<table>
<thead>
<tr>
<th>Project Title</th>
<th>Connections that last: ensuring a sustainable future for the Scientific Research and Education Network (SciREN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duke Student Representative</td>
<td>Alyse A. Larkin, Heather L. Heenehan</td>
</tr>
<tr>
<td>Duke Student Email</td>
<td><a href="mailto:alyse.larkin@duke.edu">alyse.larkin@duke.edu</a>, <a href="mailto:hh18@duke.edu">hh18@duke.edu</a></td>
</tr>
<tr>
<td>UNC Student Representative</td>
<td>Avery B. Paxton, Justin T. Ridge, Ethan J. Theuerkauf</td>
</tr>
<tr>
<td>UNC Student Email</td>
<td><a href="mailto:abpaxton@live.unc.edu">abpaxton@live.unc.edu</a>, <a href="mailto:ridge@unc.edu">ridge@unc.edu</a>, <a href="mailto:ejtlu@email.unc.edu">ejtlu@email.unc.edu</a></td>
</tr>
<tr>
<td>Faculty Advisor(s)</td>
<td>Dr. Charles H. Peterson, Dr. David W. Johnston</td>
</tr>
</tbody>
</table>

**Executive Summary (one paragraph)**

The Scientific Research and Education Network (SciREN) is a graduate student-led network that connects local STEM researchers with educators to foster the dissemination of current research and ultimately enhance the science literacy of today's youth. Over the past three years, SciREN has connected over 500 STEM researchers and educators across NC. SciREN successfully filled an unoccupied niche by facilitating the transmission of cutting-edge research into classrooms statewide through free annual networking events and lesson plan workshops. The networking events bring researchers and educators together for face-to-face interaction and exchange of ideas and the lesson plan workshops help researchers translate their work into classroom-ready exercises that meet teaching standards. Given the popularity of SciREN among researchers and educators, the network is growing rapidly and requires additional funding to strengthen connections among researchers and educators. As such, SciREN requests funding to develop an interactive online network with three components: 1) Database of searchable lesson plans; 2) Interactive directory of researchers and educators; and 3) Forum to encourage continued dialogue among members of the network. An interactive online network is critical for continuing and furthering the dialogue between STEM researchers and educators that began with the SciREN networking events. This proposal is well aligned with the goals of the Kenan-Biddle Partnership because SciREN is an inter-institutional graduate student-led program that encourages collaboration among researchers from multiple universities, including both UNC and Duke, to disseminate cutting-edge research to local classrooms and inspire the next generation of scientists.

| Grant Amount Requested | $15,000.00 |
Title: Connections that last: ensuring a sustainable future for the Scientific Research and Education Network (SciREN)

Student Investigators:
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Justin T. Ridge; Doctoral Candidate; Department of Marine Sciences; University of North Carolina at Chapel Hill, Institute of Marine Sciences; 3431 Arendell Street, Morehead City, NC 28557; 252-726-6841; ridge@unc.edu
Ethan J. Theuerkauf; Doctoral Candidate; Department of Marine Sciences; University of North Carolina at Chapel Hill, Institute of Marine Sciences; 3431 Arendell Street, Morehead City, NC 28557; 252-726-6841; ejtheu@email.unc.edu

Faculty Advisors:
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Dr. David W. Johnston; Assistant Professor of the Practice of Marine Conservation and Ecology; Duke University Marine Laboratory, Division of Marine Science and Conservation, Nicholas School of the Environment; 135 Duke Marine Lab Road, Beaufort, NC 28516; 252-504-7593; david.johnston@duke.edu

