will be the participating institution.

3. The mission of the institute or center.

An interdisciplinary academic center providing research and graduate/undergraduate education of the highest quality in marine mammal science through the collaboration of experts and students dedicated to scientific excellence, marine mammal conservation, and outreach.

4. Guidelines for appointing, funding, supervising, and evaluating the director of the institute or center.

The NCF Provost and VP for Academic Affairs will directly supervise the director(s) of the Master’s in Marine Mammal Science (MIMMS) program, who will typically, but not necessarily, also be the director(s) of FIMMS. The NCF Provost will conduct annual year end reviews of the FIMMS directors based on annual progress reports for FIMMS submitted by the FIMMS directors, as well as meet with FIMMS directors on a monthly basis throughout the academic year. The FIMMS or MIMMS directors will be appointed by the NCF Provost, with funding from state sources (either state appropriations or legislative budget request).
5. The criteria for appointments to the institute or center’s advisory board, including terms, roles, authority, and, if known, current numbers.

NCF’s affiliated MIMMS will create a Marine Mammal Science Graduate Academic Program Committee that will assess the programmatic and academic parameters of the program. A coordinating Florida Institute of Marine Mammal Science Advisory Board (FIMMS Advisory Board) will be created upon approval of FIMMS. Board members of the FIMMS Advisory Board will be selected by the Marine Mammal Science Graduate Academic Program Committee be comprised of representatives from participating institutions. Please see Appendix 1.

6. Expectations for the administrative and logistical support for the institute or center, including expectations regarding the reimbursement to the host university for direct costs of administrative services rendered by the university to the institute or center.

ADMINISTRATION: The NCF Provost and NCF VP for Academic Affairs will directly supervise the MIMMS directors to ensure the quality of the program. NCF will provide administrative and logistical support for FIMMS and will receive compensation for overhead costs from grants initiated through NCF. For shared grants, overhead compensation will be distributed based on the conditions of the grant, including lead institution and sub awardees.

TEACHING: NCF’s MIMMS and the Aquatic Animal Health Program (AAHP) in the UF’s College of Veterinary Medicine will allow students, on an individually determined basis negotiated among program leaders at each institution, to take courses in each other’s programs without requiring these students to pay tuition beyond the tuition they already pay to the institution in which they are enrolled, i.e., UF students pay tuition to UF and may take to-be-determined courses in NCF’s MIMMS without providing tuition to NCF, and NCF MIMMS students pay tuition to NCF, and may take courses in UF’s AAHP without providing tuition to UF. In addition, teaching personnel at each institution may from time to time provide lectures or other academic services to the other institution’s students, subject to the rules and/or regulations of each institution, without remuneration.

RESEARCH: Marine mammal scientists at UF and NCF will seek out opportunities to collaborate with each other on marine mammal science projects in various capacities, e.g., consulting, grant writing, shared students, project design, etc., as overlapping interests warrant.

SERVICE: Marine mammal scientists at UF and NCF will collaborate on outreach projects to engage and educate Florida’s citizens and visitors on marine mammal science and conservation, as opportunities arise.

7. Procedures at the institutional level for recommending increases/decreases in the
appropriation of state funds for the institute or center.

In consultation with the NCF Chief Financial Officer, the NCF Provost, the FIMMS directors, and the FIMMS Advisory Board will determine if recommendations for increasing or decreasing state funds are needed for FIMMS.

8. Specifications for the processing of contracts and grants, including the percentage of overhead funds to be returned to the institute or center.

The FIMMS Grants Administrator will work directly with NCF's Office of Research Programs and Services and the grant offices of partners to process grants. Overhead compensation will be distributed to the lead institution and sub-awardees based on the conditions of the grant.

9. Expectations and criteria for the cyclic review of the institute or center at least once every five years and other planning and expectations for its operation.

Annual Institute Progress Reports will be submitted to the NCF Provost and NCF VP of Academic Affairs by the FIMMS directors and used in annual evaluations of the FIMMS directors. The FIMMS will be reviewed based on criteria and procedures established by the Florida Board of Governors’ Regulation 10.015(5)(c) at minimum of every five (5) years and will include:

a. A determination of FIMMS progress related to defined goals and objectives within the context of the FIMM’s mission, the missions of participating universities, and the current Florida Board of Governors’ Strategic Plan;
b. An assessment of the return on investment of state dollars, if applicable;
c. The need for continuation of FIMMS;
d. Possible changes in mission or organizational structure;
e. Budget reduction or expansion;
f. Recommendations for change of classification, if applicable; and
g. Recommendations for status change (active, inactive, terminated), if applicable.

NEW COLLEGE OF FLORIDA
Signature: [Signature]
Name: Richard Corcoran
Title: President
Date: 3/25/24

UNIVERSITY OF FLORIDA
Signature: [Signature]
Name: Ben Sasse
Title: President
Date: 3/22/2021
Appendix 1
FIMMS Advisory Board Charter

Mission:
The Florida Institute of Marine Mammal Science (FIMMS) Advisory Board (Advisory Board) will provide strategic advice and support to FIMMS in realizing its mission of “an interdisciplinary academic center providing research and graduate/undergraduate education of the highest quality in marine mammal science through the collaboration of experts and students dedicated to scientific excellence, marine mammal conservation, and outreach.”

Objectives:
- Consult on issues of materiality that may influence FIMMS;
- Assist in the development or expansion of the FIMMS network in order to help achieve its goals, including enrollment growth;
- Catalyze networks; improve opportunities for learning, understanding trends, and connecting with businesses, policymakers, and the broader community through speaking opportunities and strategic special events held at or in partnership with FIMMS; and,
- Advance and support the mission of FIMMS among known and new stakeholders alike, as well as other constituencies.

Responsibilities:

To assist FIMMS in achieving these objectives, Advisory Board members will focus on:

- Contributing input and expertise on the implementation of FIMMS’s strategic direction;
- Providing feedback and guidance on the development of competencies that align with organizational and programmatic objectives;
- Expanding the network of professionals and functions engaged in FIMMS activities to facilitate knowledge-sharing;
- Interacting with both staff members and stakeholders through mentorship, guest speaking, programmatic interactions, events, and fundraisers;
- Acting as a connector and advocate for potential grants and contractual opportunities;
- Securing funding opportunities that support FIMMS operations and/or project needs;
- Attending at least one Advisory Council meeting per year, whether in person or by telephone or video conference.

By focusing on these overall objectives, we envision the development of a lively and constructive platform for sharing of best practices and lessons learned across our many stakeholder areas with a focus on higher education and research.
**Time Commitment:**
Members of the Advisory Board will agree to serve for a 1-year term, which can be extended (to a 2-year and then 3-year term) upon mutual agreement among members of the Advisory Board. The Advisory Board will meet in-person semi-annually (typically for 2-3 hours). FIMMS will also periodically ask Advisory Council members to respond to emails, participate in relevant networking events, join in subgroups, engage in collective impact initiatives, facilitate capacity building and funding opportunities, and/or meet with the FIMMS team on specific initiatives. We will always seek to tailor such requests in a manner that respects each Advisory Board member’s time and commitments.

**Composition:**
The Advisory Board will consist of experts and community leaders who are committed to the mission of FIMMS. Advisory Board members should have relevant domain knowledge, excellent networks and reputations, and a demonstrated commitment to building future success for FIMMS. Members may include, but are not required nor limited to, representatives from university partners, industry, government, non-governmental organizations, nonprofit organizations, foundations, or other strategic partners.

