

Environmental Science and Policy MS and PhD Programs

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EVR MS & PHD HANDBOOK

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About the Department of Environmental Science and Policy

Overfishing, habitat degradation, water and land use mismanagement, pollution, natural hazards, and climate change are the principal threats to sustainability of natural environments and the societies that depend on them. We in the Department of Environmental Science and Policy (EVR) approach these challenges knowing that we cannot solve the environment's greatest crises without first accepting people and the environment as two inherently linked components of the earth system. EVR research and academics deal with complex interdependent nonlinear systems that involve human-environmental feedbacks, different legitimate perspectives and values, nontrivial or unclear tipping points, and limited possibilities for controlled experimentation.

EVR's mission is solutions-oriented, policy-relevant research and scholarship, training the next generations of environmental managers, practitioners, and research scientists. Our faculty are leading scholars in the applied environmental social sciences dedicated to addressing pressing ocean, coastal, and climate challenges central to long-term sustainability and resilience. We are the hub at the Rosenstiel School for connecting the natural sciences with society and policy.

The EVR faculty and students seek to improve understanding of the dynamical interactions of humans and the natural world. Our motivation arises from an awareness that better scientific information alone, without a full understanding of the cultural, socioeconomic, political, and psychological context for the use of this information can limit its impact, and in some cases lead to unintended or unwanted equity and environmental consequences. Here at the Rosenstiel School, and UM in general, in comparison to the natural and physical sciences, there has been a dearth of social scientists dedicated to environmental scholarship and teaching. The Department of Environmental Science and Policy fills this critical intellectual gap.

EVR is interdisciplinary at its core. The Department aims to broadly represent the functional and cultural intersection between humans and the natural world. As such, EVR focuses on providing environmental and social science perspectives that have explicit policy relevance for these complex challenges. In particular, the interdisciplinary aspect of the department refers to conducting teaching and research that are problem driven and solutions oriented, integrating data, methods, and theories from the social and natural sciences.

About the Abess Center

The Ph.D. in Environmental Science and Policy program is under the Leonard and Jayne Abess Center for Ecosystem Science and Policy and administered by the Rosenstiel School Department of EVR. The Center was founded in 2003 and the naming gift from the Abess

family was made in 2005. Its mission is to create innovative, interdisciplinary initiatives that bridge the gap between science and environmental policy.

The Center was inspired by the experiences in Washington, D.C. of Mary Doyle, late UM Law School Dean Emeritus, who served in the Clinton Administration as Assistant Secretary of the U.S. Department of the Interior. Doyle, who was instrumental in crafting the Comprehensive Everglades Restoration Plan and during her time in the Interior Department, noted that scientific and technical personnel had difficulty communicating with policy and legal personnel, and vice versa.

Upon returning to UM, Doyle and the newly appointed President of the University, her Clinton Administration colleague Donna Shalala, agreed that addressing the communication problem between scientists and policy makers required a new type of interdisciplinary approach that would foster discourse between these communities. Their conversations resulted in the chartering of the Center for Ecosystem Science and Policy, with Doyle and then-Dean Otis Brown, of the Rosenstiel School of Marine, Atmospheric, and Earth Science, as co-directors. The aim was to provide programming and training for faculty and students that would enable them to bridge disciplines thanks to a broad exposure to the methods, theoretical approaches, operating assumptions, and political contingencies of the natural and social sciences. In 2004 the undergraduate program began, and in 2010, the graduate program. Every initiative the Center undertakes is informed by an awareness of the importance of the co-production knowledge among scientists, policymakers, and the public, including our graduate Ph.D. and Master of Professional Science (M.P.S.) and Master of Arts (M.A.) programs, our undergraduate program, our scholarly collaborations, and our community outreach.

In terms of governance, the Abess Center Director reports directly to the Provost, who also appoints the Faculty Advisory Committee, which currently includes representatives from all schools and colleges except the School of Music and advises on all Center activities. The Ph.D. degree is awarded under the Graduate School, as are the M.P.S. and M.A. in Environment, Culture, and Media. The undergraduate B.S. and B.A. degrees are awarded by the College of Arts & Sciences, and the directors of the undergraduate program reports both to the College and the Director of the Abess Center.

The current Director of the Center is Kenny Broad who worked closely with Mary Doyle for several years and assumed directorship in 2010. Andee Holzman is Assistant Director of the Center, and also served under Mary Doyle. Katharine Mach is Director of the Environmental Science and Policy Ph.D. program. Terri Hood is Assistant Director of the Ecosystem Science and Policy B.A. and B.S. programs, and Julia Wester is Associate Director. Meryl Shriver-Rice is Director of Environmental Media and of the Environment, Culture, and Media M.P.S. and M.A. programs.

Kenny Broad's primary faculty appointment is at the Rosenstiel School, as is Mach's; Hood and Wester have appointments in the College of Arts & Sciences; Holzman and Shriver-Rice are Abess administrators.

Requirements for the Environmental Science and Policy (EVR) Marine Ecosystems and Society (MES) Master of Science (M.S.) degree

Key milestones for the MES M.S. degree:

- Required course should be completed in Year 1, with progress towards other class credit requirements.
- Committee should be formed, with a first committee meeting, in Year 1.
- Thesis proposal should be developed and defended before the start of Year 2.
- Thesis should be completed and defended by the end of Year 2.

Timeline

M.S. students are expected to complete the degree in 2 years, with a thesis equivalent to a single scientific paper that could be submitted and published in a scientific journal. A short extension of the time in residence may be requested in writing by the Committee Chair and submitted to the EVR Graduate Program Director.

Year 1: Enroll in courses; Form Committee and coordinate first Committee meeting; Define research plan and draft proposal; Defend proposal before the end of summer semester

Year 2: Conduct research and begin writing thesis chapters; Complete thesis and host defense

Students are required to meet with their Committee a minimum of once per year and provide a succinct, 1-page progress report (template from GSO). The Committee Chair is expected to add a statement summarizing their view of student progress, and the report is then evaluated by EVR faculty during the annual student review. The progress report should be distributed annually to the EVR Graduate Program Director and the GSO for filing.

Thesis Committee

The thesis Committee consists of no fewer than three members, as follows:

- a. The Chair, who must be a member of the EVR/UM Graduate Faculty (<https://environmental-science-policy.earth.miami.edu/people/faculty/index.html>)
- b. One additional EVR Graduate Faculty member
- c. One faculty member from outside the Rosenstiel School (i.e., outside EVR or UM)

Students must submit their Appointment to Committee form to the GSO and notify both the GSO and EVR Graduate Program Director of any changes in membership.

Credits

Students enrolled in the M.S. program must complete 30 credits, including 24 course credits (18 of which must be completed in residence at UM) and 6 research credits. A maximum of 6 credits of graduate coursework from

another school that did not result in the conferral of a degree may be transferred at the sole discretion of the Committee Chair. Transferred credits should be relevant to the EVR program and each student's track. Students should discuss these courses with their Committee Chair and obtain an approval memorandum from each instructor of the equivalent graduate course at the Rosenstiel School. The memorandum is reviewed by the EVR Graduate Program Director and, upon approval, submitted to the GSO for official notice.

The distribution of credits in the M.S. program should follow one of the options below:

Option 1: Students enroll in 18 course credits over 2 semesters, with the remaining 6 course credits completed in the 3rd semester. One (1) research credit is added to any semester in which enrollment is <9 credits in order to achieve full-time status. Students balance their time between coursework and research in the 3rd semester. The 4th semester is devoted to completing thesis research and will include the balance of research credits required to reach 6 total.

Option 2: Students enroll in 24 course credits over 2 semesters. The remaining research credits are distributed across the 3rd and 4th semesters, and this time is devoted entirely to thesis research.

Option 3: Students enroll in any number of credits across the 1st, 2nd, and 3rd semesters. One (1) research credit is added to any semester in which enrollment is <9 credits in order to achieve full-time status. Students balance their time between coursework and research in the 3rd semester. The 4th semester is devoted to completing thesis research and includes the balance of research credits required to reach 6 total.

Please note: Regardless of enrollment option, students are expected to submit their proposal and begin their thesis research no later than their first summer in residence. The subsequent pace will depend upon whether or not students elect to enroll in courses during their 3rd semester.

Course Requirements

Course enrollment and scheduling is defined by the student and their Chair. At minimum, all MES M.S. students in EVR are required to enroll in either of the following courses, unless proficiency is clearly established:

Statistics & Data Analysis for Environmental Science & Policy (MES 624)

OR

Statistics for Marine Scientists (RSM 612)

All M.S. students are required to complete at least 12 course credits in MES/EVR. A formal request for an exception to this rule can be submitted in writing to the Committee Chair, and any/all exceptions must be approved by the EVR Graduate Program Director.

Full-time status is achieved by either a total of 9 course credits or 1 dissertation research credit (MES 810) (i.e., 800-level courses are full time status indicators) per semester.

Additionally, students are expected to attend EVR department and student seminars.

Thesis Proposal & Proposal Defense

The first step in designing a research project is to formulate clearly stated research questions, hypotheses, and research design. The purpose of the proposal is to certify the readiness of the student to conduct thesis research. A proposal template will be provided, and all M.S. students are required to attend a proposal writing seminar during their second semester in residence. Students must submit and defend their proposal before the start of their third semester in residence.

The purpose of the proposal defense is to ensure that each student possesses the requisite knowledge and expertise to successfully execute the proposed research project, as well as facilitate an open discussion regarding the stated objectives and experimental approach.

Thesis

The full thesis should be equivalent to a single, peer-reviewed publication.

Thesis Defense

EVR requires a public oral presentation of the M.S. thesis, and students are required to submit the complete written thesis to the Committee 4 weeks prior to the oral defense. The Announcement of Defense form, signed by all Committee members, must be submitted to the GSO 2 weeks before the intended defense. The final thesis must be evaluated by the Electronic Thesis and Dissertations office at the Gables Campus and signed by all Committee members in accordance with the deadlines established by the UM Graduate School and posted on the UM Academic Calendar (<http://www.miami.edu/index.php/registrar/calendar/>).

Funding

Two funding models currently exist:

- A) MS-1: a self-funded MS. The Chair covers the research costs of the thesis. Tuition and insurance are paid by the student or granted to the student by fellowships.
- B) MS-2: a fully-funded MS. The Chair covers the stipend, tuition, insurance, and thesis research costs (similar to that of a Ph.D. student).

Environmental Science and Policy Ph.D. degrees

The Abess Center, through the Department of Environmental Science and Policy, offers a Ph.D. in Environmental Science and Policy (EVR). It also offers a joint Ph.D. and J.D. program with the School of Law. The Ph.D. program was launched in 2010 and is intended to provide students with the ability to work on interdisciplinary research problems using mixed methods, both quantitative and qualitative. The goal is for students to formulate dissertation projects that factor in both social and natural science approaches at the outset in order to further understanding of linked social-ecological systems. The program targets top caliber students whose demonstrated skills and interests involve both science and societal needs and who seek the theoretical and analytical skills to address complex, human-environment problems from academic and applied perspectives.

Each Ph.D. student is paired with a faculty mentor. **The faculty mentor may be based at any UM department, not limited to the Department of Environmental Science and Policy.** Mentors are generally identified prior to admission, when applications are reviewed by an admission committee and then referred to potential mentors. These mentors generally agree to fund two years of the student's stipend (approximately \$60,000), while the Abess Center provides two years of funding and the Provost's office provides one year. All admitted students receive 5 years of tuition waivers.

During the first year, students receive training in the fundamentals of the methods and theories of environmental sciences, with an emphasis on the possibilities and constraints for integrating science and policy into problem-based research. Each student then consults with their mentor and with Abess Director Broad, EVR Graduate Program Director Mach, and any other relevant UM faculty, to determine additional coursework that will best prepare them to address their interdisciplinary research problem. Coursework is usually completed by the end of the second year, though certain advanced skillsets (e.g., Bayesian statistics, advanced remote sensing) may need to be acquired in later years.

The Ph.D./J.D. program with the School of Law launched in 2013. This joint program requires students to apply for and be accepted to both the Ph.D. and the J.D. separately. Students complete requirements for both degrees, with 12 Law credits counted toward the Ph.D. and 9 Ph.D. credits toward the J.D. The program enables students with strong interests in both environmental policy and law to prepare for careers in either the private or public sector in a shorter amount of time than if pursuing both degrees separately. Students admitted to the Ph.D. program first complete the core courses in the first year, spend the entire second year as law students, and thereafter take a mix of courses in order to accrue the necessary credits for both degrees. They have mentors in both the Ph.D. and J.D. programs who consult on their coursework and progress toward both degrees.

All Ph.D. students are able to tap into research networks across a range of schools and colleges at the University of Miami, including the Rosenstiel School, the School of Law, the College of Arts and Sciences, the Miller School of Medicine, the College of Engineering, the School of Architecture, and the School of Communication, the College of Education and Human Development, and the School of Business. The graduate program draws upon existing interdisciplinary collaborations among Abess-affiliated faculty, as well as engaging in the continuous process of forging new connections with researchers and policymakers, both within and outside UM.

The Ph.D. program is intended to provide students with the ability to work on interdisciplinary research problems using mixed methods, both quantitative and qualitative. The goal is for students to formulate dissertation projects that factor in both social and natural science approaches at the outset in order to further understanding of linked social-ecological systems.

General Academic Requirements and Regulations for the Ph.D.

Key milestones for the EVR Ph.D. degree:

- Required courses should be completed in Year 1.
- Comprehensive exams should be completed by the middle of Year 2.
- Committee should be formed by the middle of Year 2.
- Dissertation proposal should be developed and defended before the start of Year 3.
- Dissertation must be completed and defended by the end of Year 5.

Core courses

The EVR Ph.D. core courses are ECS 601 Interdisciplinary Environmental Research (cross listed as MES 603), ECS 603 Interdisciplinary Environmental Methodology, and ECS 605 Interdisciplinary Environmental Law. In addition to the core courses, students take additional coursework according to their particular needs with regard to skills and knowledge for their dissertation project. Students may take Directed Readings or other special topics courses through EVR/ECS. (For the Ph.D./J.D. please see suggested six-year plan in the Appendix.)

Students who have not completed their comprehensive exams are, after year one, enrolled in ECS 830 Pre-candidacy Research for credit; after they have attained candidacy, they are enrolled in ECS 840 Doctoral Dissertation credits.

Tracks for degrees

The EVR Ph.D. does not have tracks. Students complete the core courses and then take additional coursework according to their particular needs with regard to skills and knowledge for their dissertation project.

The Ph.D./J.D. has a suggested six-year plan (see Appendix).

Comprehensive exams

Students complete comprehensive exams covering material from the core courses and their areas of dissertation focus by the middle of their second year. The format of the three exams is to be determined in consultation with the primary advisor(s) and the Graduate Program Director. The exams typically consist of three critical literature reviews of roughly 30 pages covering areas relevant to the student's dissertation project OR an equivalent demonstration of methodological and theoretical expertise. Each paper or project-based exam will be read and graded by at least two comprehensive exam committee members using a standardized rubric (see Appendix). Comprehensive exam committee members are selected by the faculty advisor in concert with the student and the EVR graduate program director. Comprehensive exam committee members need not be identical to the dissertation committee members and can be from within or outside the University of Miami.

Students who do not achieve an average of 3 or higher on the rubric have the opportunity to revise or rewrite one or more of the comprehensive exams, which will then be re-graded. Students who do not achieve a 3 upon

re-grading are deemed to have failed the comprehensive exams, will not have the opportunity to defend a dissertation proposal, and will exit the program (they may or may not be awarded an M.A. at the discretion of their advisor and the director of the Ph.D. program).