Executive Summary: The Scientific Research and Education Network (SciREN) is a graduate student-led network that connects local STEM researchers with educators to foster the dissemination of current research and ultimately enhance the science literacy of today’s youth. Over the past three years, SciREN has connected over 500 STEM researchers and educators across NC. SciREN successfully filled an unoccupied niche by facilitating the transmission of cutting-edge research into classrooms statewide through free annual networking events and lesson plan workshops. The networking events bring researchers and educators together for face-to-face interaction and exchange of ideas and the lesson plan workshops help researchers translate their work into classroom-ready exercises that meet teaching standards. Given the popularity of SciREN among researchers and educators, the network is growing rapidly and requires additional funding to strengthen connections among researchers and educators. As such, SciREN requests funding to develop an interactive online network with three components: 1) Database of searchable lesson plans; 2) Interactive directory of researchers and educators; and 3) Forum to encourage continued dialogue among members of the network. An interactive online network is critical for continuing and furthering the dialogue between STEM researchers and educators that began with the SciREN networking events. This proposal is well aligned with the
goals of the Kenan-Biddle Partnership because SciREN is an inter-institutional graduate student-led program that encourages collaboration among researchers from multiple universities, including both UNC and Duke, to disseminate cutting-edge research to local classrooms and inspire the next generation of scientists.

**Background:** The Scientific Research and Education Network (SciREN) is a graduate student-led network that connects local STEM researchers and educators to foster the dissemination of current research and ultimately enhance the science literacy of today’s youth. The goals of SciREN are to: 1) Establish a lasting network of researchers and educators; 2) Facilitate cooperation and collaboration among network members; 3) Bring cutting-edge research and researchers into local classrooms; and 4) Support researchers in developing broader impacts, strengthening outreach efforts, and improving communication skills. SciREN accomplishes these goals by hosting free annual networking events, held at museums and aquaria, which bring researchers and educators together for face-to-face interaction as well as the exchange of ideas and materials (Fig. 1). Additionally, SciREN organizes lesson plan workshops to help researchers translate their work into classroom-ready exercises that meet state and national teaching standards.

*Over the past three years, SciREN has organized successful networking events and lesson plan workshops on the coast and in the Triangle regions of North Carolina (NC).* SciREN was founded in 2012 by two graduate students, Justin Ridge and Ethan Theuerkauf, at the University of North Carolina at Chapel Hill’s Institute of Marine Sciences (UNC-IMS). During the first year of SciREN, Ridge and Theuerkauf planned SciREN Coast, a networking event at the NC Aquarium in Pine Knoll Shores that connected 36 local marine scientists with 65 local educators. During the second year of SciREN, the leadership team expanded to include Avery Paxton at UNC-IMS and Heather Heenehan and Alyse Larkin of the Duke University Marine Lab (DUML). In early 2014, the SciREN team hosted their second annual SciREN Coast networking event at the NC Aquarium at Pine Knoll Shores. The event grew to include 65 local marine science researchers and 93 teachers. Prior to the second SciREN Coast networking event, the team piloted a lesson plan workshop to teach researchers how to prepare a lesson plan based on current research while adhering to state and national teaching standards. The third SciREN Coast is scheduled for February 2015.

**Figure 1:** SciREN networking events bring researchers and educators together for interaction and exchange of ideas and materials. A) Graduate student Katy Wood from DUML explains interactive class-room exercise that simulates marine debris with jellybeans. B) UNC-IMS professor Dr. Johanna Rosman and graduate student Jie Gao demonstrate ocean stratification using dye. C) Educators gather for an opening address at a SciREN networking event.

*Following the success of two SciREN Coast networking events, the SciREN team expanded to the Triangle region of NC.* After deciding to expand SciREN to a different geographic area, six additional team members from three of the major universities in the Triangle area, UNC, Duke
University, and North Carolina State University (NCSU), were invited to join the team. The entire team is now organizing SciREN Triangle, a networking event for the triangle area of NC. SciREN Triangle is open to all STEM fields and is scheduled for November 13, 2014 at the NC Museum of Natural Sciences in Raleigh. Within two months of opening registration, we reached our maximum capacity of over 130 researchers and as of one month prior to the event, we have around 200 educators registered. To help researchers prepare for the SciREN Triangle networking event, we hosted a lesson plan workshop, led by the SciREN team with the help of 20 local teachers, that taught 49 researchers how to make an effective lesson plan based on their research.