**Officers:**
The Advisory Board will be led by a Chair or co-Chairs. The Chair(s) is charged with carrying out the mission of the Board and is empowered to perform such duties that would ordinarily pertain to the office, including but not limited to:

- Chairing the meetings of the Advisory Board; and,
- Determining the agenda of the meetings in consultation with the FIMMS Directors.
Heidi E. Harley

5010 Sun Circle
Sarasota, FL  34234
Division of Social Sciences
New College of Florida
5800 Bay Shore Road
Sarasota, FL  34243

(M) 941-685-1387  (O) 941-487-4328
e-mail: harley@ncf.edu

Education

University of Hawaii at Manoa, 1993, Ph.D., Psychology
University of Hawaii at Manoa, 1990, M.A., Psychology
University of Colorado at Boulder, 1984, B.A. cum laude, Philosophy

Teaching & Training Positions


Peg Scripps Buzzelli Endowed Chair in Psychology, New College of Florida, 2018-present.

Faculty Director, Environmental Studies Program, New College of Florida, 2002-2004, 2011-present.

Professor, Division of Social Sciences, New College of Florida, 2008-2018.

Associate Professor, Division of Social Sciences, New College of Florida, 1999-2008.

Assistant Professor, Division of Social Sciences, New College of USF, 1994-1999.

Visiting Assistant Professor, Department of Psychology, Rollins College, 1993-1994.


Elementary and Junior High School Teacher, Oak Hall School, Charleston, SC, 1985-1986. Received Teacher of the Year award.

Research Positions


Research Associate, Mote Marine Laboratory, Sarasota, FL (1997 to present)

Guest Investigator, Woods Hole Oceanographic Institute, Woods Hole, MA (2015 to 2018)


Research Assistant, Developmental Research Group at the University of Hawaii, Honolulu, HI (1992 to 1993) Cognitive research with 3- to 5-year-olds.


Research Assistant, Laboratory for Comparative Cognition at the University of Hawaii, Honolulu, HI (1986 to 1988) Cognitive research with dolphins, sea lions (Sea Life Park) & rats, pigeons.

Research Assistant, Kewalo Basin Marine Mammal Laboratory at the University of Hawaii, Honolulu, HI (1986 to 1987) Cognitive research with dolphins.

Publications


**Presentations/Published Abstracts**


Harley, H.E. (2013). Queries on dolphin consciousness. Disney’s Animal Kingdom, Kissimmee, FL. (Invited.)


Harley, H.E. (2013). Cognition and communication in the bottlenose dolphin. NIMBioS Workshop: Multidisciplinary approaches to analyzing vocal communication sequences, Knoxville, TN. (Invited.)


Honors and Awards
- Excellence in Science Communication Award for poster (2009), Echoic Shape Discrimination by Dolphins?, at the 18th Biennial Conference on the Biology of Marine Mammals
- TIP Award for Exceptional Teaching (1998)

Grants
- Disney Research Grant, Principal Investigator, 1996 - present.
- Disney-NCF contract, Coordinator, 2010 - present.
- New College Faculty Development Award, 1995 - 2021.
- Travel grants: USF, NCF, European Union, Stazione Zoologica, German Research Foundation/Office of Naval Research Global, NIMBioS, Association of Zoos and Aquariums.
- Dolphin Aviation, 1997 (with Gordon Bauer).
- Southwest Florida Water Management District, Principal Investigator, 2003.
- NOAA Grant to NCF, Investigator, 2002 - 2006.

Membership in Professional Societies
- Comparative Cognition Society
- International Marine Animal Trainers’ Association
- Society for Marine Mammalogy
- Psychonomics Society (Fellow)
- Association of Zoos and Aquariums
- International Society for Anthrozoology
- American Psychological Association
**Community Service**

New College: Student Life Committee (1995-1997; 2001-2002; 2005); Statistics Committee (1996); Student Activities Coordinator Search Committee (1996); Library Committee (1997-1999); USF Strategic Planning Task Force – Honors Programs, Services, and Environment (1998); Alumnae/i Grants Committee (2001-2002); Health Fee Committee (2001-2002); Admissions Committee (2003); Institutional Review Board (2004-2005, 2006); Provost’s Advisory Council (1999-2001, 2005, 2006-2008, 2014, 2019, 2020-2022); Environmental Studies Steering Committee (2002 - present); Shared-appointment Committee (2009-2010); FASC (2010-2011); Interdisciplinary Programs Committee (2014); Data Science Master’s Initiative (2014); Psychology Search Committees (multiple years); Anthropology Search Committee (2018-19); Philosophy Search Committee (2018-19); and more.

Reviewer: *Journal of Comparative Psychology; Journal of Experimental Psychology: Animal Behavior Processes; Aquatic Mammals; NSF; Animal Cognition; Animal Behaviour; Marine Mammal Science; International Journal of Comparative Psychology; Natural Sciences and Engineering Research Council of Canada; Journal of the Acoustical Society of America; Zoo Biology; Journal of Comparative Physiology; PNAS; Oxford University Press; MIT Press; Chicago University Press, and more.*

Community Presentations: National Student Conference of the National Consortium for Specialized Secondary Schools of Mathematics, Science, and Technology; Golden Anchor Guest Lecture Series; Anna Maria Island Library Lecture Series; Indian Beach/Sapphire Shores Neighborhood Association; NCF Foundation Lecture Series; NCF Admissions; Pine View School; McClellan Park School; Renaissance Weekend 25th Anniversary; Anna Maria Library Teens Lecture Series; G Wiz Museum of Science; Duke TIP Melodies of the Mind; Duke TIP Marine Research; Bates College Comparative Cognition; NCF Anniversary; Sarasota Newcomers’ Club; Chabad Men’s Club; multiple New College events (admissions, alumnae/i, celebrations) and more.

**Professional Service**

- Editorial Board Member: *Journal of Comparative Psychology*, 2023-present
- Co-organizer/Leader, Conference Workshop: Exploring Cognition as a Conservation Tool, Society for Marine Mammalogy, West Palm Beach, FL 2022
- IACUC Member: Lemur Conservation Foundation, Myakka City, FL, 2005-present
- DACWC Member: Disney’s Animals, Science, and Environment, 2018-present
- IACUC Member: Clearwater Marine Aquarium, 2014-present
- Bishop Museum Animal Welfare Committee, Bradenton, FL, 2017-present
- Editorial Board Member: *Aquatic Mammals*, 2007-present.
- Society of Marine Mammalogy: Louis M Herman Scholarship Committee, 2019-present
- Reviewer, SUNY Purchase Psychology Program, 2022
- Reviewer, Hampshire College Cognitive Science Program, 2014
- Member, AZA Dolphin Welfare Initiative, 2014
- Advisory Board Member: Sea World’s Blue World Initiative, 2014-2016
- CO3 (Student) Awards Committee, 2013-2017
- Florida State Science Fair Juror
Peter F. Cook, Ph.D.
September 2023
Depts. of Psychology, Biopsychology, Neuroscience
New College Florida
Sarasota, FL 34234
phone 831/535-2686 • pcook930@gmail.com
https://scholar.google.com/citations?user=LfoEA4oAAAAJ&hl=en

EDUCATION
PhD in Psychology, University of California Santa Cruz 2013
Post-Baccalaureate in Psychology, Columbia University, NY 2007
Bachelor of Arts in Philosophy, Pomona College, Claremont CA 2003

PROFESSIONAL APPOINTMENTS
Associate Professor of Psychology, New College, Sarasota FL August 2016 – Present
Teaching a 2/2 course load covering introductory and advanced topics and laboratories in cognition, neuroscience, and comparative psychology, supervise ~5 senior research theses per year and ~8 interterm student research projects, manage a grant-funded research lab with paid undergraduate research assistants

Research Associate, Institute of Marine Sciences, UCSC 2020 – Present
Collaborate and consult on pinniped research into cognition and sensory systems and neurobiology

Post-Doctoral Research Fellow in Neuroscience, Emory University 2013 – 2016
Contributed to a series of behavioral fMRI studies with unrestrained awake dogs. Took a primary role in experimental design, behavioral training, image analysis, and writing up results for publication. Also lead a series of studies using novel post-mortem white matter imaging techniques to investigate brain networks in a range of animals (including cetaceans, pinnipeds, canids, and marsupials)

CURRENT EXTERNAL FUNDING
PI Human Frontier Science Program Grant: The Social Origins of Rhythm, $1.4 million 2022 – 2025
I’m one of four PIs on this grant examining the proximal (neurobiological) and distal (evolutionary) underpinnings of social vocalization and rhythm across marine mammal clades. My primary areas are brain connectivity analyses and behavioral study design.