Dissertation proposal defense

The dissertation proposal process involves a combination of three components: a written proposal, an oral presentation of the proposal, and a committee only “closed-door” deliberation and defense. This process, a major milestone towards your dissertation, should be completed after your comprehensive exams and by no later than the end of the second year.

The **written proposal** of your research can take different forms corresponding to the disciplines and fields of inquiry relevant to your work. Please use past proposals close to your fields of inquiry as models, also drawing from strategies reviewed in ECS 601. You must circulate your written proposal to your committee for the defense at least two weeks prior to the meeting with them, or earlier if requested by any committee member. Copy the PhD graduate program director and Andee on this email.

For the **oral presentation**, students, in consultation with their advisor(s) and the PhD graduate program director, have the option of choosing either (1) a public presentation immediately followed by the committee only “closed-door” defense or (2) a presentation done as part of the committee only “closed-door” session. Prior to the defense, students are strongly encouraged to practice their presentation for Abess students, relevant research groups, and/or Abess program leadership.

During the “**closed-door**” **deliberation** with the committee, whether the presentation itself is for the public or for the committee, committee members will pose questions to the student in multiple rounds of discussion. Once the discussion concludes, the committee members deliberate on a decision and evaluation for the student. The presentation and committee discussion may not exceed 2.5 hours in length.

The defense will be assessed by the dissertation committee members and graded by a standardized rubric. Students who do not achieve an average of 3 or higher will have one opportunity to revise their proposal and have it re-graded. If they do not succeed in achieving an average of 3 or higher, they will not advance to candidacy and will exit the program (in rare cases, it may be possible to be awarded an M.A. at the discretion of their advisor, the director of the PhD program, and the Dean of Graduate Studies). Students who have advanced to candidacy should work with Andee to complete program and university paperwork central to this major milestone in the program. Students who advance to candidacy will then be expected to formulate a schedule with deadlines for their remaining time in the program.

Dissertation defense

By the middle of second year, students should form a four-member dissertation committee in consultation with their faculty advisor. Three members must be members of the UM graduate faculty; one member must be from another institution. There may be more committee members if needed, but such situations should be discussed with the program director prior to contacting any committee members.

Once the committee is determined, students must fill out the committee form (now electronic) and submit it to the GSO and to Andee Holzman.

The dissertation will be defended in a public presentation of approximately 45 minutes with 15 minutes additional for questions from the audience. The public defense is followed by a “closed door” session where the committee meets with the candidate and will continue in-depth questions and discussion of the

dissertation. There is no set time limit, and this usually runs 1.5-2 hrs. Following the discussion, the candidate is asked to leave the room and the committee discusses the candidate's progress and makes their determination on the success of the defense and any additional requirements for completion of the Ph.D.

Students must follow the Graduate School guidelines for Electronic Theses and Dissertations, which can be found in the Graduate Handbook as well as online at the Graduate School site.

Colloquia series, special seminars, and conferences

The Abess Center carries out extensive programming during the year as part of its mission. These events are open to all graduate students, faculty, undergraduate students, and community members. Our events expose graduate students to professionals from academia, industry, and government, and we frequently arrange for campus speakers to meet one-on-one with graduate students to discuss their dissertation projects, as well as to interact with them informally at Abess-sponsored lunches and dinners. Graduate students are expected to be active participants in all Abess Center events, as well as relevant programming from RMSAS, GSO, and the Department of Environmental Science and Policy.

Students are also expected to seek opportunities to present posters or do oral presentations at leading interdisciplinary conferences. They should plan with mentors to identify suitable conferences and clear all work to be presented with them in advance. Please also alert the program director and administrator of your plans and provide them copies of your materials for your files. The Abess Center and Department of Environmental Science and Policy should be credited as your affiliation in all public presentations, and the Abess logo should be included. Copies of the logo are provided in Appendix and can also be obtained from Andee Holzman.

Some funding for conferences is available through Abess Center; please consult with Andee Holzman well in advance about covered expenses. In addition, GAFAC and the Rosenstiel School have some funding, but it generally must be applied for in Fall as funds quickly are exhausted. For instructions on how to apply, please see Appendix.

Grading and remaining in good standing

The EVR Ph.D. program follows the Graduate School policies with regard to grading and remaining in good standing. According to the Graduate Handbook, "An average of B (3.0) is required for a graduate degree, and no 'D' credit may be counted toward the degree. All work leading to the graduate degree and taken as a graduate student will be counted in computing the quality point average, including courses graded 'D'." (Graduate Handbook, p. 9; please see that document for further rules regarding grading, active status, and withdrawal.)

Ethical obligations

EVR Ph.D. students must abide by the terms of the Graduate Student Honor Code, which can be found online at:

<https://www.grad.miami.edu/policies-and-forms/academic-integrity/index.html>

Academic calendar

The EVR Ph.D. program follows the University of Miami academic calendar, which can be found online through the Office of the Registrar. See: <https://registrar.miami.edu/dates-and-deadlines/academic-calendars/index.html>

Faculty for the Ph.D. program

University-wide faculty participation

The Abess Center does not have faculty permanently assigned to teach within the Ph.D. program. Instead, faculty participate in the Ph.D. program as affiliated faculty. Graduate students may establish research connections with faculty across the University and are guided in that effort by their advisors and by the Abess program administrators.

Interaction with other graduate programs

The EVR Ph.D. students, who take courses at multiple campuses, are exposed to faculty and students from a number of other graduate programs, especially including Epidemiology and Public Health, Biology, Geography and Sustainable Development (master's-level programs), Psychology, and most programs at the Rosenstiel School (Ph.D. and master's-level). Lecture series and other events coordinated by other graduate programs are routinely publicized to EVR students, such as the Biology lecture series, the Rosenstiel School speakers, and environmentally relevant talks at the medical campus. We also encourage students to take advantage of the programs organized by the Graduate School to bring students together from across the University to engage in professional development, hone their writing skills, and present their dissertations to an interdisciplinary audience (e.g., 3 Minute Dissertation). In the past, the Abess Center has funded informal interdisciplinary get-togethers either at the Rathskellar or WetLab (food covered, not alcohol). Several of our students have also been involved in an environmental film discussion group organized by Ph.D. students in English Literature, and have hosted screenings and discussions in our central Abess Center space, Ungar 230 C/D.

Academic direction and day-to-day administration

The EVR Graduate Program Director is Katharine Mach. The Abess Center is directed by Kenny Broad. Day-to-day activities are overseen by the Assistant Director of the Abess Center, Andee Holzman. Mach and Broad are responsible for big picture planning and outreach, carry out their own research, head the admissions process, teach in the M.S./Ph.D./M.P.S. and Exploration Science programs, liaise with all faculty mentors, fundraise, and advise graduate students. Mach and Broad consult as necessary with the EVR Department Chair, relevant Deans, and the Provost's office for administrative and other matters.

Holzman and the Rosenstiel School GSO are responsible for administering the annual admissions process; handling semester-by-semester enrollments, stipends, and tuition waivers; monitoring graduate student progress; assisting with field work planning and funding; aiding in communication with faculty mentors and committee members; and facilitating comprehensive exams and dissertation defenses. In addition, they counsel graduate students regarding personal or family disruptions, and oversee publicity for the graduate program.

Policy-making mechanisms

The Abess Center Director reports to the Provost as well as to the Dean of Graduate Studies for relevant graduate degree issues. In addition, the Abess Center Faculty Advisory Committee (see Appendix TK for full list of members), which consists of representatives from all but one College and School at UM, serves as a consultative body for the Center's activities, as well as its graduate and undergraduate programs. In this

respect, graduate policy is determined directly by the Graduate Dean, and is influenced by the Faculty Advisory Committee.

Resources

Library resources and services

The University of Miami Libraries, comprising collections on Coral Gables, Miller School, and Rosenstiel campuses, are ranked among the top 50 research libraries in the U.S., with a collection of more than 3.75 million volumes and e-books and databases providing access to over 100,000 electronic journals. Services include Interlibrary Loan, multimedia equipment and support, subject-area research librarians, and a newly expanded digital humanities and digital learning group that promotes interdisciplinary digital research. Graduate students have full access to collections and services, and EVR and the Abess Center tap the expertise of research librarians as needed to help support students' MS and dissertation work. Abess students also have access to the School of Law's library, which has one of the largest collections in the southeastern U.S.

Existing equipment and facilities

The EVR Ph.D. program is housed in the Abess Center on the second floor of the Ungar Building, which is located near the Richter Library, the Cox Science Center and Plaza, and the School of Law along the Memorial Drive entrance to the Coral Gables campus. Abess Center occupies one L of the floor, while the undergraduate Marine Science and Marine Ecosystems and Society occupy the other L. With these programs we share a lobby with a video wall and green wall, a student study space and kitchen area, and a large conference/lecture space that seats 50 and can be split into two smaller rooms seating approximately 15 and 35 people. We have three faculty offices and a staff office along one corridor and three faculty offices along the other. The remainder of the second corridor is devoted to four graduate student offices, shared by two students each. Across from those offices is a large shared graduate space with an additional twelve desks, as well as chairs, bookshelves, and a display screen.

Classroom and laboratory space

Core graduate courses are taught in Ungar, the Coral Gables campus, and the Rosenstiel School, depending on faculty preference. Students take additional, elective courses on all campuses, depending on their research topic.

All Ph.D. students are provided office space on Ungar second floor, either in the shared space in Ungar (typically first- and second-year students) or in shared offices (two per office). The large, central Ungar 230 C/D space hosts many gatherings for graduate students, including lectures, workshops, and dissertation defenses.

Some students are also provided with office and/or laboratory space in other locations, depending on their faculty advisor.

Ph.D. Students

Requirements for admission and admission data

The EVR doctoral program admits students directly from undergraduate study, as well as those who have pursued graduate studies. Students for whom English is not a first language must comply with University requirements for English proficiency.

Full data on admitted students and applicants are provided in Appendix 7 and 8.

Teaching or research positions held by graduate students

All EVR Ph.D. students are required to serve for two semesters as teaching assistants for undergraduate Ecosystem Science and Policy courses. These include our introduction to Ecosystem Science and Policy, our spring field work course, and our Quantitative Methods course. At the discretion of the graduate program director, in consultation with students, they may also TA other courses as needed.

Students with at least 18 credits also have the option of developing and teaching 200-level courses for the undergraduate program focusing on their dissertation topics. (This is permitted under our accrediting body). We are unable to compensate students for this but consider it as a necessary form of professional development to have available for students. Those proposing courses provide the Abess director and graduate program director with a short description, and then are given one-on-one feedback and guidance on designing a syllabus and teaching the course.

Research positions are assigned by individual faculty mentors and comport with the Graduate School guidelines of entailing no more than 20 hours of work per week. Because of varying disciplinary expectations, research positions may be in the lab, in the field, or may involve library or archival research.

Training of TAs and RAs

Entering EVR graduate students attend the annual orientation program organized by the Graduate School. In addition, they receive one-on-one guidance from faculty members for whom they serve as TAs or RAs. We endeavor to schedule professional development sessions or to encourage students to attend such sessions carried out by other units (e.g., IRB training, supplemental training in statistical or other software, grant writing workshops, dissertation proposal writing workshops, team science workshops, big data analysis, workshops on DEI in science, etc.).

Quality of applicants

Each year, we have drawn applicants from many top 50 U.S. colleges and universities. We have also generally drawn a fair number of applicants from China, India, Africa, and the Middle East. Our pool has generally been diverse, and students frequently have already earned one or two additional graduate degrees and have published in peer review journals. Typically, we skype, talk by phone, or meet in person with applicants and then connect them with faculty whom we believe they might have a productive connection with. We actively have endeavored to encourage underserved minorities and women to apply through individual contact or follow up in response to email queries. As of 2021, we have enrolled a total of 35 female students and 18 male. Of

these, we have had six international students (from Canada, Kenya, Nigeria, Sri Lanka, the Philippines, and the Netherlands). Ethnic backgrounds have included Black and African American, Latin and Hispanic American, Asian American, Iranian-American, and Pakistani-American. We have enrolled 1 Veteran.

In re: productivity of our students, please see Appendix 9 for a list of student publications.

Retention rate

Of 57 students admitted since the program's inception in Fall 2010 through 2021, seven have not advanced to candidacy. Of these, four students have received an M.A. from the program; three have left the program without a degree.

Placement of graduates through 2017

Stacy Aguilera, Ph.D. 2017, has been awarded a NOAA Sea Grant Knauss Fellowship for 2018.

Temitope Alimi, Ph.D. 2016, is an Orise Fellow at the Centers for Disease Control and Prevention.

Caitlin Augustin, Ph.D. 2016, is Adjunct Faculty at NYU Tandon School of Engineering and Head of Learning and Technical Practice at DataKind.

Jessica Bolson, Ph.D. 2010, is a Postdoctoral Fellow at University of Pennsylvania Wharton Risk Management and Decision Processes Center.

Katie Crosley Beem, Ph.D. 2014, is Lecturer and Student Academic/Residential Life Coordinator at Cornell University in D.C.

Karlisa Callwood, Ph.D. 2016, is Director, Informal Education and Engagement at Pacific Science Center.

Jill Ulrich Fernandes, Ph.D. 2016, is Research Officer at the Centre for Animal Science at the Queensland Alliance for Agriculture and Food Innovation.

Austin Gallagher, Ph.D. 2015, is Founder and CEO, Beneath the Waves, Inc.

Catherine Macdonald, Ph.D. 2017, is Co-founder and Director of the Field School.

David Shiffman, Ph.D. 2016, is a Liber Ero Postdoctoral Research Fellow at Simon Fraser University.

Galen Treuer, Ph.D. 2017, is a Post-doctoral Researcher at the University of Connecticut's Department of Civil and Environmental Engineering.

Aaron Welch, Ph.D. 2015, is Founder of Two Docks Shellfish, LLC.

Julia Wester, Ph.D. 2015, is Co-Founder and Director of Program Development at the Field School.

(See also Appendix 10 for greater detail.)

Additional Information

Appendix 1—Sample 6-year schedule JD/PhD**

Sample 6-Year Schedule: J.D./Ph.D. in Environmental Science and Policy (ECS) Students Entering through the School of Law**

The joint program will enable students to obtain both a JD and PhD in 6 years. The first year will be spent in the School of Law, and the remaining five years will be spent taking both Law and ECS courses. Students must complete 79 credits in the School of Law and 9 credits from ECS will be double counted to complete the total of 88 JD credits. Students must complete 48 credits toward the ECS PhD and 12 Law credits will be double counted toward the total of 60 ECS credits. (Students entering with a master's degree are eligible to have 24 of the 60 ECS credits waived.)