Since its conception in 2012, SciREN has connected over 500 researchers and educators. The majority of participating researchers are graduate students, although post-doctoral fellows, professors, faculty researchers, and undergraduates have also participated. One of the most exciting aspects of SciREN is that researchers come from a broad range of institutions for the common goal of providing educators with cutting-edge STEM research. For example, marine science researchers from UNC, Duke University, NCSU, East Carolina University, UNC-Wilmington, NC Sea Grant, NC Maritime Museums, NC Coastal Reserves, The Science House, and Surfrider participated in the two SciREN Coast events. These researchers have had positive experiences as part of the SciREN network. For example, Shannon Brown, a graduate student from NCSU, stated: “I felt SciREN was the perfect outreach opportunity. As a first year graduate student, it was one of the first times I was speaking about my research to a general audience. The educators found my work interesting, and many were able to offer suggestions for future improvements or potential collaborations for future work.” The majority of participating educators are K-12 teachers, although informal educators, homeschool, and preschool teachers have also joined. The second SciREN Coast event, for example, hosted teachers from nine counties in Eastern and Central North Carolina, and teachers from neighboring states of Virginia and South Carolina also attended (Fig. 2). Educators have been enthusiastic about and impressed by SciREN. For example, Kelly Riley, a 4th Grade Teacher at the Tiller School in Beaufort, NC who participated in both SciREN Coast networking events, stated: “SciREN offers an amazing grassroots experience for educators to learn about marine studies and research conducted in our own backyards! The opportunity to discuss the relevance of local research and how it translates to classroom learning develops powerful partnerships with scientists and teachers! The impact on student learning is the true reward!” Based on the success and growth of SciREN over the past three years, SciREN plans to expand to connect additional researchers and educators throughout NC, additional states, and eventually countries.

Proposed Activities: SciREN is an existing program led by an inter-institutional and inter-departmental team of graduate students. Over the past three years, SciREN has successfully filled an unoccupied niche by facilitating the transmission of cutting-edge research into classrooms statewide. Given the popularity of SciREN among researchers and educators, the network is dramatically expanding. To meet the needs of the growing network, SciREN must
adapt to ensure that it is sustainable into the foreseeable future. While existing networking events and lesson plan workshops form the backbone of SciREN, a formal space for sustaining lasting communication, connection, and collaboration among SciREN members is lacking (Fig. 3). As such, we propose the construction of an interactive online network to foster long-lasting connections between researchers and educators. The online network will include three tangible components (Fig. 3):

1) Database of searchable lesson plans that researchers have created for SciREN events;
2) Detailed and interactive directory of researchers and educators who have participated in SciREN events;
3) Forum to foster continued dialogue among researchers and educators.

Database of searchable lesson plans: In preparation for each SciREN networking event, researchers create lesson plans based on their research that adhere to state and national teaching standards. Currently, the lesson plans presented at a particular SciREN networking event are circulated to the educators who attended that same event via email. Although this system has functioned in the past, our goal is to improve this system to make SciREN sustainable. We will do this by making SciREN lesson plans accessible to all SciREN-network educators. We envision a system where: 1) Researchers who created a lesson plan for SciREN networking events can personally upload their lesson plan and associated materials to an online database; 2) Researchers can update their lesson plan and associated materials at their convenience to ensure that they reflect up-to-date science; 3) Educators can access all SciREN lesson plans, rather than just a subset of plans from the networking event they attended; 4) Educators can easily search for lesson plans that meet certain criteria including grade levels, teaching standards, topics, time allocation, etc. so that they can readily integrate SciREN lesson plans into their teaching curricula; and 5) Educators can provide feedback on lesson plans and materials for researchers.

Interactive directory of researchers and educators: Whereas SciREN has connected hundreds of researchers and educators, each of these connections stems from a particular networking event. For example, educators who attended SciREN Coast in 2013 received contact information from the researchers who also attended that specific event. We aim to create an interactive directory of all SciREN researchers and educators to maintain a lasting network and facilitate enhanced cooperation among network members. Specifically, we envision an interactive
directory, reminiscent of a social media site like LinkedIn where: 1) Researchers maintain profiles including their research topics, lesson plans, and interests in classroom visits; 2) Educators build profiles that include their teaching needs and potential opportunities for researchers to engage with students via in-person and/or remote classroom visits; and 3) Researchers and educators can browse these profiles and communicate directly to facilitate future collaborations.