PUBLICATIONS (44 published peer reviewed, 1238 citations, h index = 18, i10 index = 23)
Most Notable
2021 Cook, P. F., Hoard, V. A., Dolui, S., Frederick, B. D., Redfern, R., Dennison, S. E., ... & Inglis, B. A. An MRI protocol for anatomical and functional evaluation of the California sea lion brain. Journal of Neuroscience Methods, 353, 109097.
2016 Cook, P., Spivak, M. & Berns, G. Wake Canine fMRI Predicts Dogs’ Preference for Praise Versus Food. Social Cognitive and Affective Neuroscience, nsw102 (Altmetric impact score: 1416, 99th percentile compared to outputs of the same age, third highest ranking from this journal)


All Published or in Press– Peer-Reviewed


2021 Cook, P. F., Hoard, V. A., Dolui, S., Frederick, B. D., Redfern, R., Dennison, S. E., ... & Inglis, B. A. An MRI protocol for anatomical and functional evaluation of the California sea lion brain. Journal of Neuroscience Methods, 353, 109097.


2019 Simeone, C., Fauquier, D., Skidmore, J., Cook, P., Colegrove, K., Gulland, F., ... & Rowles, T. K. Clinical signs and mortality of non-released stranded California sea lions housed in display facilities: the suspected role of prior exposure to algal toxins. The Veterinary Record, 185(10), 304.


2014  Cook, P., Spivak M. & Berns, G. One Pair of Hands is Not Like Another: Caudate BOLD response in dogs depends on signal source and canine temperament. *PeerJ* 2: e596 https://dx.doi.org/10.7717/peerj.596 (Altmetric impact score: 18, 92nd percentile compared to outputs of same age)


**Published – Other**


**In Preparation/submitted (**student co-author**)

Cook, P.F., Gray, P., Pena-Guzman, D.M., & Willet, C. The S.P.A.C.E. Model of Laboratory Science: Animals as Co-Participants in the Research Process (in revision)

Athanassiades, K., Prichard, A., Cook, P.F & Berns, G. An MRI and DTI Brain Atlas for the Coyote (Canis latrans) with Comparison to the Dog (submitted)

Michal, I.*, Inglis, B., Schmidt, T., Cook, P.F. Longitudinal Volumetric Comparison of Hippocampal Volume in a Captive Fur Seal With Long-Term Domoic Acid Toxicosis (Submitted)


Cook, P.F., Sawyer, E., Rouse, A., Casey, C., Reichmuth, C., & Berns, G. Brain Organization of Vocal Learning and Non-Learning Pinnipeds (In preparation)
Ferguson, Q.* and Cook, P. Diffusion Tensor Mapping of Oxytocinergic Projections from the Hypothalamus in Domestic Dogs and Coyotes (In preparation)

EDITORSHIP
Just offered editorial position at Frontiers of in Behavioral Neuroscience
Co-editor of a special issue for peer reviewed journal *Animals*: Novel approaches to Comparative Study of Human and Animal Emotions, to be published 2023
Handling Editor for Frontiers of Biology

GRANTS AND FELLOWSHIPS

PI Human Frontier Science Program Grant: The Social Origins of Rhythm, **$1.4 million** 2022 - 2025

New College Florida Faculty Summer Development Award 2016 - 2019

Post-doctoral Research Fellowship, Emory University 2013 - 2016

  Funded by Office of Naval Research

Co-investigator, Packard Ocean Sciences grant, $18,000, UCSC 2011 - 2012

Co-investigator, Packard Ocean Sciences grant, $20,000, UCSC 2010 - 2011

National Science Foundation Graduate Research Fellow, $120,000, UCSC 2008 - 2011

External Collaborator, Oceans and Human Health Program 2008 - Present

  Funded by National Oceanic and Atmospheric Association

GRANT APPLICATIONS 2016-2021

University of California Multicampus Research Funding Opportunities proposal: Domoic acid poisoning and epilepsy in California sea lions

NMFS ECOHAB proposal for developmental work with juvenile sea lions naturally exposed to algal toxin domoic acid *in utero*

Templeton Foundation proposal for work examining the evolutionary trail of beat keeping with primates and cetaceans

NSF proposal for rhythm research with bonobos

Australian Research Council proposal to study effects of algal toxins on wild cetaceans

HONORS AND AWARDS

Green Neuroscience Award – Society for Neuroscience 2017

Dean’s award for best presentation – UCSC Graduate Research Symposium 2012

UCSC summer dissertation writing fellowship 2012

UCSC summer research fellowship in Psychology 2011

Earl and Ethel Myers Oceanographic Trust Award 2009

Friends of Long Marine Lab, Student Research Grant 2008
INVITED PRESENTATIONS

2023  Jones, R.; Cook P.F.; Reichmuth, C.R. Ronan and the Legacy of Schusterman’s California Sea Lions. Annual Meeting of the American Acoustical Society, Chicago, IL, May 2023

2023  Cook, P.F. Auditory Connectivity in Phocid Brains – Presentation for MURI Grant Symposium

2021  Cook, P.F. Unrestrained Brain Imaging in Domestic Dogs – Presentation for Dr. Frederike Hanke’s Integrative Biology Lab, University of Rostock


2018  Alternative Models for Comparative Neuroscience Research – Whitman College, Walla Walla WA, November 2018

2017  Cook, P.F. Wild Sea Lions as a Model for Human Disease. At AQMHD at University of Alabama at Birmingham.


2013  Cook, P. Memory and Functional Connectivity in Wild Sea Lions with Naturally Occurring Hippocampal Damage, Emory University

2011  Cook, P., Reichmuth, C., and Gulland, F. A Behavioral Assay for Diagnosing Domoic Acid Toxicosis in Stranded California Sea Lions, International Symposium on Advanced Studies by Young Scientists on Environmental Pollution and Ecotoxicology, Ehime, Japan, August

2011  Cook, P., Reichmuth, C., and Gulland, F. Auditory Habituation as a Diagnostic Measure of Domoic Acid Toxicosis in Wild Sea Lions, 161st Meeting of the Acoustical Society of America, Seattle, Washington, May


OTHER CONFERENCE PRESENTATIONS

2022  Harley, H., Bauer, G & Cook, P. Cognition as a Tool in Marine Mammal Conservation. Workshop Leads, Society for Marine Mammalogy, West Palm Beach, FL
2016  Cook, P. et al. The neurobehavioral effects of naturally occurring domoic acid toxicosis in wild California sea lions. Oral presentation at the 23rd Annual Comparative Cognition Conference, Melbourne, FL, April


2016  Rouse, A., Cook, P., Reichmuth, C. & Large, E. Beat Keeping in Sea Lion as Coupled Oscillation: Implications for Comparative Understanding of Human Rhythm. Workshop presentation at Evolang, New Orleans, LA


2013  Cook, P., Reichmuth, C., and Gulland, F. Delayed alternation in wild California sea lions with naturally occurring hippocampal damage. Poster presentation at the 20th Annual Meeting of the Cognitive Neuroscience Society, San Francisco, CA, April


2012  Cook, P., Reichmuth, C., and Gulland, F. Delayed alternation in wild California sea lions with naturally occurring hippocampal damage. Oral presentation at the 9th Bay Area Memory Meeting, UC Davis, April


2010  Cook, P. and Reichmuth C. Delayed alternation by California sea lions with naturally occurring hippocampal damage. Oral presentation at the 17th Annual International Conference On Comparative Cognition, Melbourne Beach, Florida, March

2009  Cook, P. & Wilson, M. Do Young Chimpanzees have extraordinary working memory? Poster presentation at the Psychonomic Society 50th Annual Meeting, Boston, Massachusetts, November
2009  Cook, P., Bernard, A., Reichmuth, C. Which way did I go? Remote training of a spatial memory task to assess the effects of domoic acid toxicosis in stranded California sea lions (Zalophus californianus). Oral presentation by co-author at the 37th Annual Conference of the International Marine Animal Trainers Association (IMATA), Atlanta, Georgia, April. Received: Editor’s Choice Award and ATAC Award.