The sample schedule below is intended as a general scheme that shows how a student would proceed through the program, entering with Law first and is not intended to be prescriptive. Students who commence law study first will complete 32 credits the first year. In subsequent years, students will take a combination of law and ECS-related courses, with the caveat that all work toward the law degree, including a required professionalism/ethics course, an upper-level writing requirement, and a skills course, must be completed within 5 years of entering the JD program.

| | Fall | Spring | Law CR | ECS CR | Cumulative credits |
|-----------------|----------------------|----------------------|--------|--------|--------------------|
| Year 1 | | | | | |
| | LAW 16 CR | LAW 16 CR | 32 CR | 0 CR | 32 LAW |
| Year 2 | | | | | |
| | LAW 9 CR ECS 6 CR | LAW 9 CR ECS 6 CR | 18 CR | 12 CR | 50 LAW 12 ECS |
| Summer 2 | | | | | |
| | LAW Externship 6 CR | | 6 CR | | 56 LAW 12 ECS |
| Year 3 | | | | | |
| | LAW 6 CR ECS 6 CR | LAW 6 CR ECS 6 CR | 12 CR | 12 CR | 68 LAW 24 ECS |
| Year 4 | | | | | |
| | LAW 5 CR ECS 6 CR | LAW 6 CR ECS 5 CR | 7 CR | 11CR | 79 LAW 35 ECS |
| Year 5 | | | | | |
| | ECS 3 CR | ECS 3 CR | 0 CR | 6 CR | 79 LAW 41 ECS |
| Year 6 | | | | | |
| | ECS 3 CR | ECS 4 CR | 0 CR | 7 CR | 79 LAW 48 ECS |

Students will also complete an environmentally related law externship for 6 credits. Students must complete 79 credits in the School of Law and 9 credits from ECS will be double counted to complete the total of 88 JD credits. Students must complete 48 credits toward the ECS PhD and 12 Law credits will be double counted toward the total of 60 ECS credits. (Students entering with a master's degree are eligible to have 24 of the 60 ECS credits waived.)

**** Schedule for Entering Through the Ph.D. Program**

We have not included a sample schedule for students entering through the ECS PhD program. They would follow a similar course, but details would be worked out on a case-by-case basis. Students may also begin in the PhD program, completing a year of coursework, including the 4 core ECS courses, before taking up their legal studies. PhD students who take courses in the School of Law prior to admission to the School of Law will not be able to count any of these courses toward their JD; consequently, it is expected that ECS students exploring the possibility of the JD will be advised to take only Law electives. For the PhD, students must also pass comprehensive examinations and take at least 13 dissertation credits. To be awarded the doctoral degree, students must successfully complete and defend a dissertation.

* Note that the provision of completing the JD within 5 years is mandated by the ABA, which accredits the JD program.

| | |
|----------------------------|--|
| School/College: | Graduate School |
| Program and Degree: | Environmental Science and Policy PhD |
| Contact Name(s): | Gina Maranto |
| Email: | g.maranto@miami.edu |

MISSION STATEMENT

(Insert in space below)

The Environmental Science and Policy (ECS) graduate program was formulated in response to increasing societal demand for academicians and practitioners at the Ph.D. level with interdisciplinary training aimed at addressing complex problems concerning the impact of human activity and global climate change on so-called linked social-ecological systems. Our graduate program targets top caliber students whose demonstrated skills and interests bridge science and social science, and who seek the theoretical and analytical skills to address human-environment problems from academic and applied perspectives.

Program Objectives

Objective 1: To train students who are able to apply their interdisciplinary understanding of complex environmental problems in diverse settings in academe, government, and the private sector.

Objective 2: To graduate a significant portion of students in 5 years or less.

OUTCOMES, METHODS AND RESULTS

(Briefly answer questions for all the SLOs, methods, results and analyses.)

STUDENT LEARNING OUTCOMES

SLO 1: Students will demonstrate command of interdisciplinary environmental policy literature.

Assessment Method (Direct) for SLO 1:

We assessed the dissertation defense (which includes both a public presentation and a private defense of the dissertation) of graduating ECS Ph.D. candidates using a standardized rubric adapted for our interdisciplinary program from the Graduate School template (see Appendix). Student understanding of environmental policy literature was assessed via the Knowledge of the discipline item on the rubric. All defense committee members filled out the rubric, ranking performance according to criteria (1-Unacceptable, 2-Poor, 3-Average, 4-Very Good, 5-Exceptional). We provide average data for each defending student on this rubric item. We expect all students to perform at level 4 or above.

Results for SLO 1:

During 2016-2017, six ECS students defended their dissertations. The average score given by dissertation committee members on the standardized rubric for Knowledge of the discipline was as follows:

| Average score from dissertation rubric | |
|--|-------------|
| Student 1 | 4 |
| Student 2 | 4.5 |
| Student 3 | 5 |
| Student 4 | 4.3 |
| Student 5 | 4.5 |
| Student 6 | 4 |
| All students | 4.38 |

Analysis for SLO 1:

All six students met or exceeded our expected average performance level of 4 for knowledge of environmental science and policy. Given the range of disciplines of dissertation committee members (including 2 from Anthropology, 1 from Atmospheric Science, 1 from Epidemiology and Public Health, 1 from English, 1 from Geography, 1 from Geology, 1 from Resource Economics, 2 from Environmental Science and Policy, 1 from Marketing, 1 from Law, 1 from Marine Conservation, 1 from Marine Ecosystems and Policy, 1 from Mosquito Ecology, 1 from Ocean Science, 1 from Science and Policy Studies), we find these results strongly support the conclusion that our program curriculum and dissertation advisors are delivering solid guidance to students as they build a command of interdisciplinary literature. We set our goal high, and did not expect to see all students meet it. For now, we do not intend to raise the bar, as dissertation committee members were impressed at the level at which the students had achieved a broad understanding of multiple disciplines' literature.

SLO 2: Students will demonstrate the ability to perform sound interdisciplinary analyses of environmental problems and formulate sound interdisciplinary research approaches.

Assessment Method (Direct) for SLO 2:

We assessed the dissertation defense using a standardized rubric (see Appendix). Student understanding of environmental policy literature was assessed via the Appropriate methodology and Application of knowledge and methodology to original research topic items on the rubric. All dissertation committee members filled out the rubric ranking performance according to criteria (1-Unacceptable, 2-Poor, 3-Average, 4-Very Good, 5-Exceptional). We provide average data for each defending student on this rubric item. We expect all students to perform at level 4 or above.

Results for SLO 2:

For the Appropriate methodology item, the average score for each student was as follows:

| Average score from dissertation rubric | |
|--|-----|
| Student 1 | 4 |
| Student 2 | 5 |
| Student 3 | 5 |
| Student 4 | 4.5 |
| Student 5 | 5 |
| Student 6 | 4 |

| | |
|---------------------|------------|
| All students | 4.6 |
|---------------------|------------|

For the Application of knowledge and methodology to original research topic item on the rubric, the average score for each student was as follows:

| Average score from dissertation rubric | |
|--|-------------|
| Student 1 | 5 |
| Student 2 | 5 |
| Student 3 | 5 |
| Student 4 | 4.5 |
| Student 5 | 5 |
| Student 6 | 4 |
| All students | 4.75 |

Analysis for SLO 2:

All students met or exceeded the expected level of 4 on the two items relevant to interdisciplinary analysis and research problem formulation. Again, the wide range of disciplinary specialists who served on these students' committees, and the high average scores for these two items strongly suggest that our curriculum and faculty mentorship is producing students who are able to address complex environmental problems, to analyze them from multiple disciplinary perspectives, and to identify and execute research projects that are relevant to multiple disciplines. Our sense is that we will leave our expected average in place, as it was already quite high.

SLO 3: Students will exhibit an ability to communicate effectively in oral presentations and in writing.

Assessment Method (Direct) for SLO 3: We assessed the dissertation defense using a standardized rubric (see Appendix). Student understanding of environmental policy literature was assessed via the Critical thinking, Effective written communication, and Effective oral communication items on the rubric. All dissertation committee members filled out the rubric ranking performance according to criteria ((1-Unacceptable, 2-Poor, 3-Average, 4-Very Good, 5-Exceptional). We provide average data on these rubric items. We expect all students to perform at level 4 or above.

Results for SLO 3:

The results for Critical thinking were as follows:

| Average score from dissertation rubric | |
|--|-------------|
| Student 1 | 4 |
| Student 2 | 5 |
| Student 3 | 4.9 |
| Student 4 | 4.5 |
| Student 5 | 4.5 |
| Student 6 | 4 |
| All students | 4.48 |

The results for Effective written communication were as follows:

| Average score from dissertation rubric |
|--|
|--|

| | |
|---------------------|-------------|
| Student 1 | 4 |
| Student 2 | 5 |
| Student 3 | 5 |
| Student 4 | 4.5 |
| Student 5 | 4.5 |
| Student 6 | 4.5 |
| All students | 4.58 |

The results for Effective oral communication were as follows:

| Average score from dissertation rubric | |
|--|-------------|
| Student 1 | 5 |
| Student 2 | 5 |
| Student 3 | 5 |
| Student 4 | 4 |
| Student 5 | 5 |
| Student 6 | 4.5 |
| All students | 4.75 |

Analysis for SLO 3:

All students met or exceeded our expected outcomes for these three measures. We are satisfied that our students have gained proficiency in communicating complex environmental science and policy concepts and issues, and will continue to expect all students to perform at level 4 or above for these measures.

PROGRAM OUTCOMES

Program Outcome:

We expect all students to complete the Ph.D. program in no more than 5 years.

Program Outcome Results:

Of the six students who defended successfully in 2016-2017, four out of six completed the program in 5 years. Two required an extra semester to complete their defense. The delays were largely due to failures to meet comprehensive exam deadlines, which was attributable to miscommunication between mentors and the Abess Center program co-ordinators. We believe that more hands-on mentoring at the program level will ensure that students will move more smoothly to meet all benchmarks, and have implemented monthly meetings with all entering first-year students, and more consistent communication of deadlines with second and third year students to help improve this outcome.

DISCUSSION

Please answer the questions below.

What did you learn from your SLO results (include strengths and weaknesses)?

The SLOs results reveal that our current curricular approach and mentoring are adequately acculturating students to interdisciplinary study in environmental science and policy. Our current measures seem

sufficient to provide a broad assessment of a set of skills necessary to prepare students for future work in the academy, in not-for-profits, and in the private sector. Our results suggest no glaring weaknesses at the point of dissertation defense.

What changes have you made and plan to make based on your SLO results?

We envision no immediate changes in curriculum or approach; however, we believe it would be fruitful to look at comprehensive rubric results (gathered in year two) to see whether and how students change between years two and five. This could provide insights on how well our core courses are preparing them for the transition to the dissertation.

Appendix 3—Graduate PhD comprehensive exam rubric

Environmental Science & Policy Evaluation Rubric for Comprehensive Exams

This form is intended to serve as a common examination and qualifying examination evaluation rubric for doctoral students in Environmental Science and Policy. Examination committee members should complete the evaluation form after the comprehensive and qualifying exams have been given. The completed forms should then be returned to Gina Maranto, Ungar Building 230 (scan via email or hard copy is fine).

| Please evaluate the student's exam performance on the following criteria: | 1-Poor | 2-Fair/Adequate | 3-Good | 4-Excellent | Rating (1-4, from scale at left) |
|---|---|--|---|---|----------------------------------|
| a. Command of literature | Has not included key and topical sources from the literature; makes numerous or substantial errors in interpreting readings; does not include analysis or synthesis of central concepts from the discipline; does not contextualize literature in relation to other disciplines accurately. | Has included some key and topical sources from the literature; makes some errors in interpreting readings; includes minimal analysis or synthesis of central concepts from the discipline; vaguely contextualizes literature in relation to other disciplines. | Has included all key and topical sources from the literature; exhibits a reasonable interpretation of readings; incorporates some analysis and synthesis of central concepts from the disciplines; appropriately contextualizes the literature in terms of other disciplines; shows some insight and original thinking. | Shows mastery of the literature and interrogates readings incisively; makes a solid critical analysis and synthesis; shows a sophisticated understanding of interdisciplinary connections; has original and penetrating insights. | |
| b. Conceptual and theoretical rigor | Muddled presentation with errors concerning key concepts/theories. | Some coverage of key concepts/theories, but no evidence of deep understanding. | Clear presentation of key concepts/theories at depth, with some awareness of context and awareness of implications. | Clear evidence of master of concepts/theories and dynamic application of them to social structures and change. | |
| c. Command of disciplinary methodologies | Discipline-specific methodology not referenced/well applied. | Some links to disciplinary knowledge and methodology but not clearly integrated. | Clear exposition of strengths and weaknesses of methodology and relationship of disciplinary knowledge and methodology vis-à-vis the student's expected research project. | Insightful references to sources and well thought out/appropriate application of methodology to student's expected research project. | |
| d. Ability to defend ideas expressed in exam | Overarching argument is largely lacking | Argument is present, but claims are supported by weak or inappropriate warrants. | Arguments are clearly laid out and claims are supported with appropriate warrants. | Argument is highly persuasive, with convincingly bolstered claims and novel conclusions. | |
| e. Quality of written communication | Writing generally unclear, with multiple errors and/or poor organization | Writing sometimes unclear, with weak organization and/or grammatical errors. | Writing generally error free, with clear organization and depth. | Elegant writing, virtually error free, with fully developed arguments and clear organization. | |
| f. Overall performance evaluation (please circle one) | Unacceptable | Fair/Adequate | Good | | |

Appendix 4—Abess lectures, seminars, colloquia

2012

Dr. Masahisa Nakamura of Shiga University in Japan gave a talk on global water management challenges.

Dr. Keene Haywood gave a talk on integrating science, technology, and exploration.

Abess Center/Citizens Board Environmental Travel Grant winner Kasey Cantwell gave a talk on mapping anthropogenic change on coral reefs.

Ecologist Peter Sale gave an ecologist's view of the crisis our planet is facing.

The Abess Center co-sponsored the 6th Annual Hug the Lake event in conjunction with Earth Week.

Orion Herbs Fieldwork Grant launched in September; goal of the grant is to help Abess Center graduate students from underserved population fulfill their goals of travel and fieldwork.

Abess Center co-sponsored a talk by Dr. Arnold Stancell from Georgia Tech on the BP oil tragedy.

Rick Counihan gave a talk on careers in the energy sector.

Dr. Robert Meyer from the Wharton School spoke on storm misperceptions and decisions preparing for hurricane threats.

Co-hosted portions of the 3rd Annual Greater Everglades Community Food Summit, including a workshop by Michael Shuman of the Post carbon Institute.

Canadian fish biologist Dr. Steve Cooke gave a talk on fish ecology, conservation and management.

Professor Josh Eagle spoke about making the public whole after an oil spill.

Dr. Zen Faulkes gave a talk on female crayfish.

2013

The Abess Center launched the joint Ph.D./J.D. program with the School of Law, becoming only the third school in the nation to offer such a dual degree. Dale Jamieson, Director of Environmental Studies and Affiliated Professor of Law at New York University, delivered the inaugural lecture..

Wenonah Hauter, Director of Food & Water Watch, spoke about her book Foodopoly: The Battle Over the Future of Food and Farming in America.

Abess Center hosted a SEEDS-sponsored workshop, *Advancing Careers in Interdisciplinary Research*.

In conjunction with Earth Day, the 2013 Reitmeister-Abess Center Environmental Stewardship Award given to Terrence "Rock" Salt; inaugural Orion Herbs Fieldwork Grant awarded to 4th-year Ph.D. student Karlisa Callwood.

Dr. Jeffrey Shaman from Columbia University gave a talk on forecasting outbreaks of influenza.

Project Noah founder Yassir Ansari gave a Citizen Science-related talk to students and faculty.

Abess Center and UM Law hosted a talk by Dan Magraw and Jim Nickel on the future of international and environmental law.

Dr. Maria Fadiman from FAU gave a talk on ethnobotanical fieldwork in the Ecuadorian Amazon and Tibetan Plateau.

Dr. Derek Willis from Columbia University spoke on the role of choice architecture in public policy.

Abess Center co-sponsored Food Day and a talk by Dr. Eric Holt-Gimenez, an agroecologist, political economist, and author.