**Forum to foster continued dialogue:** SciREN networking events foster communication among researchers and educators regarding innovative ways to translate and introduce cutting-edge research into local classrooms. These conversations are critical for enhancing STEM education nationwide. We aspire to provide a platform where these conversations can continue to accelerate the dissemination of STEM research to students throughout the year, beyond our networking events. Specifically, we aim to create a members-only online forum where: 1) Researchers can pose questions about the best way to incorporate their research into classroom curricula; 2) Educators can present questions about the best ways to incorporate cutting-edge science in their classroom curricula; and 3) Sustained conversations among multiple educators and researchers may occur.

**Programmatic Benefits:** This proposal is uniquely poised to meet both goals of the Kenan-Biddle Partnership. The first goal of the Kenan-Biddle Partnership is to 'promote inter-institutional collaboration and the enhancement of intellectual life at both universities by strengthening established or encouraging new collaborations.' SciREN meets this goal for three main reasons. First, at its core, SciREN is an *inter-institutional graduate student led-program* that facilitates collaboration among researchers from both universities to bring cutting-edge science to local classrooms. Second, SciREN *improves intellectual life* at both universities, as well as their more isolated marine labs, because it provides meaningful science outreach opportunities for diverse members of the academic community, including graduate students, undergraduates, faculty, and postdoctoral fellows and provides hands-on training in broader impacts. Third, SciREN is unique because it is an *existing collaboration* with an impressive track-record, thus it is prepared to successfully implement this *new type of collaboration*, the interactive online network, which will ensure long-term sustainability and growth of the established dialogue between STEM researchers and educators. The second goal of the Kenan-Biddle Partnership is to contribute ‘to the scholarly and/or service missions of both UNC-CH and Duke.’ The UNC mission states that it strives to 'enhance access to learning and to foster the success and prosperity of each rising generation,' which SciREN achieves by *fostering the dissemination of current research* to local classrooms to *inspire the next generation of scientists.* Additionally, the service mission of UNC is to 'extend knowledge-based services... to the citizens of NC.' SciREN meets this objective by *connecting researchers with educators and students* from across the state. Analogously, the Duke University mission is to 'provide wide-ranging educational opportunities, on and beyond our campuses, for traditional students, active professionals and life-long learners.' SciREN provides STEM educational opportunities to *researchers on campus* looking to translate their science into classroom-ready exercises, to *students beyond campus* who are the next generation of leaders, and to *teachers beyond campus* who aim to inspire students. As such, this proposal to fund an interactive online network to enhance the existing SciREN program is well aligned with the Kenan-Biddle Partnership goals.
**Expected Products and Presentations:** Funding is requested to create an interactive online network to extend and strengthen the SciREN network. Specific products include the three components of the interactive online network: database of lesson plans, directory of researchers and educators, and forum to foster collaboration (Fig. 3). The interactive online network will be constructed over the course of one year, beginning in January 2015 (Table 1). The network will be launched in September, presented to participating SciREN researchers and educators electronically in October and November, and polished by December 2015. At each subsequent networking event and lesson plan workshop, attendees will be introduced to and invited to join the interactive online network. Each researcher and educator will receive their own login information. Members of the SciREN team will monitor activities on the interactive online network.

**Table 1: Milestone schedule for creation of SciREN interactive online network.**

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<thead>
<tr>
<th>Milestone</th>
<th>Feb</th>
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<td>Contact web developers</td>
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<td>Invite SciREN members to join</td>
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<td>Write and submit final report</td>
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This proposal for an interactive online network is timely because four of the five SciREN Executive Team members plan to complete their PhD programs within the next two years. As such, it is critical that SciREN develop an interactive online network to ensure the sustainability of this innovative program even after the founding members have graduated. Having a solid interactive online network in place will ensure that SciREN remains sustainable as leadership roles rotate to incoming graduate students. The SciREN Executive Team has already developed the infrastructure for incoming graduate students to ‘shadow’ the current team members to learn how to successfully implement SciREN associated events and ultimately transition to full leadership roles.