2009  Cook, P., Reichmuth, C., and Schusterman, R.J. Habituation of an orienting response to auditory stimuli in California sea lions (Zalophus californianus) exhibiting symptoms of domoic acid toxicosis. Poster presentation at the 18th Biennial Conference on the Biology of Marine Mammals, Quebec City, Canada, October

2009  Cook, P. Novel Brain and Behavior Research in Wild Sea Lions With Naturally Occurring Brain Damage, Oral presentation at the Bay Area Memory Meeting, San Francisco, California, August

2009  Cook, P. & Wilson, M. Do Young Chimpanzees have extraordinary working memory? Poster presentation at the Bay Area Memory Meeting, San Francisco, California, August

CAMPUS OR DEPARTMENTAL TALKS

2023  Neural Connectivity in Dolphins – Research talk for NCF interdisciplinary course in museum sciences
2021  Training Wild Animals – Research talk for NCF Goldfish Lab
2017  Studying Behavioral Flexibility in Non-Human Animals – Research talk for NCF Psychology Club
2017  Embodied Cognition in Action – Dance for Parkinson’s Symposium at New College
2016  Cook, P.F. Et al. A Natural Model for Studying Domoic Acid, Ecotoxicology Seminar, April
2015  Cook, P. Alternative Models for Cognitive Neuroscience, Emory University Post-Doctoral Symposium, March
2014  Cook, P., Dilks, D., Weiller, S., Berns, H., Spivak, M & Berns, G. Analog to Primate Face Patches in the Domestic Dog, Emory University Cognitive and Development Speaker Series, October
2013  Cook, P., Reichmuth, C., and Gulland, F. Delayed alternation in wild California sea lions with naturally occurring hippocampal damage. EEB Graduate Symposium, University of California Santa Cruz, April
2012  Cook, P., Rouse, A., Wilson, M., and Reichmuth, C. Rhythmic entrainment in a California sea lion (Zalophus californianus). 2012 UCSC Graduate Research Symposium Received: Dean’s Award for best presentation
2011  Cook, P. Functional dissociations in the medial temporal lobe: Historical perspective and a novel, naturalistic lesion model. UCSC’s Cognitive area Psychology Colloquium, March

COMMUNITY TALKS

2014  Cook, P. Sea lions keep the beat. Oral presentation at Nerd Nite Atlanta, GA, March
2011 Cook, P. The cognitive effects of domoic acid toxicosis in California sea lions. The Marine Mammal Center’s “Meet the Scientist” monthly series, Sausalito, California, April

COURSES TAUGHT AT NEW COLLEGE OF FLORIDA
Advanced Topics in Cognitive Neuroscience
Cognitive Neuroscience
Biological Psychology
Introductory Psychology – Perception and Action
Introductory Psychology – The Embodied Mind
Brain Anatomy Laboratory
Brain Connectivity Laboratory
Curiosity in Humans and Other Animals
Rhythm in Brain and Behavior
Ecologically Valid Study Design in Psychological Science
Dance, Brain and Parkinson’s
Psychology Senior Seminar

STUDENT TUTORIALS SUPERVISED
Deception
Neuroscience and Meditation
Neuroeconomics
Language in the Brain
Movement
Advanced Topics in Cognitive Neuroscience

PRIOR TEACHING EXPERIENCE
Instructor, UCSC
Cognitive Neuroscience  
Designed and sole-taught new course for Psychology Department.  
Summer 2013

Teaching Assistant, UCSC
Infant Development, guest lecture  
Winter 2013
Developmental Psychopathology, 2 weekly sole-taught sections  
Fall 2012
Cognitive Psychology, 2 weekly sole-taught sections  
Spring 2012
Psychology Statistics, 2 weekly sole-taught sections  
Winter 2012
Perception, guest lecture  
Winter 2011
Perception, 2 weekly sole-taught sections  Winter 2008
Personality Psychology, 2 weekly sole-taught sections  Fall 2007

**Guest Lectures, UCSC**

- Studying memory in human infants  Winter 2013
- Memory in non-human animals  Fall 2012
- Perception in non-human animals  Winter 2011

**Instructor, youth program “Girlstart,” Austin, TX**  Summer 2010

Used online tools to teach elementary-age girls about science, using hands on demonstrations with sea lions

**Instructor, youth program “Ocean Explorers,” Seymour Marine Discovery Center**  Summer 2008

Led hands-on science programs for children ages 7-14, focused on education and participation in marine mammal research

**Mentoring, Pinniped Cognition and Sensory Systems Lab**  2007 to 2013

Helped supervise the participation of 15+ undergraduate students per year (over 50 in total) at the Pinniped Cognition and Sensory Systems Laboratory at UCSC’s Long Marine Lab. Students engage in laboratory and field research, working 15+ hours per week for at least one year. All students complete an intensive academic and applied training program and many complete independent research projects or senior theses in the laboratory. Mentored 1–2 interns per year who worked closely with me on my dissertation research.

**Dissertation Advisor**  2010

Helped oversee Masters dissertation at St. Andrews University in Scotland: The evaluation of olfaction in stranded California sea lions (Zalophus californianus) exposed to domoic acid toxicity, completed 2010

**UNIVERSITY SERVICE**

- Member, Student Academic Status Committee, NCF  Spring 2023-Present
- Board Member, New College Child Care Center  Fall 2023
- Steering Committee, Chart Your Course (GenEd Requirements), NCF  Fall 2021
- Steering Committee, Environmental Studies, New College of Florida  2020-Present
- Steering Committee, Neuroscience Area of Concentration, New College of Florida  2018-Present
- Search Committee Member, New College of Florida  2017
  - Two searches, both successful: Human Neuroscience and Human Computer Interaction
- Seymour Marine Discovery Center at University of California Santa Cruz  2007 - 2013
  - Regular demonstrations on pinniped behavior, biology, and ongoing research
UNIVERSITY TRAINING
New College CITI training in research ethics, Emory University Training Course on Animal Care and Use, UCSC Training Course on Animal Care and Use, UCSC Research Ethics Training Course

PRIOR RESEARCH POSITIONS
Graduate Student Researcher 2007 - 2013
Pinniped Cognition Lab, Institute of Marine Sciences, UCSC
Visual and Embodied Cognition Laboratory, UCSC

Research Assistant 2005 - 2006
Primate Cognition Laboratory, Columbia University, NYC
Walrus Communication Laboratory, Hunter College and Coney Island Aquarium, NYC

AD-HOC REVIEWING

MEDIA COVERAGE
Video, Beat Keeping in a California Sea Lion, viewed over one million times - https://www.youtube.com/watch?v=6yS6qU_w3JQ
Interview, with Susanne Malveaux on CNN’s Newsroom, regarding rhythm work, April 3, 2013
Interview, with Amy Standen on KQED – NPR San Francisco, regarding rhythm work, April 2, 2013
Interview, with Carol Off on CBC’s As It Happens, regarding rhythm work, April 5, 2013
Interview, with Kiet Do on CBS San Francisco, regarding rhythm work, April 2, 2013
Coverage, regarding sea lion rhythm work: ABC, NBC, CBS, BBC, Daily Mail, San Francisco Chronicle, Wired, Slate, The Verge, Google News
Interview with Beth Ruyak on Capital Public Radio, NPR Sacramento, regarding work with wild sea lions - http://www.capradio.org/61898
Featured, in Liz Cunningham’s book Ocean Country for my work with wild sea lions
Coverage, regarding dog imaging work: 60 Minutes with Anderson Cooper, The New York Times, Time, Rolling Stone, Wired