Abess Center co-sponsored a talk by Dr. Karen Seto from Yale University on urbanization and climate change in China and India.

The Abess Center helped to mobilize groups from across campus to work with the ideas and concepts of artist Eve Mosher and consultant Heidi Quante to realize the vision of Mosher's The High Waterline Project.

2014

Ph.D. student Caitlin Augustin selected as the UM Scholarship Recognition Luncheon graduate keynote speaker and subject of a 5-minute scholarship video shown at the luncheon.

The Abess Center co-hosted with FIU the South Florida Water Sustainability and Climate Project 2014 Agricultural Penalty Function Workshop, which included several Abess graduate students.

Cornell University's Marianne Krasny gave a talk on civic ecology.

General Counsel for the U.S. Environmental Protection Agency, Avi S. Garbow, gave a talk on federal environmental policy.

Dr. Renzo Taddei held a three-day Ethnographic Field Methods Workshop for graduate students at the Abess Center.

The Abess Center co-sponsored the SEEDS workshop on communicating science, which included on the panel our Ph.D. student Caitlin Augustin.

2015

Gregory Ives from an international design, sustainability, and project management firm spoke on sustainable development on the Azuero, Panama.

Dr. John Weeks from the Department of Geography and Regional Studies gave a talk on socialist experiments in Chile and Venezuela.

Mary Evelyn Tucker presented her film “Journey of the Universe: An Epic Story of Cosmic, Earth, and Human Transformation” and followed it with a panel discussion.

The Abess Center held a SEEDS-sponsored workshop, *Environmental Science and Policy Beyond the Academy*. The Abess Center co-sponsored anthroScene: Arts and Nature in a Manufactured Era, a multi-faceted exhibition with environmental themes in multiple mediums that included workshops, panel discussion, and gallery viewing.

Kim Ross from ReThink Energy Florida presented a talk on fracking in Florida.

Members of the South Florida Water, Sustainability and Climate Project held their mid-project booster shot meeting at the Abess Center. Several Abess Center faculty and graduate students participated.

Dr. Tim Norris from UM Libraries presented a data workshop for graduate students on wrangling data in the research environment.

Dr. Renzo Taddei held a three-day Ethnographic Field Methods Workshop for graduate students at the Abess Center.

2016

Exploration Science ROV and drone workshops.

Dr. Ben Orlove from Columbia University gave a talk on Andean landscapes and waterscapes.

The Environmental Justice Summer Clinic was held in the Abess Center.

Journalist/author Kathleen McAuliffe gave a talk on parasites and they manipulate behavior and shape society.

Dr. Kenneth Feeley spoke about how climate shifts related to tree composition in tropical forests.

The documentary film *Before the Flood* starring Leonardo DiCaprio screened at U.M.’s Cosford Cinema and was followed by a Q&A by a panel that included Dr. Kenny Broad, DiCaprio and the director, Fisher Stevens.

Ph.D. student Andrew Carter helped to organize and lead the *Research Intersections* meeting in conjunction with the Graduate School.

Reitmeister Award winner Rachel Silverstein, founder of Miami Waterkeepers presents at award ceremony.

2017

Dr. Rob McDonald from The Nature Conservancy spoke to students and faculty.

Dr. John Bates from the Field Museum of Natural History gave a talk on evolution in Amazonia.

Exploration Science ROV and drone workshops.

Dr. Naresh Kumar hosted a climate summit at the Abess Center.

CLEO climate literacy workshop was held at the Abess Center and included Abess graduate students.

Dr. Renzo Taddei’s Ethnographic Field Methods Workshop held at the Abess Center for graduate students.

Reitmeister-Abess Center Environmental Stewardship Award given to Carlton Ward, Jr., conservation photographer and 8th-generation Floridian. He presented his work to graduate students, faculty, and others from the U.M. community.

Appendix 5—Faculty CVs

Please see Box file for CVs for the following faculty:

<https://miami.box.com/s/uj03tnw65ev55jmwyq28e9k6tzemle5a>

Broad

Hammerschlag

Letson

Maranto

F. Mormann

M. Mormann

Olson

Stoler

Swart

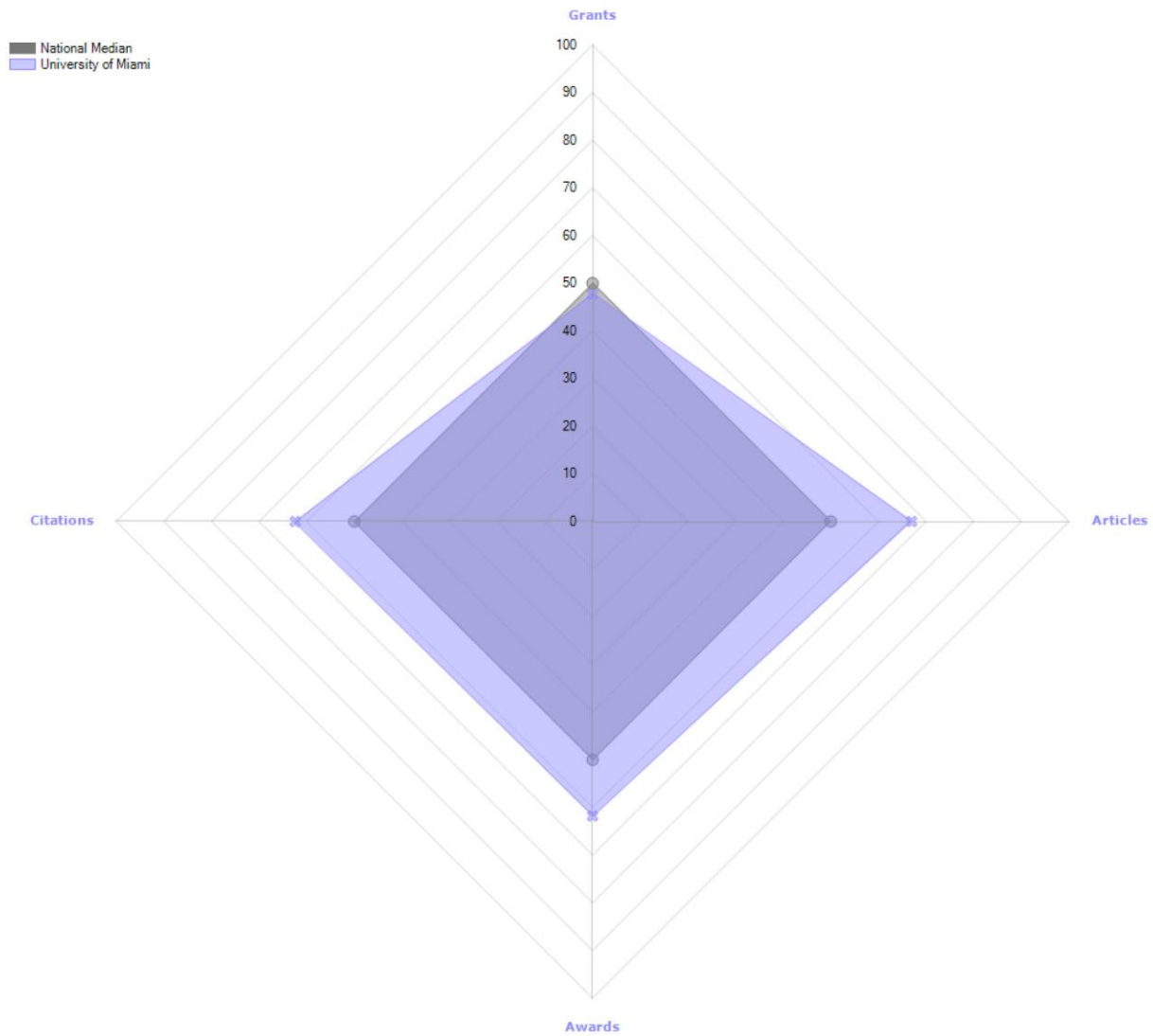
Williamson



Productivity Radar

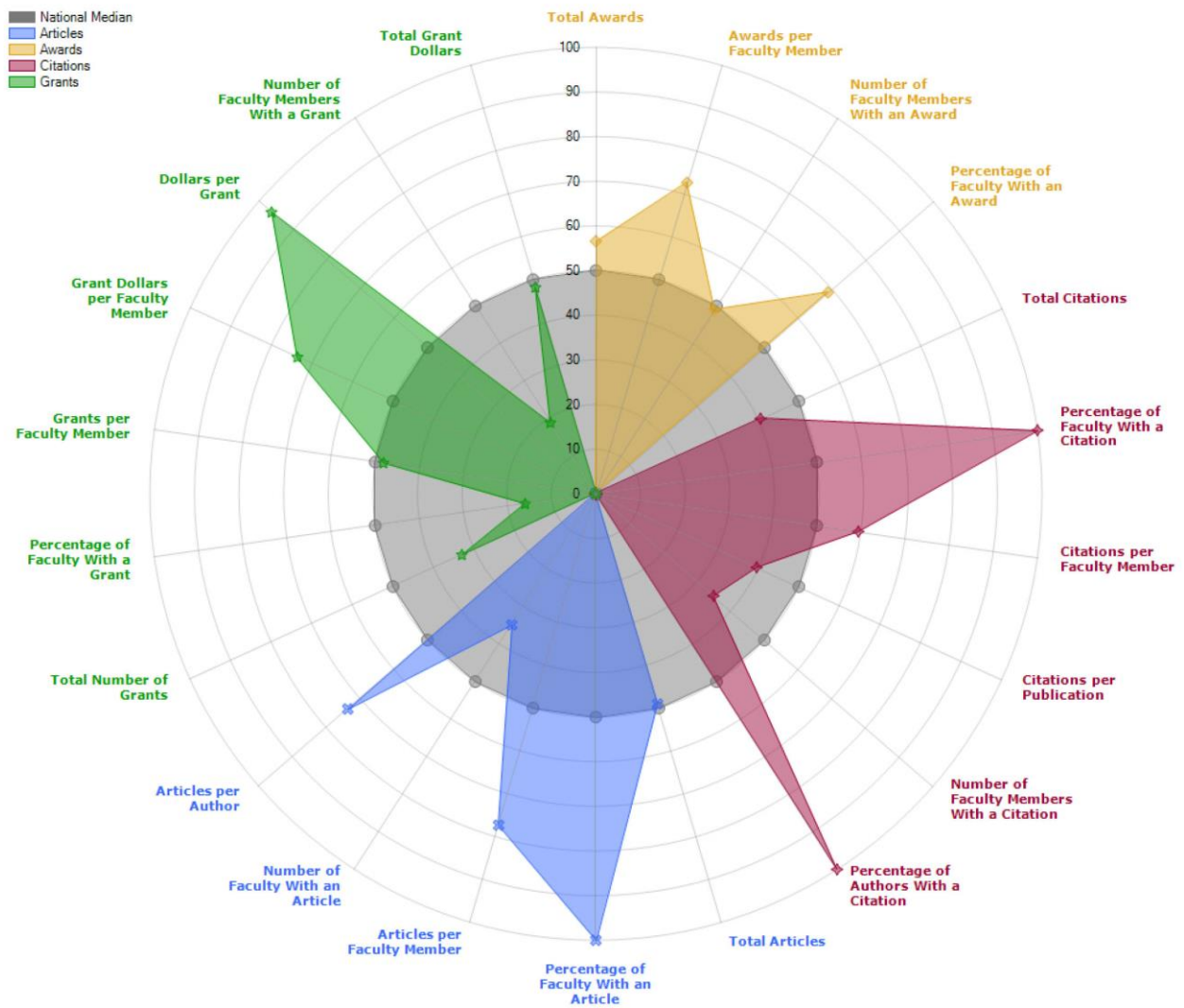
Environmental Science and Policy | Environmental Sciences (105 Programs) Program Radar - All Variables Summary