**Detailed Budget Plan:** The strength of SciREN currently builds on the passion of educators and researchers, the commitment of the SciREN team, and the generosity of our sponsors. Funding from SciREN team members’ respective university departments, including Duke University Marine Laboratory and Department of Biology, UNC Institute of Marine Sciences, Department of Marine Sciences and Department of Biology, has made the main networking events sustainable (Fig. 2). External funding from sources, such as NC Sea Grant, has made the accompanying lesson plan workshops sustainable (Fig. 2). The NC Aquarium at Pine Knoll Shores and the NC Museum of Natural Sciences have also provided support by donating space for networking events and lesson plan workshops. Because the SciREN network is growing rapidly, we require additional funding to expand our efforts to connect researchers and educators through development of the interactive online network (Fig. 3).

SciREN Executive Team members developed a SciREN website (http://www.thesciren.org/) using a Word Press platform. While the team learned how to create a website with the user-friendly Word Press, none of the team members has formal web development training. The vision for an interactive online network requires high-level web development skills that we
simply do not have and cannot master quickly enough to cater to the growing SciREN network. For example, the network requires functional file upload and download functions for the database of lesson plans. The directory of researchers and educators requires social-network type programming. The forum is simple yet must be linked to the database and directory for seamless integration and ease of use. As such, the budget is for web development costs to create the interactive online network. Cost estimates were obtained as quotes from several web development contractors in NC (see supplemental materials). If this proposal is funded, the SciREN Team will receive quotes from additional contractors, as per UNC requirements. The lowest cost estimate received was $5,000 for phase one of web development. For the full interactive online network, it will cost close to $15,000. We request that Kenan-Biddle Partnership consider funding the entire cost, but if that is not possible, then please consider funding part of the development costs, such as $5,000 for phase one, so that we could then find additional funding sources to complete this project.

Qualifications of Student Investigators: The SciREN Executive Team is composed of the student investigators Paxton, Larkin, Heenehan, Ridge, and Theuerkauf (Fig. 4). Two members, Ridge and Theuerkauf, founded SciREN in 2012. Paxton, Larkin, and Heenehan were selected to join the SciREN Executive team in 2013. In total, the SciREN Executive Team has successfully hosted two SciREN Coast workshops and is planning a third SciREN Coast networking event and accompanying lesson plan workshop. Additionally, the Executive Team is working with six graduate students from the Triangle region to organize SciREN Triangle, scheduled for November 2014. The Executive Team members are all graduate students in marine science related fields. They specialize in a variety of topics ranging from marine bioacoustics (Heenehan) and phytoplankton communities (Larkin) to coastal geology (Ridge & Theuerkauf) and applied marine ecology (Paxton). They have all demonstrated excellence and commitment to research, teaching, and outreach (see CVs).

Advisor Assessments: Dr. Charles ‘Pete’ Peterson is an Alumni Distinguished Professor of Marine Sciences, Biology, and Ecology at the University of North Carolina at Chapel Hill, currently based at the Institute of Marine Sciences. Over the past 38 years as a Professor at UNC, Pete has demonstrated a commitment to inter-departmental and inter-institutional research and collaboration. Pete has collaborated on research and publications with colleagues from the three UNC departments he holds appointments in plus Geology, Physics, Chemistry, Environmental Sciences and Engineering, and the Law School. As the head of an interdisciplinary marine conservation and ecology lab, Pete has conducted cutting-edge research that has led to enhanced collaboration across universities both in the US and worldwide. Pete helped establish and was a multiple-year chair of the scientific steering committee for the National Center for Ecological Synthesis and Analysis (NCEAS), a National Science Foundation supported center. As the chair of the NCEAS steering committee, Pete participated in six working groups which included scientific experts from across the nation and internationally that led to widely cited publications in journals such as Science and PNAS, among others. Additionally, Pete chairied and helped
establish the national steering committee for the first biologically oriented US global change program, called GLOBEC. By its termination, this governmentally mandated program had funded hundreds of millions of dollars of research in 15 countries worldwide. Specifically, Pete has demonstrated a commitment to collaboration with Duke University faculty and students. For 15 years, Pete and his counterpart Dr. John Sutherland at DUML held joint journal club and weekly seminars during the academic year. Participants included UNC and Duke students and faculty members specializing in diverse fields of oceanography, phycology, and chemical ecology, as well as scientists from the NOAA lab in Beaufort. This tradition has continued today following the arrival of Dr. Brian Silliman at DUML. Pete taught an interdisciplinary summer course in barrier island geology, ecology, and policy that jointly merged UNC with Duke University. During this last year, faculties from the three local marine labs (UNC-IMS, DUML, and CMAST) met to discuss and ultimately approve the establishment of a coastal center for marine natural and social capital and environmental and human health. Pete, along with Dr. Brian Silliman of DUML and Dr. Dave Eggleston of CMAST are the founders of this center.