NON-ACADEMIC WORK

**Senior Editor**, Psychiatry Weekly, NYC  
2006 - 2007

Responsible for writing and editing content for weekly Psychiatry publication distributed to over 600 hospitals nation-wide

PROFESSIONAL ASSOCIATIONS


REFERENCES

Gregory Berns, MD, PhD  
Professor, Psychology, Emory University  
36 Eagle Row  
Atlanta, GA 30322  
gberns@emory.edu - 404-561-8551

Charan Ranganath, PhD  
Professor, Psychology, University of California Davis  
1 Shields Avenue  
Davis, CA 95616  
cranganath@ucdavis.edu - 530-220-3269

Colleen Reichmuth, PhD  
Research Scientist, University of California Santa Cruz  
Long Marine Laboratory  
100 Shaffer Rd.  
Santa Cruz, CA 95060  
coll@ucsc.edu - 831-419-3017

Gordon Bauer  
Professor Emeritus of Psychology  
New College of Florida  
Sarasota, FL 34234  
bauer@ncf.edu
ATHENA RYCYK
New College of Florida, 5800 Bay Shore Rd., Sarasota, FL 34243  •  arycyk@ncf.edu

EDUCATION
2013  Ph. D. in Biological Oceanography (Florida State University, advisor Doug Nowacek)
Dissertation Foci: 1) Modeling factors that affect manatee reactions to boats 2) Acoustic cues in
boat noise that affect a manatee’s response to boats 3) Comparison to manatees with less
exposure to boats (Belize)
2007  M.S. in Biological Oceanography (Florida State University, advisor Doug Nowacek)
Thesis Foci: 1) Vocal behavior of two bottlenose dolphin (*Tursiops truncatus*) communities in the
Big Bend region of Florida 2) Soundscapes in the Big Bend region of Florida: dolphin, fish, and
anthropogenic sounds
2004  B. A. in Biological Psychology (New College of Florida)
Thesis: Manatee Psychophysical Testing: Are results biased by sequence learning?

FACULTY APPOINTMENTS
2023–current  New College of Florida (Associate Professor of Biology and Marine Science)
2023–current  New College of Florida (Director of the Quality Enhancement Program that uses First
Year Seminars to support student success)
2018–2023  New College of Florida (Assistant Professor of Biology and Marine Science)
2014–2018  Eckerd College (Adjunct, CPT, Visiting Assistant Professor of Marine Science)
2016–2017  University of Southern Mississippi (Visiting Associate Graduate Faculty)
2015–2016  New College of Florida (Adjunct Assistant Professor)

RESEARCH APPOINTMENTS
2017–current  Mote Marine Laboratory (Adjunct Scientist)

COURSES TAUGHT (FALL/SPRING)
2015–current  New College of Florida
Analysis of Florida Manatee Mortality Events
Animal Behavior Lecture x 2
Animal Behavior Laboratory x 2
First Year Seminar: The Inquisitive Scientist
Foundations of Biology I
General Biology
Introduction to Environmental Studies
Marine Ecology Laboratory x 2
Marine Mammal Behavior
Marine Mammal Biology x 2
Research Methods in Biology x 2
2014–2018  Eckerd College
Biological Oceanography Lecture x 7
Biological Oceanography Laboratory x 13
Introduction to Environmental Science x 3  
Marine Ecology Senior Seminar  
Marine Mammal Science x 2  
Principles of Ecology

2012–2013  
**Florida State University**  
Environmental Science Capstone  
Environmental Science and Policy Capstone

**COURSES TAUGHT (WINTER TERM)**

2019  
**New College of Florida: Acoustical Ecology of Sarasota Bay**  
Students learned about acoustics and soniferous species in Sarasota Bay, created a sound identification guide, an auditing protocol, and audited recordings from Sarasota Bay. Field trips included Loggerhead Instruments (developer of acoustic recorders), Weeki Wachee to kayak with and observe manatees, and the Manatee Viewing Center at the Big Bend Power Station in Apollo to observe manatees at a warm-water site.

2018  
**Eckerd College: Natural History of the Galapagos Islands and Ecuador**  
This course included three weeks in Ecuador, exploring a cloud forest, rainforest, tundra, and the Galapagos. It was a rigorous expedition across many ecosystems that provided students with the opportunity to study and contrast the unique biodiversity in these environments.

2016–2017  
**University of Southern Mississippi: Sirenian Biology** x 2 (Gulf Coast Research Laboratory)  
These courses attracted students from around the country and included trips across Florida to study manatees in the wild and participate in a manatee necropsy.

**TUTORIALS TAUGHT (examples)**

- Alligator Behavior Manuscript Revisions,  
- Dolphin Acoustic Analysis,  
- Advanced analyses of manatee body condition,  
- African Manatee Vocalizations,  
- Scientific Writing on Comparative Alligator Social Behaviors,  
- Introduction to MATLAB with a focus in marine bioacoustics,  
- Otter Behavior and Biology,  
- Sirenian Vocal Behavior with Art,  
- Sarasota Bay Soundscapes

**INDEPENDENT STUDY PROJECTS SUPERVISED (examples)**

- Bird Surveys of Crystal River,  
- Behavior of Captive and Wild Antillean Manatees,  
- Observing Social Interactions Within Captive and Wild Alligator Congregations,  
- Bioacoustic Analysis in R,  
- Carefree Learner,  
- Experimental Methods in Otter Vocal Behavior,  
- Genotyping Lemon Shark DNA,  
- A Game of Situational Awareness of Manatees and Boats,  
- Development of a Classification of Spatial Overlap in Algae and Vibrissa in Manatees,  
- Acoustic Ecology of Sarasota Bay

**FUNDED PROPOSALS**

2021  
**Rycyk, Athena**, $14,985, Sarasota Bay Dolphin Acoustics, Financial support for interns in summer 2021 from the Environmental Discovery Award Program (Cross College Alliance)
2020  **Rycyk, Athena**, $8,500, Acoustic analysis of aquatic, sound-producing organisms, Financial support for interns in summer 2020 from the Environmental Discovery Award Program (Cross College Alliance)

2018  **Rycyk, Athena** and Leininger, Elizabeth, $3,900, Acoustic analysis software for undergraduate students, Women’s Giving Circle


**PUBLICATIONS**

*Undergraduate student authors are underlined  
Graduate student authors are underlined and have an * 


Editor’s pick and featured on the cover


2021 **Rycyk, Athena** *Florida Manatee (Trichechus manatus latirostris) mortality from boat collisions*. Isana 74: 7–14. [an invited paper for a marine mammal oriented academic association in Japan; not peer-reviewed]


*Co-first authors


Among the top 10% most downloaded papers from the journal between January 2018 and December 2019


**MANUSCRIPTS IN PREPARATION**


In prep Quirós-Corella, F., Mora-Ramírez, S., **Rycyk, A. M.** et al. Working title: *Benchmarking an automatic manatee count algorithm using field audio data and vocalization recordings*, In progress (data have been collected and analysis is ongoing)

In prep **Rycyk, Athena M.**, Reep, Roger, Gaspard, Joe, Colbert, Deborah E., Nowacek, Doug, Deutsch, Charles, Mann, David, & Bauer, Gordon. Working title: *Manatee hearing and collisions with boats.* (fully drafted)

In prep **Rycyk, AM**, Skinner, J, Ryba, TR, & Erdsack, N. *Macro-epibiont growth on wild Florida manatee (Trichechus manatus latirostris).* (fully drafted)