University of Miami | Environmental Science and Policy



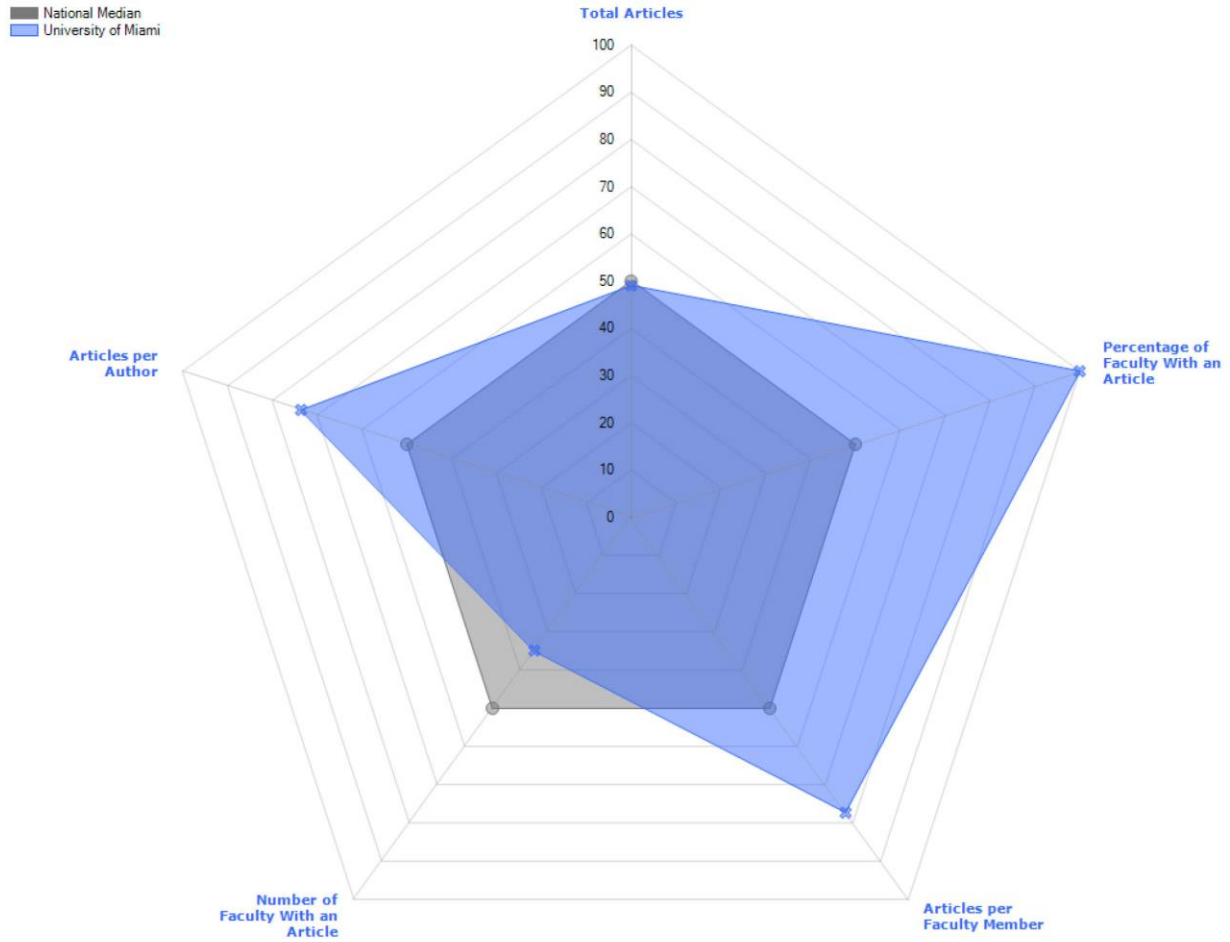
Program Radar - All Variables

University of Miami | Environmental Science and Policy



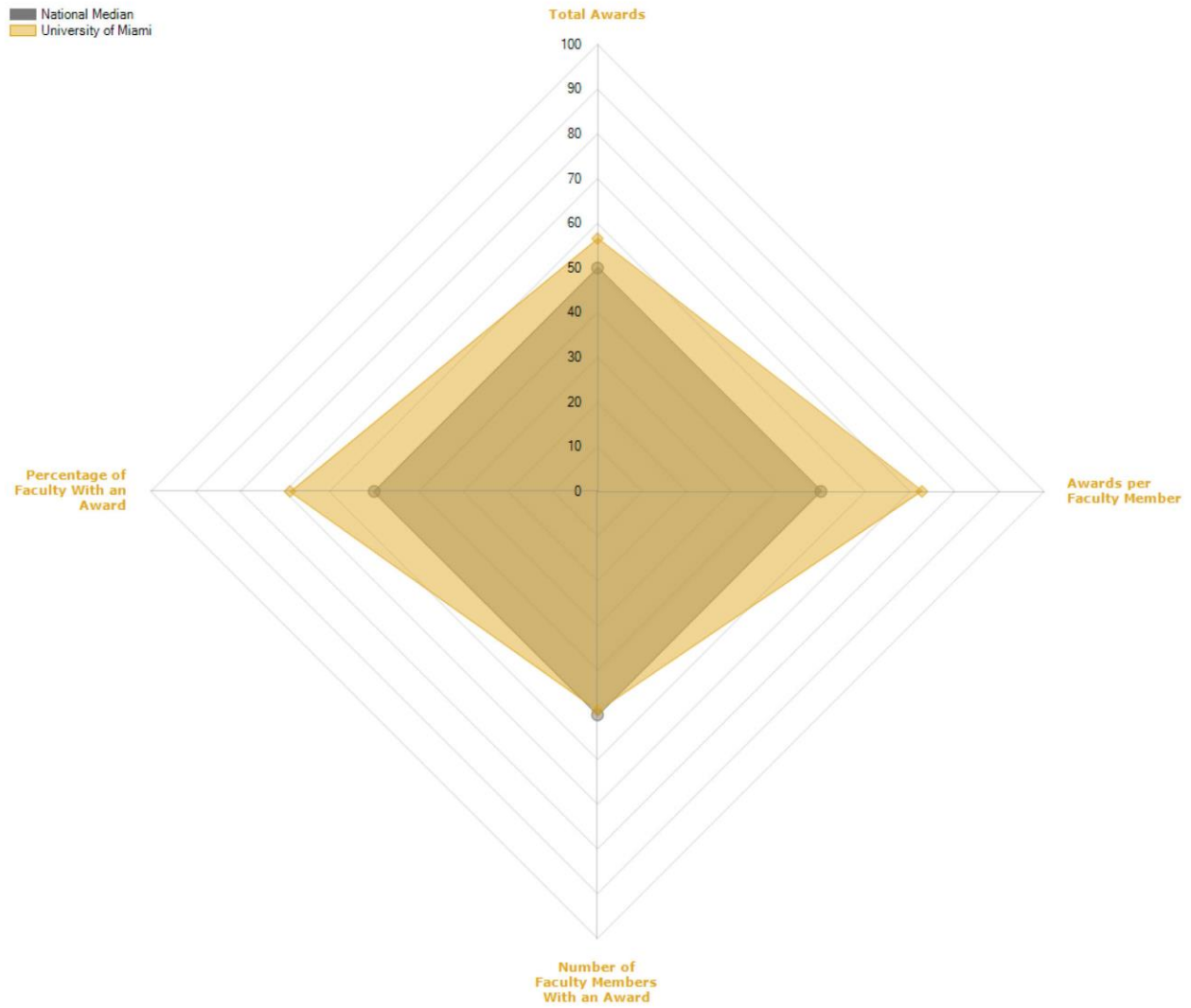
Program Radar - Articles

University of Miami | Environmental Science and Policy



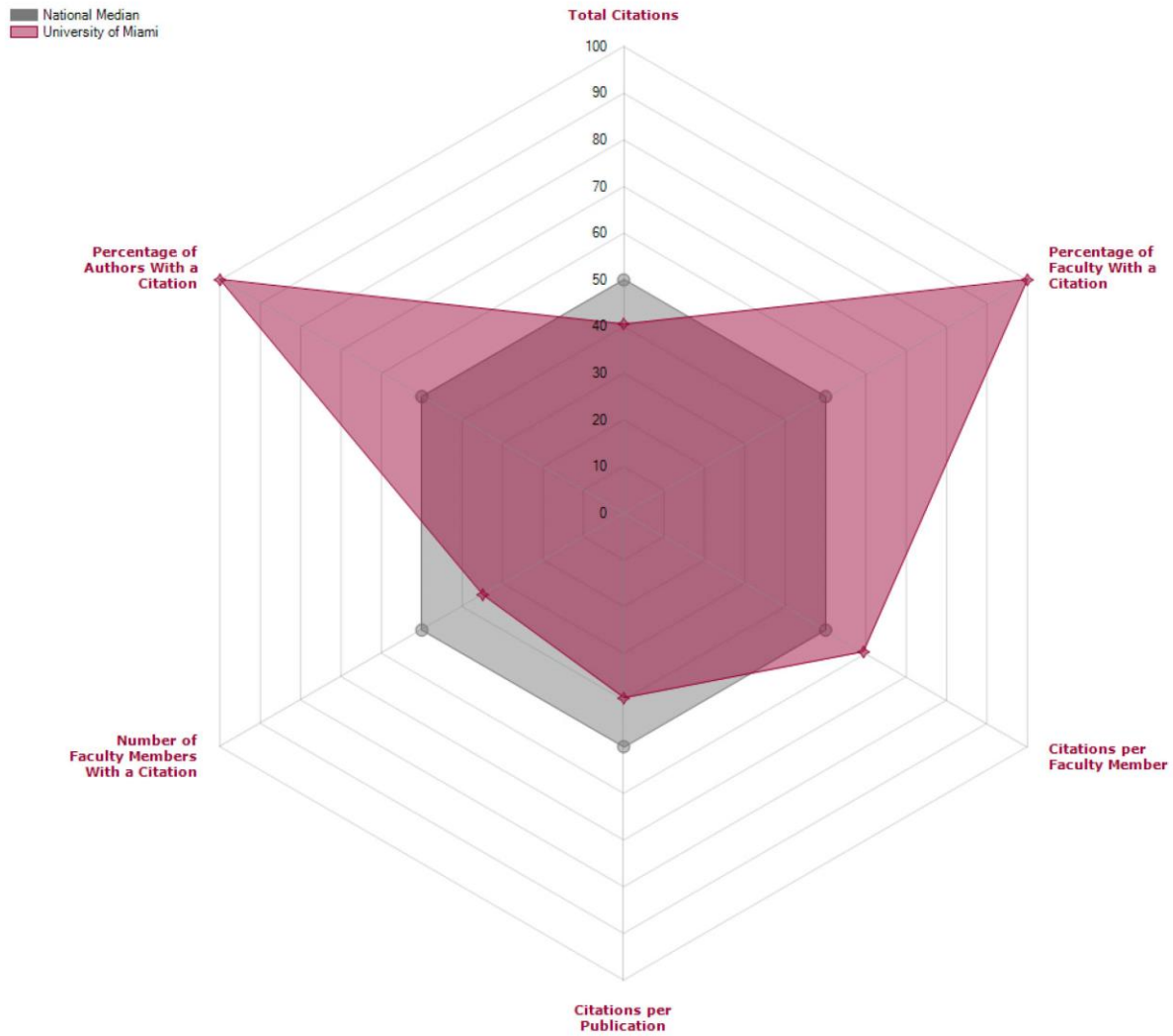
Program Radar - Awards

University of Miami | Environmental Science and Policy



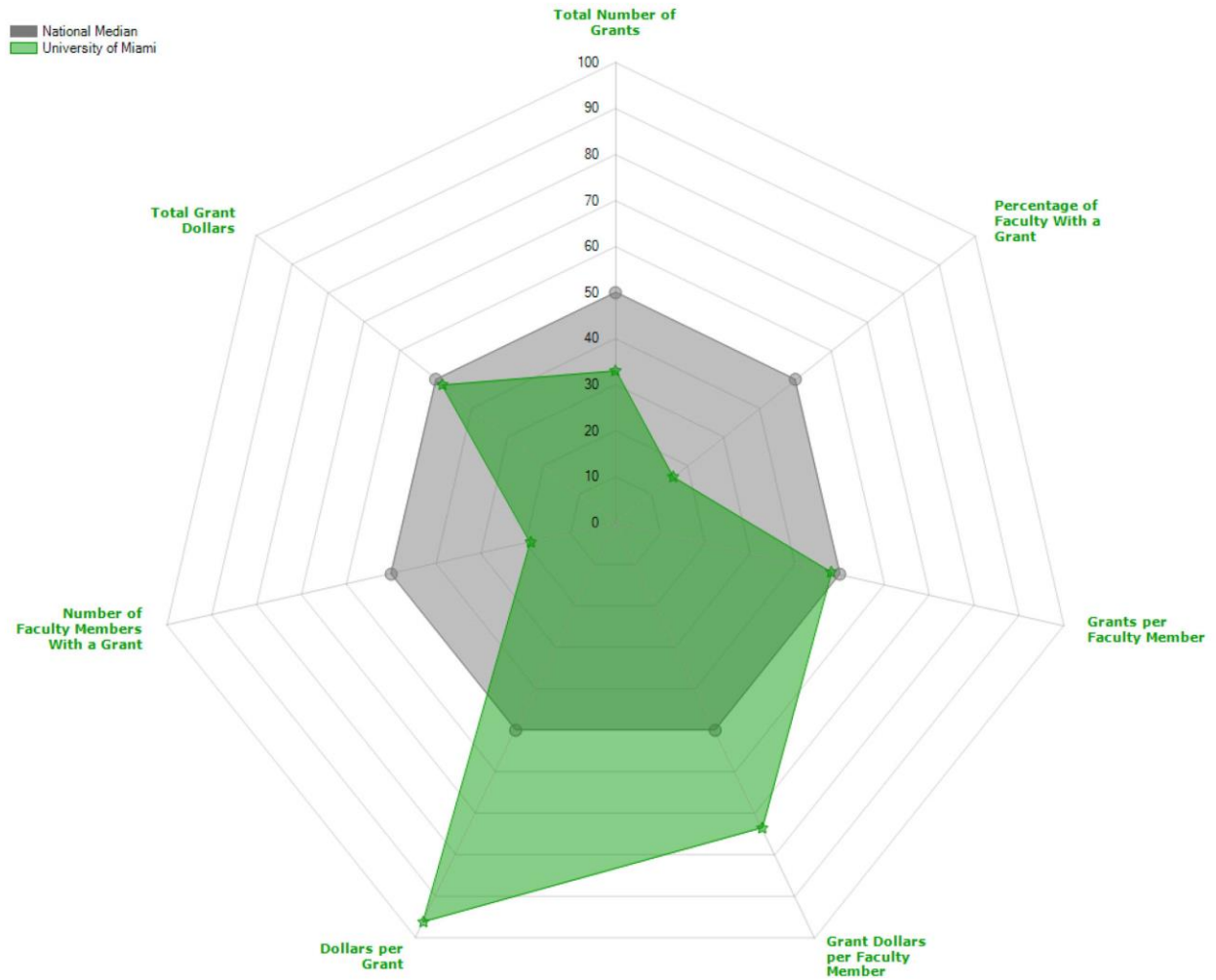
Program Radar - Citations

University of Miami | Environmental Science and Policy



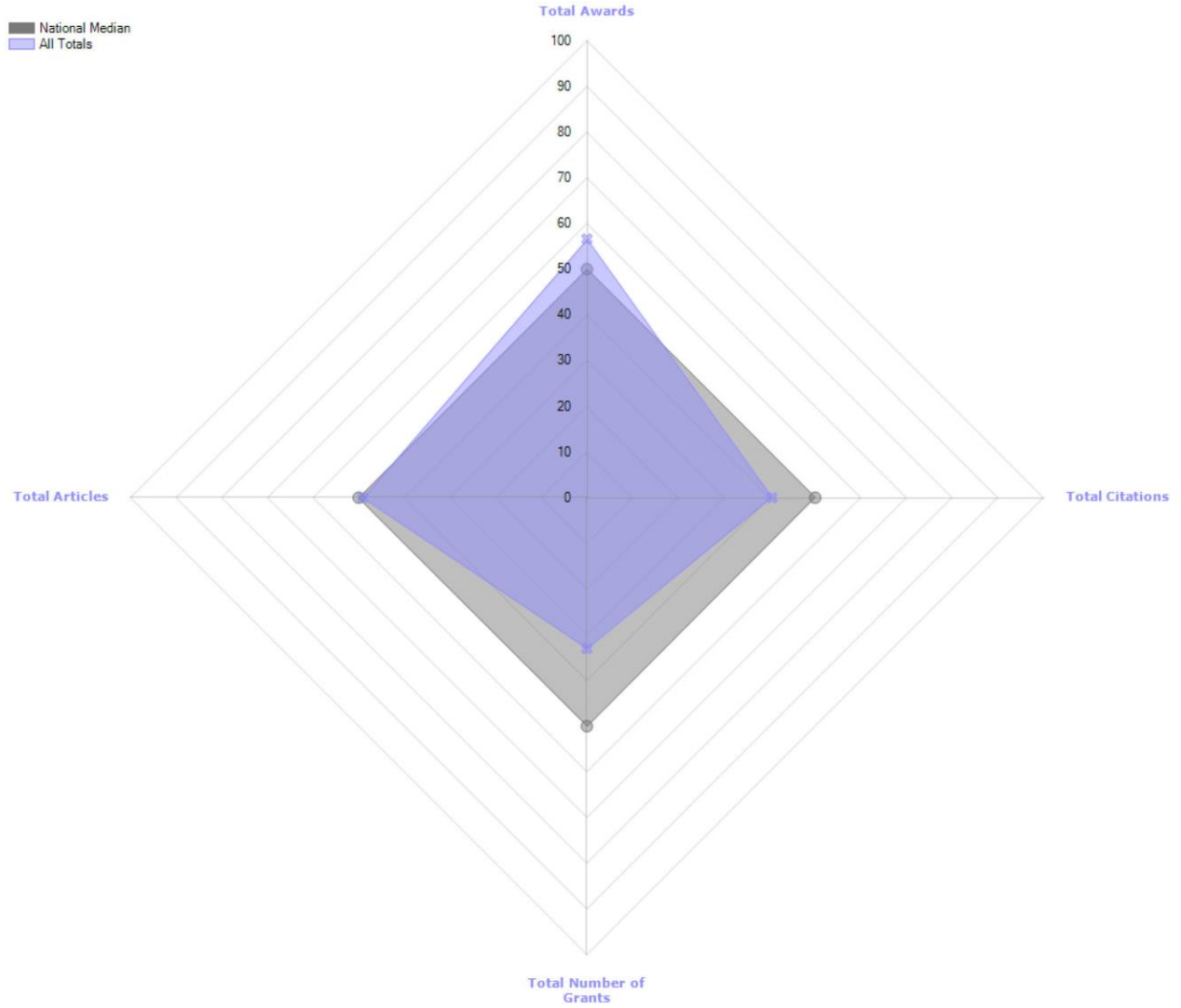
Program Radar - Grants

University of Miami | Environmental Science and Policy



Program Radar - Totals

University of Miami | Environmental Science and Policy



Appendix 7—Abess data on applicants and admitted students

Please see Box file for Excel spreadsheet on all applicants and enrolled students, 2011-2017:

<https://miami.box.com/s/erug0arzmef3kj5gee9wokcno97awov8>

Appendix 8—UM data on applicants and admitted students

UNIVERSITY OF MIAMI
GRADUATE SCHOOL



Program Summary

Program Name and Degree (please fill out separate form for each degree):

SP Environmental Science and Policy - PhD

Program Web Link:

Purpose:

| Fall | 2012 | 2013 | 2014 | 2015 | 2016 | Remarks |
|--|---|------|------|------|------|---------|
| Admissions | | | | | | |
| No. of Applications | 26 | 29 | 40 | 24 | 30 | |
| No. of Accepted | 5 | 6 | 2 | 3 | 0 | |
| No. of Enrolled FT | 5 | 5 | 2 | 2 | 0 | |
| No. of Enrolled PT | 0 | 0 | 0 | 1 | 0 | |
| Average GRE Scores for Fall Entering Class | 310 | 324 | 310 | 318 | N.A. | |
| Average GMAT Scores for Fall Entering Class | N.A. | N.A. | N.A. | N.A. | N.A. | |
| Average Undergraduate GPA for Fall Entering Class | 3.6 | 3.7 | N.A. | 2.9 | N.A. | |
| Average Graduate GPA for Fall Entering Class (if applicable) | N.A. | 3.5 | N.A. | N.A. | N.A. | |
| Financial Support | | | | | | |
| No. of Enrolled Students | 14 | 20 | 16 | 18 | 15 | |
| No. of Students with TA Stipends | 1 | 5 | 1 | 2 | 2 | |
| No. of Students with RA Stipends | 5 | 7 | 11 | 10 | 8 | |
| No. of Students with GA Stipends | 0 | 0 | 0 | 0 | 0 | |
| No. of Students with Fellowship Stipends | 3 | 7 | 4 | 6 | 4 | |
| No. of Students with Trainee Stipends | 0 | 0 | 0 | 0 | 0 | |
| No. of WV (Waivers only but none of above, e.g., dissertation only with waiver) | 0 | 0 | 0 | 0 | 0 | |
| No. of Stipends Only | 0 | 0 | 16 | 0 | 14 | |
| \$ Amount of "Typical Stipend" for First-Year Student | | | | | | |
| No. of Students Funded on Grants | | | | | | |
| Degrees, Time to Degree, and Placement | | | | | | |
| No. of Degrees Granted by FY (Summer B-Summer A before AY14; in AY14: Summer B 2013, Fall 2013, Spring 2014) | 0 | 0 | 1 | 1 | 3 | |
| Time to Completion for Students | N.A. | N.A. | 3.75 | 4.75 | 4.83 | |
| % of Students Passing License or Certification Exams (Year of Report) | | | | | | |
| Placement Status for the past 5 years | Enter placement information in the Degrees Awarded Data tab | | | | | |

Appendix 9—Student Publications

Papers published by ECS PhD students, 2010-2017

Temitope Alimi

1. 2013. Alimi, T.O., W.A. Qualls, D. D. Roque, D.P. Naranjo, D.M. Samson, J. C. Beier, and R.D. Xue. Evaluation of a new formulation of permethrin applied by water-based thermal fogger against *Aedes albopictus* in residential communities in St. Augustine, Florida. *Journal of the American Mosquito Control Association*, 29:1, pp. 49-53.
2. 2013. Ulrich J.N., D. P Naranjo, T. O Alimi, G. C Müller and J.C. Beier. How much vector control is needed to achieve malaria elimination? *Trends in Parasitology*, 29:3, pp. 104-109.
3. 2013. Naranjo D.P., W.A. Qualls, D.M. Samson, D.D. Roque, T.O. Alimi, K. Arheart, G. Muller, J. C. Beier and R.D. Xue. Evaluation of boric acid sugar baits against *Aedes albopictus* (Diptera:Culicidae) in tropical environments. *Parasitology Research*, 112:4, pp. 1583-1587.
4. 2013. Dayana M Samson, Whitney Qualls, Deborah Roque, Diana P Naranjo, T. Alimi, Kristopher R Arheart, Gunter C Muller, John C Beier, Rui De Xue. Resting and energy reserves of *Aedes albopictus* collected in common landscaping vegetation in St. Augustine, Florida. *Journal of American Mosquito Control Association*, 29:3, pp. 231-236.
5. 2014. D.O. Fuller, A. Troyo, T.O. Alimi, J.C. Beier. Participatory Risk Mapping of Malaria Vector Exposure in Northern South America using Environmental and Population Data. *Applied Geography*, 48:1, 1-7.
6. 2015. Samson, Dayana M.; Archer, Reginald S.; Alimi, Temitope O.; et al. New baseline environmental assessment of mosquito ecology in northern Haiti during increased urbanization *Journal of Vector Ecology*, 40: 1, 46-58
7. 2015. Alimi, Temitope O.; Fuller, Douglas O.; Qualls, Whitney A.; et al. Predicting potential ranges of primary malaria vectors and malaria in northern South America based on projected changes in climate, land cover and human population. *Parasites & Vectors*. 8:431.
8. 2016. Alimi, TO, Fuller, DO, Herrera, SV, Arevalo-Herrera, M, Quinones, ML, Stoler, JB, Beier, JC. A multi-criteria decision analysis approach to assessing malaria risk in northern South America. *BMC Public Health*, 16: 221
9. 2016 Fuller, DO, Alimi, T, Herrera, S, Beier, JC, Quinones, ML. Spatial association between malaria vector species richness and malaria in Colombia. *ACTA TROPICA*, 158, 197-200.

Julius Dewald

1. 2014. Dewald, Julius R.; Pike, David A. Geographical variation in hurricane impacts among sea turtle populations. *Journal of Biogeography*, 41:2, 307-316.
2. 2016. Dewald, Julius R.; Fuller, Douglas O.; Mueller, Gunter C.; et al. A novel method for mapping village-scale outdoor resting microhabitats of the primary African malaria vector, *Anopheles gambiae*. *Malaria Journal*, 15, 489.

Austin Gallagher

1. Gallagher, AJ, Romeiro, J, Canabal, D, Canabal, V, Hammerschlag, N. (2014). Novel social behaviors in a threatened apex marine predator, the oceanic whitetip shark *Carcharhinus longimanus*. *Ethology, Ecology & Evolution*. 26:4, 413-417.
2. Gallagher, AJ, Orbesen, ES, Hammerschlag, N, Serafy, JE. (2014) Evolutionary traits explain the vulnerability of apex predatory sharks to human-induced environmental changes. *Integrative and Comparative Biology*, 54: E70, Suppl. 1.
3. Cooke, S.J., Hogan, Z.S., Butcher, P.A., Stokesbury, M.J.W., Raghavan, R., Gallagher, A.J., Hammerschlag, N., Danylchuk, A.J. (In Review) Angling for endangered fish: conservation problem or conservation action? *Fish and Fisheries*

4. **Gallagher, A.J.**, Orbesen, E.S., Hammerschlag, N., Serafy, J.E. (In Review) Survival and vulnerability of pelagic shark species to pelagic longline bycatch. *Proceedings of the National Academy of Sciences USA*
5. **Gallagher, A.J.**, Hammerschlag, N. (In Review) Shark declines: fuel for a decade of conservation research *Bulletin of Marine Science*
6. **Gallagher, A.J.**, Hammerschlag, N., Shiffman, D.S., Giery, S.T. (2014) Evolved for Extinction? The price of specialization in apex marine predators. *Biodiversity and Conservation*, 64:7, 619-624.
7. Hammerschlag, N., Cooke, S.J., **Gallagher, A.J.**, Godley, B.J. (In Review) Considering the fate of electronic tags: user responsibility and interactions when encountering tagged marine animals. *Animal Biotelemetry*
8. **Gallagher, A.J.**, Serafy, J.E., Cooke, S.J., Hammerschlag, N. (2014) Physiological stress response, reflex impairment, and survival of five sympatric shark species following experimental capture and release. *Marine Ecology Progress Series*. 496:207-208.
9. Fallows, C., **Gallagher, A.J.**, Hammerschlag, N. (2013) White sharks (*Carcharodon carcharias*) scavenging on whales and its potential role in further shaping the ecology of an apex predator. *PLoS ONE*. 8:4.
10. Hammerschlag, N., **Gallagher, A.J.**, Carlson, J.K. (2013) A revised estimate of daily ration in the tiger shark (*Galeocerdo cuvier*) with implications for assessing ecosystem impacts of apex predators. *Functional Ecology*. 27:5, 1273-1274.
11. Carr, L.A., Stier, A.C., Fietz, K., Montero, I., **Gallagher, A.J.**, Bruno, J.F. (2013) Illegal shark fishing in the Galapagos Marine Reserve. *Marine Policy* 39: 317-321
12. Hammerschlag, N., **Gallagher, A.J.**, Wester, J., Luo, J., Ault, J.S. (2012) Don't bite the hand that feeds: behavioral impacts of provisioning ecotourism on an apex marine predator. *Functional Ecology* 26(3): 567-576 (Cover story)
13. **Gallagher, A.J.**, Kyne, P.K., Hammerschlag, N. (2012) Ecological risk assessment and its application to elasmobranch conservation and management. *Journal of Fish Biology* 80(5):1727-1748.
14. Shiffman, D.S., **Gallagher, A.J.**, Boyle, M.D., Hammerschlag-Peyer, C.M., Hammerschlag, N. (2012) Stable Isotope Analysis as a Tool for Elasmobranch Conservation Research: A Primer for Non-Specialists. *Marine and Freshwater Research* 63(7): 635-643 (Cover story)
15. Staaterman, E., Clark, C. W., **Gallagher, A.J.**, Claverie, T., deVries, M., and Patek, S. N. (2012) The acoustic ecology of the California mantis shrimp. In: Popper, A. N. and Hawkins, A. eds. *Effects of Noise on Aquatic Life*. Springer Science+Business Media, LLC, New York.
16. **Gallagher, A.J.**, Jackson, T., Hammerschlag, N. (2011) Occurrence of tiger shark (*Galeocerdo cuvier*) scavenging on avian prey and its possible connection to several large-scale bird die-offs in the Florida Keys. *Florida Scientist* 74(4):264-269
17. Staaterman, E., Clark, C. W., **Gallagher, A.J.**, Claverie, T., deVries, M., and Patek, S. N. (2011) Rumbling in the benthos: acoustic ecology of the California mantis shrimp (*Hemisquilla californiensis*). *Aquatic Biology* 13: 97-105 (Featured article, cover story).
18. **Gallagher, A.J.**, Hammerschlag, N. (2011) Global Shark Currency: The distribution and frequency, and socio-economics of shark ecotourism. *Current Issues in Tourism* 14(8):797-812
19. Hammerschlag, N., **Gallagher, A.J.**, Lazarre, D.M. (2011) A review of shark satellite tagging studies. *Journal of Experimental Marine Biology and Ecology* 398(1-2): 1-8
20. Hammerschlag, N., **Gallagher, A.J.**, Lazarre, D.M., Slonim, C. (2011) Range extension of the endangered great hammerhead shark (*Sphyrna mokarran*) in the Northwest Atlantic: Preliminary data and significance for conservation. *Endangered Species Research* 13: 111-116
21. **Gallagher, A.J.**, Frick, L.H., Bushnell, P. Brill, R.W., Mandelman, J.W. (2010) Blood gas, oxygen saturation, pH, and lactate values in elasmobranch blood measured with a commercially available portable clinical analyzer and standard laboratory equipment. *Journal of Aquatic Animal Health* 22:229-234
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23. 2014. Gallagher, Austin J.; Wagner, Dominique N.; Irschick, Duncan J.; et al. Body condition predicts energy stores in apex predatory sharks. *Conservation Physiology*, 2:1.
24. 2014. Gallagher, A. J.; Serafy, J. E.; Cooke, S. J.; et al. Physiological stress response, reflex impairment, and survival of five sympatric shark species following experimental capture and release. *Marine Ecology Progress Series*, 49, 207-218.
25. 2014. Gallagher, A-J; Orbesen, E-S; Hammerschlag, N.; et al. Evolutionary traits explain the vulnerability of apex predatory sharks to human-induced environmental changes. Conference: Annual Meeting of the Society-for-Integrative-and-Comparative-Biology. *Integrative and Comparative Biology*, 54: Suppl1, E70.
26. 2014. Gallagher, Austin. J.; Hammerschlag, Neil; Shiffman, David S.; et al. Evolved for Extinction: The Cost and Conservation Implications of Specialization in Hammerhead Sharks. *Bioscience*, 64-7, 619-624.
27. 2014. Gallagher, Austin J.; Romeiro, Joe; Canabal, Debra; et al. Novel social behaviors in a threatened apex marine predator, the oceanic whitetip shark *Carcharhinus longimanus*. *Ethology, Ecology & Evolution*, 26:4, 413-417.
28. 2014. Hammerschlag, Neil; Cooke, Steven J.; Gallagher, Austin J.; et al. Considering the fate of electronic tags: interactions with stakeholders and user responsibility when encountering tagged aquatic animals. *Methods in Ecology and Evolution*, 5:11, 1147-1153.
29. 2014. Shiffman, D. S.; Gallagher, A. J.; Wester, J.; et al. Trophy fishing for species threatened with extinction: A way forward building on a history of conservation. *Marine Policy*, 50, 318-322.
30. 2016. Hammerschlag, Neil; Bell, Ian; Fitzpatrick, Richard; Gallagher, A.J., et al. Behavioral evidence suggests facultative scavenging by a marine apex predator during a food pulse. *Behavioral Ecology and Sociobiology*, 70:10, 1777-1788.
31. 2017. Gallagher, Austin J.; Skubel, Rachel A.; Pethybridge, Heidi R.; et al. Energy metabolism in mobile, wild-sampled sharks inferred by plasma lipids. *Conservation Physiology*, 5, cox002.
32. 2017. Gallagher, Austin J.; Shiffman, David S.; Byrnes, Evan E.; et al. Patterns of resource use and isotopic niche overlap among three species of sharks occurring within a protected subtropical estuary. *Aquatic Ecology*, 51: 3, 435-448.
33. 2017. Hammerschlag, N.; Gutowsky, L. F. G.; Gallagher, A. J.; et al. Diel habitat use patterns of a marine apex predator (tiger shark, *Galeocerdo cuvier*) at a high use area exposed to dive tourism. *Journal of Experimental Marine Biology and Ecology*, 495, 24-34.
34. 2017. Macdonald, Catherine; Gallagher, Austin J.; Barnett, Adam; et al. Conservation potential of apex predator tourism. *Biological Conservation*, 215, 132-141

Book Chapters

1. Staaterman, E., Clark, C. W., **Gallagher, A.J**, Claverie, T., deVries, M., and Patek, S. N. (2012) The acoustic ecology of the California mantis shrimp. In: Popper, A. N. and Hawkins, A. eds. *Effects of Noise on Aquatic Life*. Springer Science+Business Media, LLC, New York.

Dishane Hewavithana

1. 2016. Hewavithana, Dishane K.; Wijesinghe, Mayuri R.; Dangalle, Chandima D.; et al. Habitat and dung preferences of scarab beetles of the subfamily Scarabaeinae: a case study in a tropical monsoon forest in Sri Lanka. *International Journal of Tropical Insect Science*, 36:2, 97-105.

Elizabeth Kelly

1. 2016. Feng, Zhixuan; Reniers, Ad; Haus, Brian K.; Kelly, E., et al. Wave energy level and geographic setting correlate with Florida beach water quality. *Marine Pollution Bulletin*, 104:1,2, 54-60.
2. 2017. Donahue, Allison; Feng, Zhixuan; Kelly, Elizabeth; et al. Significance of beach geomorphology on fecal indicator bacteria levels. *Marine Pollution Bulletin*, 121:1,2, 160-67.

Shireen Rahimi

1. 2016. Rahimi, Shireen; Gaines, Steven D.; Gelcich, Stefan; et al. Factors driving the implementation of fishery reforms. *Marine Policy*, 71: 222-228.
2. In review at PNAS. Elodie Le Cornu, Elena M. Finkbeiner, Shireen Rahimi, Rebecca Martone, Adam L. Ayers, John N. Kittinger, Stefan Gelcich, Natalie Ban, Christina Hicks, Fiorenza Micheli, Xavier Basurto, Josh Cinner, Eddie Allison, Rebecca Gruby, Larry Crowder. Implementing property rights-based management in small-scale fisheries: key enabling conditions to achieve social, economic and ecological outcomes.

Deborah Roque

1. 2013. Alimi, T.O., W.A. Qualls, **D. D. Roque**, D.P. Naranjo, D.M. Samson, J. C. Beier, and R.D. Xue. (2013) Evaluation of a new formulation of permethrin applied by water-based thermal fogger against *Aedes albopictus* in residential communities in St. Augustine, Florida. *Journal of the American Mosquito Control Association*. 29:1, 49-53.
2. 2013. Naranjo D.P., W.A. Qualls, D.M. Samson, **D.D. Roque**, T.O. Alimi, K. Arheart, G. Muller, J. C. Beier and R.D. Xue. Evaluation of boric acid sugar baits against *Aedes albopictus* (Diptera: Culicidae) in tropical environments. *Parasitology Research* (Accepted).
3. 2013. Dayana M Samson, Whitney Qualls, **Deborah Roque**, Diana P Naranjo, T. Alimi, Kristopher R Arheart, Gunter C Muller, John C Beier, Rui De Xue. (2013) Resting and energy reserves of *Aedes albopictus* collected in common landscaping vegetation in St. Augustine, Florida. *Journal of American Mosquito Control Association*. 29:3, 231-236.

David Shiffman

1. Shiffman, D. Keeping swimmers safe without killing sharks is a revolution in shark control (2014). *Animal Conservation*. 17: 4, 299-300.
2. Shiffman, D.S., Frazier, B, Kucklick, J, Abel, D, and Sancho, G. Feeding ecology of sandbar sharks in South Carolina estuaries), *Marine and Coastal Fisheries*(in review)
3. Shiffman, D.S. and Hammerschlag, N. A characterization of the recreational charterboat shark fishery in Florida: fishing practices, economic impact, attitudes, and policy implications) *Fisheries* (accepted pending modifications)
4. Parsons, C., Shiffman, D.S., Darling, E, Wright, A, and Spillman, N. (2014) How Twitter literacy can help conservation scientists. *Conservation Biology*. 28:2:299-231.
5. Gallagher, A.J., Hammerschlag, N., **Shiffman, D.S.**, Giery, S.T. (2014) Evolved for Extinction? The price of specialization in apex marine predators. *Biodiversity and Conservation*. 6:7, 619-624.
6. Darling E, **Shiffman DS**, Drew J, and Cote Isabelle (2013) The role of twitter in the life cycle of a scientific publication. *Ideas in Ecology and Evolution* 6, 32-43.
7. Shiffman, David. (2013) Biology of Sharks and Their Relatives. *Transactions of the American Fisheries Society*. 142:6, 1773-1773.
8. **Shiffman DS**. (2012) Twitter as a tool for conservation education and outreach: what scientific conferences can do to promote live-tweeting. *Journal of Environmental Studies and Sciences DOI* 10.1007/s13412-012-0080-1.
9. **Shiffman DS**, Gallagher AJ, Boyle MD, Hammerschlag-Peyer CM, Hammerschlag N. (2012, Cover) Stable Isotope Analysis as a Tool for Elasmobranch Conservation Research: A Primer for Non-Specialists. *Marine and Freshwater Research* 63:635-643.
10. Thaler AD, Zelnio KA, Freitag A, MacPherson R, **Shiffman DS**, Bik H, Goldstein MC, McClain C. (2012) Digital environmentalism: tools and strategies for the evolving online ecosystem. *SAGE Reference – Environmental Leadership: A Reference Handbook* D. Gallagher (Ed.).
11. 2014. Shiffman, David S.; Frazier, Bryan S.; Kucklick, John R.; et al. Feeding Ecology of the Sandbar Shark in South Carolina Estuaries Revealed through delta C-13 and delta N-15 Stable Isotope Analysis. *Marine and Coastal Fisheries*, 6:1, 156-169.
12. 2014. Gallagher, Austin. J.; Hammerschlag, Neil; Shiffman, David S.; et al. Evolved for Extinction: The Cost and Conservation Implications of Specialization in Hammerhead Sharks. *Bioscience*, 64: 7, 619-624.

13. 2014. Shiffman, David Samuel; Hammerschlag, Neil. An Assessment of the Scale, Practices, and Conservation Implications of Florida's Charter Boat-Based Recreational Shark Fishery. *Fisheries*, 39: 9, 395-407.
14. 2014. Shiffman, D. S.; Gallagher, A. J.; Wester, J.; et al. Trophy fishing for species threatened with extinction: A way forward building on a history of conservation. *Marine Policy*, 50, 318-322.
15. 2014. Ferry, Lara A.; Shiffman, David S. The Value of Taxon-focused Science: 30 Years of Elasmobranchs in Biological Research and Outreach. *COPEIA*, 4: 743-746.
16. 2015. Thaler, Andrew David; Shiffman, David. Fish tales: Combating fake science in popular media. Conference: International Marine Conservation Congress. *Ocean & Coastal Management*, 115: 88-91.
17. 2016. Shiffman, David S.; Hammerschlag, Neil. Preferred conservation policies of shark researchers. *Conservation Biology*, 30:4, 805-815.
18. 2016. Collins, Kimberley; Shiffman, David; Rock, Jenny. How Are Scientists Using Social Media in the Workplace? *PLOS ONE*, 11: 10, e0162680.
19. 2017. Gallagher, Austin J.; Shiffman, David S.; Byrnes, Evan E.; et al. Patterns of resource use and isotopic niche overlap among three species of sharks occurring within a protected subtropical estuary. *Aquatic Ecology*, 51:3, 435-448.
20. 2017. Shiffman, D. S.; Hueter, R. E. A United States shark fin ban would undermine sustainable shark fisheries. *Marine Policy*, 85, 138-140.
21. 2017. Macdonald, Catherine; Gallagher, Austin J.; Barnett, Adam; Shiffman, David, et al. Conservation potential of apex predator tourism. *Biological Conservation*, 215, 132-141.

Rachel Skubel

1. 2015. Skubel, Rachel; Arain, M. Altaf; Peichl, Matthias; et al. Age effects on the water-use efficiency and water-use dynamics of temperate pine plantation forests. Conference: Annual Meeting of Canadian-Geophysical-Union. *Hydrological Processes*, 29:18, SI, 4100-4113.
2. 2017. Skubel, Rachel A.; Khomik, Myroslava; Brodeur, Jason J.; et al. Short-term selective thinning effects on hydraulic functionality of a temperate pine forest in eastern Canada. *Ecohydrology*, 10:1, e1780.
3. 2017. Gallagher, Austin J.; Skubel, Rachel A.; Pethybridge, Heidi R.; et al. Energy metabolism in mobile, wild-sampled sharks inferred by plasma lipids. *Conservation Physiology*, 5, cox002
4. 2017. Cooke, Steven J.; Gallagher, Austin J.; Sopinka, Natalie M.; Skubel, Rachel, et al. Considerations for effective science communication. *Facets*, 2, 233-248.
5. 2017. Hammerschlag, N.; Skubel, R. A.; Calich, H.; et al. Nocturnal and crepuscular behavior in elasmobranchs: a review of movement, habitat use, foraging, and reproduction in the dark. *Bulletin of Marine Science*, 93:2, 355-374.
6. 2017. Kough, Andrew S.; Cronin, Heather; Skubel, Rachel; et al. Efficacy of an established marine protected area at sustaining a queen conch *Lobatus gigas* population during three decades of monitoring. *Marine Ecology Progress Series*, 573, 177-189.

Galen Treuer

1. 2013. Johnson, Eric J.; Hassin, Ran; Baker, Tom; Treuer, Galen, et al. Can Consumers Make Affordable Care Affordable? The Value of Choice Architecture. *PLOS ONE*: 12, e81521.
2. 2017. Treuer, Galen; Koebele, Elizabeth; Deslatte, Aaron; et al. A narrative method for analyzing transitions in urban water management: The case of the Miami-Dade Water and Sewer Department. *Water Resources Research*, 53:1, 891-908.

Jill Ulrich

1. 2013. Ulrich J.N., D. P Naranjo, T. O Alimi, G. C Müller and J.C. Beier. (2013) How much vector control is needed to achieve malaria elimination? *Trends in Parasitology*. 29:3, 104-109.
2. 2016. Ulrich, Jill N.; Beier, John C.; Devine, Gregor J.; et al. Heat Sensitivity of wMelWolbachia during *Aedes aegypti* Development. *PLOS Neglected Tropical Diseases*, 10:7, e0004873.

Aaron Welch

1. Welch, A., 2013. The Second Commons: Rethinking Fisheries Reform for the Political Market. *Stanford Journal of Law, Science, and Policy*. Published online January 2013, pp. 1-31.
2. Stieglitz, J.D., Benetti, D., Hoenig, R., Sardenberg, B., Welch, A., Miralao, S. 2011. Environmentally conditioned, year-round volitional spawning of cobia (*Rachycentron canadum*) in broodstock maturation system. *Aquaculture Research*, 43(10):1557-1566.
3. Benetti, D.D. and A. Welch. 2010. Advances in open ocean aquaculture technology and the future of seafood production. *The Journal of Ocean Technology* (5)2: 1-14.
4. Welch, A., Hoenig, R., Stieglitz, J., Benetti, D., Tacon, A., Sims, N., O'Hanlon, B., 2010. From Fishing to the Sustainable Aquaculture of Carnivorous Marine Finfish. *Reviews in Fisheries Science*, 18(3):235-247
5. Bennetti, D., O'Hanlon, B., Rivera, J., Welch, A., Maxey, C., Orhun, M., 2010. Growth Rates of Cobia (*Rachycentron canadum*) Cultured in Open Ocean Submerged Cages in the Caribbean. *Aquaculture* 302:195-201. Papers under review:
1. Welch, A., 2013. Seafood Watch Report: Farmed Cobia, Panama, Colombia, and the United States. Monterey Bay Aquarium Seafood Watch Program, Monterey, CA. *In review*.
2. Welch, A., 2013. Seafood Watch Report: Farmed Pompano, Asia and the Americas. Monterey Bay Aquarium Seafood Watch Program, Monterey, CA. *In review*.
3. Welch, A., Hoenig, R., Stieglitz, J., Daugherty, Z., Sardenberg, B., Miralao, S., Farkas, D., and Benetti, D., 2013. Growth Rates of Larval and Juvenile Bigeye Scad *Selar crumenophthalmus* in Captivity. SpringerPlus, 2, 634.

Julia Wester

1. Hammerschlag, N., Gallagher, A.J., Wester, J., Luo, J., Ault, J.S. (2012) Don't bite the hand that feeds: behavioral impacts of provisioning ecotourism on an apex marine predator. *Functional Ecology* 26(3): 567-576 (Cover story)
2. 2014. Shiffman, D. S.; Gallagher, A. J.; Wester, J.; et al. Trophy fishing for species threatened with extinction: A way forward building on a history of conservation. *Marine Policy*, 50, 318-322.
3. 2016. Wester, Julia; Timpano, Kiara R.; Cek, Demet; et al. The psychology of recycled water: Factors predicting disgust and willingness to use. *Water Resources Research*, 52:4, 3212-3226.

Conference presentations by ECS PhD students, 2010-2013

Temitope Alimi

1. Feb. 2013. *Evaluation of a new formulation of permethrin applied by water-based thermal fogger against Aedes albopictus in residential communities in St. Augustine, Florida*. The 79th Annual American Mosquito Control Association Meeting. Atlantic City, NJ. February 2013.
2. Mar. 2013. *Multi-scale Modeling and Assessment of Malaria Risk in Northern South America*. The 10th Annual Workshop of the Anastasia Mosquito Control District. St. Augustine, FL. March 2013
3. Jun. 2013. GIS in Public Health Conference, Urban and Regional Information Systems association (URISA), Miami, FL: *Modelling risk of exposure to malaria vectors in northern South America*

Caitlin Augustin

1. Augustin, Caitlin Marina and Peter K Swart, Kenneth Broad, "Predictive Bayesian Models for Risk Modeling of Geologic Carbon Capture and Storage Leaks Using Natural Analogues." Goldschmidt. August 2013. Abstract ID: Gold2013:abs:6248
2. Augustin, Caitlin Marina and Peter K Swart, Kenneth Broad, Richard Braumback "The role of stakeholders in developing a regulatory framework for carbon capture and storage." American Geophysical Union. December 2011 Abstract ID: PA13B-1754

3. Augustin, Caitlin Marina and Peter K Swart. "Geochemical Models of Carbon Sequestration in Cranfield, Mississippi." National Science Foundation CCS-Oman 2011 Workshop. January 2011
4. Augustin, Caitlin Marina and Peter K Swart, Timothy H Dixon, Daniel D Riemer. (2010) "Application of computational software to model the geochemical and geomechanical interactions in geologic carbon sequestration sites." AGU Annual Meeting. Abstract 967374
5. "Computational modeling of geologic carbon dioxide sequestration." Comparative Sedimentology Annual Meeting. October 2010, Key Biscayne, Florida

Karlisa Callwood

1. "What's Yours is Mine and What's Mine is Mine: Examining the Political Ecology of the Bahamian Spiny Lobster Fishery." (Talk)
2. Bahamas Natural History Conference, College of The Bahamas; March 16, 2016.
"Condos & Connectivity: Developing an Interdisciplinary Approach to Guide Caribbean Spiny Lobster (*Panulirus argus*) Fisheries Management in the Bahamas." (Talk)
3. 68th Gulf and Caribbean Fisheries Institute Conference, Panama City, Panama; November 13, 2015.
"Making the Most of a Mini-Exhibition as a Platform for Science Education Programming." (Talk) Nano Informal Science Education Network (NISE Net) Network Wide Meeting, Science Museum of Minnesota; June 13, 2015.
4. "Engaging Students in Afterschool Science Learning Programs." (Talk) Building a Healthy Community Advisory County Meeting, Opa Locka City Hall; March 17, 2015
5. "Creating an Interdisciplinary Framework to explore Spiny Lobster Fisheries Management." (Poster) Environmental Science and Policy Beyond the Academy, Poster Session, University of Miami; February 27, 2015
6. "Creating Connections within the Bahamian Spiny Lobster Fishery." (Talk)
Abess Center for Ecosystem Science and Policy Graduate Student Presentations, University of Miami; February 24, 2015
7. "Science Education Best Practices for School Groups." (Panel) Emerging Museum Professionals, Vizcaya Museum and Gardens; February 23, 2015
8. "Connectivity, Condos, & Catch: Analyzing the State of the Bahamian Spiny Lobster Fishery." (Poster) 2014 NOAA Science and Education Forum, Poster Session, University of Maryland, Eastern Shore; October 28, 2014
9. "Reaching Bilingual Science Audiences" (Talk) NISE Net Bilingual Workshop, Houston Children's Museum; June 5, 2013
10. "Connectivity, Condos, & Catch: Analyzing the State of the Bahamian Spiny Lobster Fishery" (Poster) Advancing Careers in Interdisciplinary Research Poster Session, University of Miami; February 11, 2013
11. "Summer Science Programming for Reaching New Audiences" (Talk) NISE Net National Conference, Museum of Science, Boston; December 11, 2012
12. "Policy Implications of Larval Dispersal by *Panulirus Argus*" (Speed Talk) 2011 Student Conference on Conservation Science-New York, American Museum of Natural History, October 11-14, 2011
13. "Policy Implications of Larval Dispersal Scales by Caribbean Spiny Lobster in The Bahamas" (Poster) 63rd Gulf and Caribbean Fisheries Institute Conference, San Juan, Puerto Rico; November 1-5, 2010