**REPORTS**

2023 **Wood-Barron, H.** and **Rycyk, A.** Croc Calls: How American and Morelet’s Crocodile Vocalizations Differ in Structure, Crocodile Specialist Group’s Student Research Assistance Scheme Report


PRESENTATIONS

Undergraduate student authors are underlined
Graduate student authors are underlined and have an *

Accepted


2023

Harley, Heidi E., Larkin, Iske V., Bauer, Gordon B., and Rycyk, Athena Has the time come to create a Manatee Science and Conservation Consortium to coordinate and support manatee research?, Abstract submitted to the 6th Manatee Research Symposium

2023


2023


2023

Thompson, C., McHugh, Katherine, Wells, R., Rycyk, A., & Mann, D. Listening in with the dolphins: Baseline monitoring of the underwater soundscape in Sarasota Bay, Florida, Southeast and Mid-Atlantic Marine Mammal Symposium

2022


2022

*Factheu, Clinton, Rycyk, Athena, Takoukam, Aristide, Kekeunou, Sévilor, Ramos, Eric, Kikuchi, Mumi, and Keith-Diagne, Lucy, African manatee (Trichechus senegalensis Link, 1795) detection in Lake Ossa, Cameroon: comparing point-scan, active and passive acoustic monitoring, 3rd African Bioacoustics Community Conference

2022


2022

Gordon Bauer, Athena Rycyk, Roger Reep, and David Mann, Manatee Cognition, Psychophysics, and Conservation, 24th Biennial Conference on the Biology of Marine Mammals

2022

Nicola Erdsack, Athena Rycyk, Jessica Skinner, Tyrone Ryba, and John E. Reynolds, Relevance of severe macro-epibiont growth on the skin of Florida manatees (Trichechus manatus latirostris), 24th Biennial Conference on the Biology of Marine Mammals
2022 *Clinton Factheu, Athena Rycyk*, Eric Angel Ramos, Mumi Kikuchi, Beth Brady, Aristide Takoukam Kamla, Lucy Keith-Diagne, Preliminary findings: Assessing the impact of giant salvinia invasion on the African manatee distribution in Lake Ossa and determining the most efficient manatee detection method. 24th Biennial Conference on the Biology of Marine Mammals

2022 Emily Garcia and *Athena Rycyk*, Characteristics of Wild Florida Manatee (Trichechus manatus latirostris) Vocalizations in Different Sized Groups, 24th Biennial Conference on the Biology of Marine Mammals

2022 Karianne Kapfer and *Athena Rycyk*, The Phenology of Humpback (Megaptera novaengliae), Blue (Balaenoptera musculus), Fin (Balaenoptera physalus), Sperm (Physeter macrocephalus), and Killer Whales (Orcinus orca) Determined by Passive Acoustic Monitoring Near Barkley Canyon, 24th Biennial Conference on the Biology of Marine Mammals

2022 Marena Long and *Athena Rycyk*, Distribution of the Bigg’s Killer Whale Ecotype in the Salish Sea with Regards to Seasonality and Pinniped Vulnerability, 24th Biennial Conference on the Biology of Marine Mammals

2022 Isabella McDonnell and *Athena Rycyk*, Growth patterns and the effect of acidification on postcranial vibrissae in Florida manatees (Trichechus manatus latirostris), Vocalizations, 24th Biennial Conference on the Biology of Marine Mammals


2021 *Rycyk, Athena*, Bauer, Gordon, Wells, Randell, Gaspard, Joe, and Mann, David, Florida Manatee (Trichechus manatus latirostris) Hearing, Boat Noise, and Variations in Background Noise, presentation at the 4th Manatee Research Symposium (September 9, 2021)


(Trichechus manatus latirostris) Hearing and Boat Collisions: Integration of Laboratory and Field Studies. **Invited** presentation for Oregon State University's Hatfield Marine Science Center


2018  **Rycyk, Athena M.**, Bauer, G., Reep, R., and Mann, D. Florida Manatee Hearing and Boat Collisions: Integration of Laboratory and Field Studies. Oral Presentation at International Society for Comparative Psychology, Los Angeles, CA (presented by Bauer)

2014  **Rycyk, Athena M.**. Response of manatees to boat traffic: behavior and the acoustic environment. **Invited** talk, Eckerd College Program Series

2013  **Rycyk, Athena M.**. Florida manatee response to vessels. **Invited** talk, Texas A&M, Corpus Christi


2009  **Rycyk, Athena M.,** Deutsch, Charles, J., Barlas, Margaret E., Nowacek, Doug P., Koslovsky, Stacie, & Frisch, Katherine Florida manatee behavior during vessel approaches. Poster at the 18th Biennial Conference on the Biology of Marine Mammals, Québec City, Canada


2008  **Rycyk, Athena M.,** Nowacek, Doug P., Deutsch, Charles, J., & Barlas, Margaret E. Vocal behavior of Florida manatees during vessel approaches. Oral presentation at the 156th Meeting of the Acoustical Society of America, Miami, FL


**RESEARCH PERMITS**

Current  Co-investigator on U.S. Fish and Wildlife Service permit for select research activities with wild and captive Florida manatees, Permit # MA100361-4

Current  Co-investigator on National Oceanic and Atmospheric Administration permit for research activities with bottlenose dolphins, Permit # 26622

Current  Special Activity License: Aquatic Species Collecting Certificate

2019–2020  Distribution of North American River Otter in Myakka River State Park, permit # 10281914

**IACUC CURRENTLY APPROVED STUDIES**

Current  Manatee Sensory Processes and Cognition, protocol #23-03-PC2 (Mote Marine Laboratory IACUC)

Current  Passive Acoustic Recording of Florida and African Manatees, protocol # S00007646 (USF IACUC)

Current  Marine Diversity Sampling, protocol # IS00011634 (USF IACUC)

Current  Observations of Social Behavior in Crocodilians, protocol # IS00008691 (USF IACUC)

**COMPLETED STUDENT UNDERGRADUATE THESIS PROJECTS SPONSORED**

2023  Crocodile talk: Structural analysis of American and Morelet’s crocodile vocalizations in Belize, Helena Wood-Barron
<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>Identifying biomarkers of brevetoxin exposure in the Northern quahog metabolome with $^{1}H$ NMR spectroscopy</td>
<td>David Ponce</td>
</tr>
<tr>
<td>2023</td>
<td>Common karp and koi coloration from cultural and scientific perspectives</td>
<td>Alana Swartz</td>
</tr>
<tr>
<td>2022</td>
<td>Underwater sound localization in Mississippi map turtles (Graptemys pseudogeographica kohnii)</td>
<td>Hannah Olson</td>
</tr>
<tr>
<td>2022</td>
<td>How effective are flowerpot snakes when it comes to controlling termite pest populations?</td>
<td>Skylar Gross</td>
</tr>
<tr>
<td>2021</td>
<td>Sleeping with the (cuttle)fishes: measuring sleep through arousal threshold in the dwarf cuttlefish, Sepia bandensis</td>
<td>Hannah Nations</td>
</tr>
<tr>
<td>2021</td>
<td>The phenology of humpback (Megaptera novaeangliae), blue (Balaenoptera musculus), fin (Balaenoptera physalus), sperm (Physeter macrocephalus), and killer whales (Orcinus orca) determined by passive acoustic monitoring near Barkley Canyon</td>
<td>Karianne Kapfer</td>
</tr>
<tr>
<td>2021</td>
<td>Growth patterns and the effect of pH on the Florida manatee (Trichechus manatus latirostris) vibrissae</td>
<td>Isabella McDonnell</td>
</tr>
<tr>
<td>2021</td>
<td>Distribution of the Bigg’s killer whale ecotype in the Salish sea with regards to seasonality and pinniped vulnerability</td>
<td>Marena Long</td>
</tr>
<tr>
<td>2021</td>
<td>Characteristics of wild Florida manatee (Trichechus manatus latirostris) vocalizations in different sized groups</td>
<td>Emily Garcia</td>
</tr>
<tr>
<td>2021</td>
<td>Directional discrimination of goldfish conditioned under pure blue to pure green light spectrum</td>
<td>Chenoah DuBree</td>
</tr>
<tr>
<td>2020</td>
<td>The underwater vocal repertoire of the North American river otter</td>
<td>Victoria Dina</td>
</tr>
</tbody>
</table>

**PROFESSIONAL SOCIETY MEMBERSHIP**
- Society for Marine Mammalogy
- Acoustical Society of America
- Animal Behavior Society
- Florida Marine Science Educators Association

**PEER REVIEW SERVICE**

**SERVICE**
- Educational Policy Committee, Quality Enhancement Plan committee, Environmental Studies Steering committee, FTIC (first time in college) Summer Advising, Outreach to prospective and accepted students for Biology and Marine Biology, service related to the following AOCs (majors): Animal Wellbeing and Conservation, Biology, Biopsychology, and Marine Biology, member of the scientific committee for the 3rd African Bioacoustics Community Conference, board member of the Sarasota Bay Listening Network
Amber Gabrielle Whittle, Ph.D., PWS (lapsed)

C: 941-586-2612 | ambergabrielle@msn.com

Executive Director

Lead by example and build consensus and partnerships among diverse stakeholders to achieve goals; exceptional communication and interpersonal skills; well-versed at incorporating science, research, and conservation into management objectives; successful grant and private fundraiser; a detail-oriented yet visionary, strategic, and goal-driven program and staff manager providing clear accountability, transparency, and relationship-building; consistently delivers projects on time and on budget; strong policy, permitting, and natural resource management skills.

Expertise

Strategic Vision & Execution | Relationship-Building | Development & Grant Writing | Team Motivation & Leadership | Board Relations | Science-Based Conservation | Project & Program Management | Environmental Permitting | Media Engagement | Political Engagement | Fiscal Accountability | Stakeholder Engagement & Partnership

Multi-Stakeholder Coordination Experience

GOMA | TBEP | FWRMC | SAFMC | SBEP | NRDA TWG & EPT | FWLI | GSAA | GCERTF | USCRTF | SFERTF | FCMP | SeaGrant

Work Experience

Southface Sarasota at the Florida House, Sarasota, FL
Executive Director/VP of Development & Marketing and Communications for Southface

Responsible for strategic vision & planning & execution, development, board relations, political relations, media relations, operations, supervision, and communications for a resilience program focused on energy efficiency, watershed restoration, climate change, and social equity and health. Raised in excess of $2M for Sarasota location with major donors, foundations, corporations, and individuals. Lead the Southface, a $8.7M company, Development department focusing on unrestricted funds and the MarComm department focusing on marketing, website, social media, press, campaigns, events, professional, and program materials.

New College of Florida, Sarasota, FL

Director of the Pritzker Marine Biology Research Center and Research Scholar

Perform administrative oversight of an active research and teaching facility, including staff supervision, budget, faculty and student research and teaching resource allocation, partner engagement, facility functionality, $4M grant funding for research and facilities, tours, and outreach.

The Florida Aquarium, Center for Conservation, Apollo Beach, FL

Director of Conservation/Director of Grants & Foundations

Visioned, funded, supervised and guided conservation priorities and communication, including coral larval propagation and sea turtle research. Integrated multi-level, multi-partner conservation practices throughout the Aquarium and its species. Met with legislative leaders to guide conservation policy. Led research, in both the field and the lab, to improve conservation practices and to inform restoration actions. Annually oversaw >$1.1M budget and a growing satellite campus focused on conservation. Led grant & foundation funding acquisition; raised $4.6M. Communicated mission and science to public through media, scientific presentations, & video.

Fish and Wildlife Research Institute, St. Petersburg, FL

Habitat Research Administrator

Supervised and guided research priorities and products for ~55 researchers and administrative personnel in the Coral, Seagrass, Upland, Coastal Wetlands, and Freshwater Plants groups. Annually, oversaw >$3.2 million in grants and managed >$1M in State Trust Fund budgets, which consistently had <2% reversion. Fostered collaborative relationships with internal and external partners, including local, state, federal, private, NGO, and public stakeholders. Ensured data is high quality and available to the public and scientific papers, products, and professional talks are generated. Identified research needs and funding to address strategic management questions/issues. Served on the Institute Leadership Team to create, direct, and manage the research priorities of the Florida Fish and Wildlife
Conservation Commission (FWC). FWC and federal agencies utilized my group’s research and monitoring to adaptively manage the living resources in our State and waters.

- Served as the FL representative to the Gulf Coast Ecosystem Restoration Task Force (GCERTF) Science Coordination Team (SCT).
  - Co-led the Inland Habitats, Watersheds, and Offshore Waters for the SCT consisting of over 20 scientists from 12 different federal and state agencies. Author of the “Inland Habitats, Watershed and Offshore Waters” chapter of the GCERTF Gulf of Mexico Science Assessment and Recommendations document (2011).
  - Participated as a Florida team member to advocate for our priorities, verbally and in writing.
- Served on the Standing Team Member for the Florida Wildlife Legacy Initiative (FWLI).
  - Serve as the liaison for the Habitat Monitoring/Coral Restoration/Marine teams.
  - Targets and approves ~$3M in FWS flow-thru grant funding annually.
- Served as the FL liaison: Healthy Ecosystems for the Governors’ South Atlantic Alliance (GSAA), Habitat and Environment Advisory Panel for the South Atlantic Fisheries Management Council (SAFMC), and Wildlife and Fisheries for the Gulf of Mexico Alliance (GOMA).
  - Core team member to initiate, facilitate (3-part workshop), and draft the Gulf Monitoring Network proposal.
  - Rank funding proposals for GOMA’s Gulf Star Program
- Coastal Monitoring team lead for the Florida Water Resources Monitoring Council (FWRMC).
  - Co-developing a multi-agency, multi-discipline Adverse Events Response Plan.
  - Authored and championed a Legislative Budget Request for Adverse Events Response.
- Grants committee membership: SWG, MEHRMA, FWRI, GOMA, NOAA RESTORE Science
- Florida Coral Disease Advisory Committee Coordinator, Steering Committee for the Florida Coastal Mapping Program (FCMP), and FWC Climate Change Steering Committee

Cardno, Inc., Sarasota, FL

Senior Ecologist/Dive Safety Officer

Worked as an Environmental Consultant to plan, coordinate, and manage small- and largescale projects for public and private sector clients, including scheduling, training, and supervising large field and writing teams. Marketed ENTRIX’s environmental consulting services at meetings and conferences, secured clients and projects, managed client expectations, participated in a multi-discipline (planners, engineers, environmental) project teams, and obtained environmental permits from local, state, and federal agencies. Consistently produced quality products on time and under budget. Managed watershed master planning projects including, Dona Bay Watershed in Sarasota, FL, Horsepen Strand in Collier County, and the Gordon River in Collier County. Delineated wetlands and native habitats, performed listed species surveys, produced and managed budgets, wrote in excess of 100 extensive responses to Requests for Proposals for private and government contracts, marketed potential clients and partners, and supervised environmental scientists.