Katie Crosley

1. 2013 Crosley, K. *The frontiers of urban environmental education: understanding the role of community-based organizations in the socio-ecological learning of urban youth*. Poster session presented at the 7th Annual World Environmental Education Congress, June 9-14, Marrakesh, Morocco

Catherine Macdonald

1. July 2013. International Conference for Conservation Biology, Baltimore, MD. *Legal Bans on Shark Tourism*.

David Shiffman

1. 2013 American Elasmobranch Society (component of Joint meeting of ichthyologists and herpetologists), Albuquerque, NM. "Use of social media to assess the knowledge and attitudes of different stakeholder groups towards shark conservation"
2. 2013: International Congress for Conservation Biology, Baltimore, MD. "Use of twitter as a tool for conservation education and outreach for scientific conferences"
3. 2012: ScienceOnline, Raleigh, NC. "Blogging to save the world: The use of social media for environmental conservation"
4. 2012: American Elasmobranch Society (component of World Herpetology Congress) Vancouver, BC. "Catch and release shark fishing in Florida: Economic, social and policy implications"

Aaron Welch

1. Welch, A., World Aquaculture Society, Aquaculture America Conference. San Diego, CA. March 2013.
2. Welch, A., Hitchcock, G., Knapp, A., Kelble, C., Benetti, D., 2013. *The Fate of Nutrients Discharged From an Offshore Aquaculture Facility: A Preliminary Report*. World Aquaculture Society, Aquaculture America Conference, Nashville, TN., February 2013.
3. Welch, A., Hoenig, R., Stieglitz, J., Benetti D., Tamaru, C., 2010. *Volitional Spawning and Larval Rearing of Goggle Eyes Selar crumemophthalmus*. World Aquaculture Society, Aquaculture America Conference. San Diego, CA. May 2010.

Workshop and course attendance

Caitlin Augustin

- [2013] Geochemists' Workbench Programming Workshop
- [2013] Research Experience in Carbon Sequestration
- [2013] Dissertation Writing Workshop
- [2013] Advancing careers in interdisciplinary research. SEEDS Sponsored Workshop
- [2011] TOUGH-2 Programming Workshop
- [2011] International Energy Association Greenhouse Gas Summer School on Carbon Capture and Storage
- [2011] American Meteorological Society Summer Policy Colloquium

Katie Crosley

- 2013 Haluza-DeLay, R. & Crosley, K. *(Re)moving margins in environmental education*. Workshop presented at the 7th Annual World Environmental Education Congress, June 9-14, Marrakesh, Morocco
- 2013 Augustin, C., Crosley, K. & Broad, K. *Advancing careers in interdisciplinary research*. SEEDS Sponsored Workshop hosted at the University of Miami, Coral Gables, FL., Feb. 13.
- 2012 National Science Teachers Association National Conference, March 29 - April 1, Indianapolis, IN
- 2011 39th Annual International Association for Experiential Education Conference, Nov. 3-6, Jacksonville, FL

David Shiffman

- 2013: ScienceOnline, Raleigh, NC.
- 2011: International Congress for Conservation Biology, Auckland, New Zealand (official live-tweeter)

Appendix 10—Alumni profiles



TEMITOPE ALIMI, 2016

'The Abess Center was my ticket to the United States and opened a whole new world to me! I chose the Abess Center for my graduate study mainly because of the interdisciplinary nature of the department. I was cognizant of the fact that providing answers to the kind of questions my research would raise would require knowledge of more than one discipline. The Center more than surpassed my expectations in this regard, because I was able to get working knowledge of many other disciplines that I couldn't have gotten otherwise.

'But beyond the academic excellence is the rapport, dependability, and that feeling of family that I came to associate with the Center while I was there. Every student knew the staff had their backs, and people (Gina, Andee, Kenny, Keene) were always on hand to help whenever needed... I was able to forge friendships with both staff and students that I wouldn't trade for the world...

'Thank you, Leonard and Jayne Abess, for your endowment to this center and for giving people like me, a little girl from Lagos with a big dream, the chance to come and actualize my dream. Thank you.'



JESSICA BOLSON, 2010

Jessica was the first recipient of a Ph.D. in Environmental Science and Policy from University of Miami in 2010. Working with Dr. Kenny Broad, she investigated the effects of climate change on the availability of freshwater resources in South Florida, and their implication for water management. Jessica came to the Abess Center with extensive knowledge of climate change policy, having served as a Gubernatorial Fellow in the Florida Department of Environmental Protection in 2008. She had also completed an M.A. in Climate and Society at Columbia University, an M.Ed. in Biology Education at New York University, and a B.A. in Environmental Science at Barnard College.

Prior to her graduate studies, Jessica taught high school biology in New York City. After receiving her Ph.D., she went on to a Postdoctoral Fellowship at the Wharton Risk Management and Decision Processes Center and coordinated the \$5 million National Science Foundation (NSF) South Florida Water Sustainability and Climate project, for which she led the project's behavioral research team. Jessica is a member of an interdisciplinary team of scientists who were recently awarded \$12 million by NSF to develop an Urban Water Innovations Network.



KATIE CROSLEY BEEM, 2014

"The Abess Center has taught me what it means to be an explorer, of both life and knowledge. It taught me to tackle challenges that at times I didn't think were surmountable, and how to be a critical thinker, scholar, and interdisciplinary collaborator. I am now a lecturer and academic/residential coordinator at Cornell in Washington (a DC semester program for Cornell University) where I mentor students on their own research projects and am slowly building up a research program for my own work in urban social-ecological issues."



KARLISA CALLWOOD, 2016

"I was honored to be selected as part of the first Ph.D. cohort with the Abess Center. Because of the program, I didn't need to narrow my research interests down to one discipline. The interdisciplinary nature of the program allowed me to design my own coursework, focusing only on classes I needed for my research. I am also thankful to the Abess Center for helping me find funding each year, particularly the last couple years as I was finishing up. I am now the first person in my family with a doctorate, and for most of the underserved students I have worked with over the past decade, I am the first black female they know who has earned a Ph.D. in science. It has also meant a lot to me to see that there were women of color in each cohort every year."





AUSTIN GALLAGHER, 2015

“The Abess Center provided me with a strong basis for asking questions about how humans interact with the environment, and introduced me to readings, lessons, and approaches I would not have been keyed in on in other doctoral programs. The program also nurtured my skill set and interests in science communication that extend beyond solely publishing, which is crucial for engaging with the public and stakeholders. Today I am working full-time running my ocean conservation NGO, Beneath the Waves, and working with a number of foundations, partners, and corporations to advance marine conservation research on threatened species.”



DAVID SHIFFMAN, 2016

David is currently a Liber Ero Postdoctoral Research Fellow at Simon Fraser University in Vancouver, British Columbia, where he is involved in assessing the sustainability of Canadian shark fisheries. David's work at the Abess Center focused on the feeding behavior and ecology of sharks, as well as on perceptions of sharks by charter boat captains, onshore shark fishers, and various participants in online social media. His dissertation was “An Integrative and Interdisciplinary Approach to Shark Conservation: Policy Solutions, Ecosystem Role, and Stakeholder Attitudes.” David has been active in the social media realm, having been named one of the “best environmentalists in South Florida” by the New Times in 2016, and one of the top scientists to follow on Twitter by Business Insider in 2014. He also won the John Beakley Marine Science Educator of the Year award from the Florida Marine Science Education Association in 2014. He has secured numerous grants, including a SciFund Challenge grant, a Guy Harvey Ocean Foundation fellowship, and a Save Our Seas Foundation grant. David has published over a dozen co-authored and first author papers on shark conservation and biology.



CAITLIN AUGUSTIN, 2016

Abess Fellow

- University of Miami, B.S., Industrial Engineering

Caitlin's research is focused on deployment of carbon capture and storage (CCS) technologies under regulatory uncertainty. Her dissertation is comprised of three unique but fundamentally linked projects: the development of an integrated model for predicting surface leak size using MCMC simulations and Gaussian plume modeling to anticipate the leak impact; crafting effective risk communication for CCS projects; and linking the results from these two projects into a set of recommendations creating an unbiased regulatory framework for CCS.

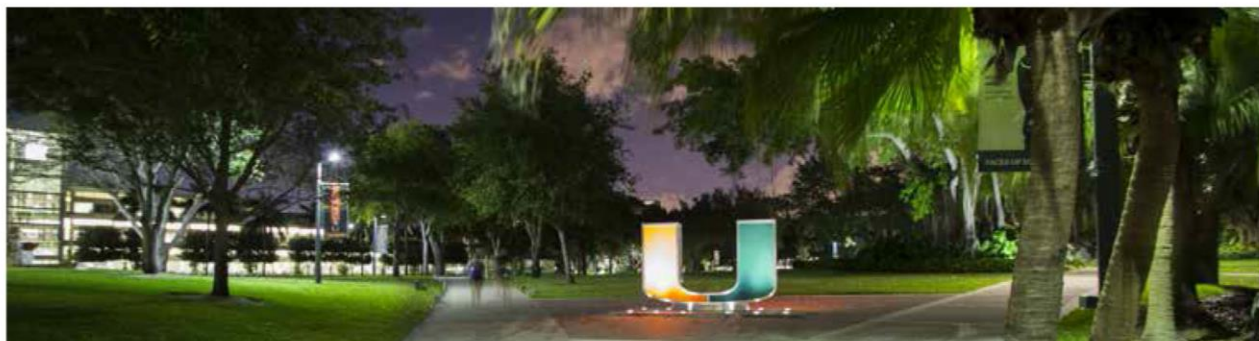


STACY AGUILERA, 2017

Abess Fellow

- Stanford University, B.S., Biology (Marine Biology concentration)
- Stanford University, M.S., Earth Systems (Marine Policy focus)

Stacy is studying small-scale fisheries in California, with a focus on Monterey Bay wetfish (Pacific sardine, northern anchovy, and market squid). Small-scale fisheries are significant to many economies, community identities, and ecosystems. To better understand how these fisheries work, Stacy is using Elinor Ostrom's Social-Ecological System framework to structure her methods and analyses. She is especially interested in how fisheries work in varying conditions and what drives different outcomes; and in science communication and striving to create solutions through interdisciplinary thinking. Stacy is a member of the Abess Center's Broad Lab.





JILL ULRICH, 2016

"I owe my initiation in policy research to the Abess Center, which provided me with all the guidance, encouragement, and resources needed to apply a multidisciplinary approach to researching mosquito-borne disease control. It is a truly unique program, and I don't think I could have had the freedom to pursue my research interests in such a holistic way anywhere else. I believe wholeheartedly in what the Abess Center is doing. It will always be home to me. I think I will always feel the desire to give back to and be a part of the Abess Center in any way I can."



AARON WELCH, 2015

Aaron is the founder of Two Docks Shellfish, LLC, an integrated aquaculture company cultivating sustainable farming of native shellfish in Florida bays. A family enterprise operated by Aaron, his father, and friends, Two Docks provides fresh, high-quality local clams and oysters to Tampa Bay area restaurants and retail outlets. Aaron has worked in the aquaculture industry throughout Latin America and has significant experience advising companies on local and national regulatory requirements, and implementing environmental monitoring programs for aquaculture facilities. Prior to beginning his professional career in the industry, Aaron served for six years as a Surface Warfare Officer in the U.S. Navy. He also holds a J.D. degree from Emory University.





JULIA WESTER, 2015

“Completing my Ph.D. at the Abess Center changed my life. It exposed me to ideas and people I never would have encountered otherwise and gave me the opportunity to work collaboratively with people from such diverse backgrounds. The experiences I had there led me to work with a great group of innovative people on issues that I care about, continuing to work to save the environment, increase research opportunities for students, and expand outreach on the ocean. The Abess Center was critical to setting me on the path I am on now in ways that another, less innovative and interdisciplinary program never would have.”



Graduate Alumni



ANDREW CARTER, 2017

Abess Fellow

- Hunter College, B.A., Geography and Anthropology
- University of Miami, J.D.
- Stony Brook University, M.A., Marine Conservation and Policy

A native of New York City, Andrew first became interested in the human dimensions of environmental change and sustainability while at Hunter College. After receiving his J.D., he practiced law in Florida and New York, simultaneously obtaining an M.A. from Stony Brook University's School of Marine and Atmospheric Sciences. He returned to South Florida and UM as a Ph.D. student at the Abess Center.

Andrew studies the development of both mercury policy and mercury science, and how policymakers, scientists, and the general public perceive and act upon risk and uncertainty concerning mercury. He approaches these issues through a framework that uses mental models theory informed by science and technology studies, decision science, and cultural anthropology. During the summer he teaches science writing to middle school students as part of the Department of Biology's Research in Ecology program. Andrew is a member of the Abess Center's Broad Lab.



CATHERINE MACDONALD , 2017

Abess Fellow

- Amherst College, B.A., History

Catherine was a 2007-2008 Thomas J. Watson Fellow at Amherst College, and her year-long independent research project, titled “Unsustainable Enmity: Sharks and shoreline communities,” explored the interactions of human communities with shark populations in the Bahamas, South Africa, Mozambique, Australia and Malaysia. She is presently the Intern Coordinator for UM’s Marine Conservation Program and the Executive Director of Field School, a hands-on scientific field training program.



Catherine’s research interests include diverse aspects of human-environment interaction, with a particular emphasis on tropical marine systems and attendant human communities. Her dissertation is an interdisciplinary study of shark tourism that addresses the historical roots of modern human-shark interactions, analyzes the present impacts of the industry on human perceptions of sharks and shark attack risk, and proposes some limitations to the conservation value of shark tourism. Catherine works with Dr. Kenny Broad and is a member of the Abess Center’s Broad Lab.



GALEN TREUER , 2017

Abess Fellow

- Oberlin College, B.A. (magna cum laude), Economics
- NSF Graduate Research Fellowship

Galen spent two years conducting research into the psychology and economics of decision making, with a focus on public policy and choice architecture, at Columbia University’s Center for Research on Environmental Decisions and Center for Decision Sciences. Galen studies climate change and water management in South Florida, researching the impact of public policy on preferences and behavior with the goal of identifying interventions that can increase the usability of climate science for adaptation and mitigation planning. He presents at the South Florida Water Sustainability Climate Project’s annual meetings.

Galen works with Dr. Kenny Broad and collaborators from around the country on a multi-disciplinary analysis of sea level rise and other projected climate impacts on the resilience of South Florida’s water system, economy, and environment. He is a member of the Abess Center’s Broad Lab.