**EARLY CAREER EXPERIENCES**

<table>
<thead>
<tr>
<th>Position</th>
<th>Organization</th>
<th>Location</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Assistant</td>
<td>UNIVERSITY OF HAWAII AT MANOA</td>
<td>Honolulu, FL</td>
<td>2000-2003</td>
</tr>
<tr>
<td>Research Assistant</td>
<td>UNIVERSITY OF HAWAII AT MANOA</td>
<td>Honolulu, FL</td>
<td>1998-2003</td>
</tr>
<tr>
<td>Vertebrate Ecology Intern</td>
<td>TALL TIMBERS RESEARCH STATION</td>
<td>Tallahassee, FL</td>
<td>FALL 1997</td>
</tr>
<tr>
<td>Natural Resource Management Intern</td>
<td>SARASOTA COUNTY</td>
<td>Sarasota, FL</td>
<td>SUMMER 1997</td>
</tr>
<tr>
<td>Assistant to the Public Lands Program</td>
<td>THE NATURE CONSERVANCY</td>
<td>Gainesville, FL</td>
<td>1997</td>
</tr>
<tr>
<td>Educational Intern</td>
<td>MOTE MARINE LABORATORY</td>
<td>Sarasota, FL</td>
<td>SUMMER 1994</td>
</tr>
</tbody>
</table>

**EDUCATION**

**Ph.D., Zoology (Ecology, Evolution, & Conservation Biology Specialization)** - UNIVERSITY of HAWAII at MANOA, Honolulu, FL
BS, ZOOLOGY - UNIVERSITY OF FLORIDA, Gainesville, FL  
BA, ENGLISH - UNIVERSITY OF FLORIDA, Gainesville, FL  
Semester Abroad—James Cook University, Townsville, Australia  
TRAINING: AAUS Diver, NAUI Master Diver, NAUI NITROX Diver, Professional Wetland Scientist (lapsed), Leadership Sarasota, 24-hour HAZWOPER, Dan O2, CPR, First Aid, Situational Leadership, Working with the Media, Supervisors Apprentice, FWC Climate Change Course, Certified Nonprofit Executive Director  

PROFESSIONAL/VOLUNTEER EXPERIENCE, AWARDS  
National Assoc. of Marine Labs, Treasurer/Secretary  
Science and Environment Council, Chair  
ACP Member Recognition  
Aquarium Conservation Partnership, Steering & Policy Committees  
SeaGrant Advisory Committee, Manatee County  
Sarasota County Coastal Advisory Committee, Chair  
Sarasota Bay Estuary Program Technical Advisory Committee, Chair  
Silent Auction Chair, FRUITVILLE ELEMENTARY PTO, Sarasota, FL  
Vice President BoD, SISTERS OFFERING SUPPORT, Honolulu, HI  
Outstanding Supervisor Nominee, FISH AND WILDLIFE RESEARCH INSTITUTE  
In-Class Volunteer (4 hrs./mth), FRUITVILLE ELEMENTARY, Sarasota, FL  
Science Fair Judge, FRUITVILLE ELEMENTARY, Sarasota, FL  
Environment Day Co-Chair/Executive Committee, CHAMBER OF COMMERCE, Sarasota, FL  
Community Service Co-Chair, YOUNG MOTHER’S LEAGUE, Sarasota, FL  
Graduate Student Representative, UNIVERSITY OF HAWAII AT MANOA, HI  
Key Club, UNIVERSITY OF FLORIDA, Gainesville, FL  
Alternative Spring Break, Washington DC

SCIENTIFIC PUBLICATIONS  


SCIENTIFIC PRESENTATIONS
Personal Pollution Energy Panel; EcoSummit, December 2023
Natural Resources; League of Women Voters, November 2023
Energy Efficiency; Sustainable Communities Workshop, November 2022
Resilience is Energy Efficient; New College Challenge, October 2022
Green Careers Panel; Environmental Design Conference, September 2022
Southface Sarasota at the Florida House: A Strong Partnership; Sarasota County School Board, April 2022
Demonstrating Water and Energy Conservation; Florida Outdoor Writers Conference, August 2021
Coral Restoration & Artificial Reefs; Artificial Reefs Summit, November 2020
SE FL Restoration Hub; SEFCRI Technical Advisory Committee, November 2020
Coral Breakthrough; Hope Spot Initiative w/ Sylvia Earle, October 2019
Coral Conservation at The Florida Aquarium; Florida Association of Environmental Professionals, Sept. 2019
Advancing Conservation with Zoos and Aquariums; Capitol Hill Ocean Week, June 2019
Hill Day Lunch Briefing for Congressional Staff; Capitol Hill Ocean Week, June 2019
Coral Outplant; Florida Aquarium Board of Directors, May 2019FWRI Coastal Mapping Priorities; Florida Coastal Mapping Program Workshop, January 2018
Habitat Research Section Overview; FWRI All Hands, November 2017
Overview of Florida's Marine Habitat Status and Trends; Florida Marine Science Symposium, October 2017
Florida’s Monitoring Approach – Integrated Mapping & Monitoring Programs and Metadata Catalogs; Gulf of Mexico Alliance Wildlife and Fisheries Team, March 2017
Acropora Palmata’s Last Stand in Florida?; International Coral Reef Symposium, June 2016
Coral Reef Monitoring and Management; Institute Leadership Team, September 2015
Ecological Monitoring in Florida; National Academy of Science, August 2015
Healthy Ecosystems Priorities; Governor’s South Atlantic Alliance, September 2014.
Update on Gulf Coast Ecosystem Restoration Council Activities; American Water Resources Association, September 2014.
Coastal Monitoring Update; Florida Water Resources Monitoring Council, May 2014.
National Coastal Condition Assessment; Institute Leadership Team, April 2014.
Habitat Research; Administrative Assistants Meeting, September 2013.
ILT Science Meeting; Institute Leadership Retreat, January 2013.
FWRI Restoration Research; Charlotte Harbor National Estuary Program, October 2012.
Dry Tortugas National Park; Fruitville Elementary, October 2012.
GOMA Nuggets; Gulf Monitoring Network, September 2012.
Habitat Research; Institute Leadership Team, May 2012.
Breakout Discussion: Strategies for communicating science and scientific uncertainty to the public; Sarasota Bay Watershed Symposium, February 2012.

Coral Reef Fish Jenga; FWC Climate Change Course. October 2011.


Ocean Governance, an Overlap; Beyond the Horizon, Creating a Network of Special Ocean Places: Sarasota, FL. May 2011.

Summary of FWC’s Role in the DWH Oil Spill Response; Sustainable Remediation Forum, February 2011.

Habitat Research; Institute Leadership Team, October 2010.

Horsepen Strand Conservation Area; UF Water Institute Symposium, February 2010.


Dona Bay Watershed Restoration Plan; Benedict Symposium, Conservancy of Southwest Florida, December 2007.


Investigation of sound as a recruitment cue in larval fishes and Schindleria sp.; Albert L. Tester Memorial Symposium, April 2003.


Nearshore currents in Hanauma Bay and their possible relationship to larval ecology; Albert L. Tester Memorial Symposium, April 2001.

Do larval supply, larval recruitment, and adult population size in (four) reef fish species differ within and outside a Marine Life Conservation District on Oahu, Hawaii? (A study design); Hawaii Institute of Marine Biology Student Colloquium, November 1999.

The fall migration patterns of Purple Gallinules at the Tall Timbers Research Station; Tall Timbers Research Station. October 1997.

**GRANTS FUNDED/MANAGED**

Barancik Foundation and other funders $1.2M
Selby Foundation $17,484
Duckwall Foundation $5,000
Patterson Foundation $2,500
Giving Challenge $4,380
NOAA Community Restoration Grant $300,000

National Fish & Wildlife Foundation $448,800
National Fish & Wildlife Foundation $168,900

Department of Environmental Protection $34,200; $15,000

Zoo-Park Partnership $4,760

FWC Fish & Wildlife Research Institute $18,836; $34,491; $8,641

Tampa Bay Butterfly Conservancy $1,760

FWC State Wildlife Grant $61,500

**GRANT AWARD COMMITTEES**

Gulf of Mexico Alliance Gulf Star, Association of Zoos & Aquariums Conservation Grant Fund, FWC Marine & Estuarine Habitat Restoration, FWC Florida Wildlife Legacy Initiative, NOAA RESTORE Act, Coastal Advisory Committee

**MEDIA**