**Dr. David W. Johnston** is an Assistant Professor of the Practice of Marine Conservation Ecology at Duke University. His professional experience ranges from leading research programs for NOAA to working as an ecologist within the NGO sector. Johnston’s research program focuses on the ecology and habitat needs of marine vertebrates in relation to pressing conservation issues such as climate change, habitat loss, ocean noise, incidental mortality and overharvests. He has published extensively in top journals in the fields of conservation biology, oceanography, marine ecology and marine policy on research that spans tropical, temperate and polar biomes. Johnston is an innovative teacher with experience in both large and small classrooms, and is skilled in Massive Open Online Courses, field-based learning situations, data visualization and digital textbook development and publication. Throughout his career Johnston has worked across departmental and institutional boundaries. While at NOAA, Johnston represented the US at UNEP marine science meetings with various Pacific Island nations, territories and freely-associated compact states, and coordinated an inter-island photo-identification project for Hawaiian spinner dolphins. At Duke, Johnston convened a three year working group on climate change and high latitude marine mammals, which resulted in an exchange of scientists between Russia and the US. Within Duke, Johnston recently co-chaired the Nicholas School’s Digital Education Working Group and was the Faculty Advisor for a previous Kenan-Biddle project, the Scientists with Stories Project.

**Supplementary Materials:** CVs for student investigators and faculty advisors are included below (p. 9-22). Web development quotes are attached at the end of this proposal (p. 23-33).
AVERY B. PAXTON  
PhD Student

University of North Carolina at Chapel Hill  Phone: (252) 726-6841, ext. 380
Department of Biology  Fax: (252) 726-2426
Institute of Marine Sciences  Website: http://www.averypaxton.com
3431 Arendell Street; Morehead City, NC 28557  Email: abpaxton@live.unc.edu

Education

2012 – 2017 - PhD – Biology, University of North Carolina – Chapel Hill (expected)  

2007 – 2011 - BS – Environmental Science, University of Virginia  
Specialization: Environmental and Biological Conservation; Advisors: Dr. Carleton Ray and Dr. Howard Epstein; Charlottesville, VA; Aug 2007-May 2011.

Professional Experience

2012 – present - RESEARCH ASSOCIATE, Albanian Center for Marine Research, Saranda, Albania. Conduct baseline data collection, habitat mapping, and hypothesis driven research on fish and invertebrate communities on submerged structures dating from 4th Century BC to 21st Century.

2012 – 2013 GRADUATE TEACHING ASSISTANT, University of North Carolina at Chapel Hill, Chapel Hill, NC. Taught two introductory biology laboratory sections per semester of twenty students each on topics ranging from photosynthesis and enzymes to molluscs and vertebrate anatomy.

2012 - SUBTIDAL ECOLOGY RESEARCH TECHNICIAN, Friday Harbor Laboratories, University of Washington, Friday Harbor, WA. Monitored long-term rocky subtidal transects with SCUBA surveys and analyzed photoquadrats.

Dive Experience


2008 – 2011 INSTRUCTOR, DIVEMASTER, CREW, Outer Banks Dive Center, Nags Head, NC. Taught basic through advanced diving courses. Guided up to four divers on wreck dives 70-130 ft deep. Managed six to twenty passengers on R.V. Go-Between to provide safe, fun mid-Atlantic wreck diving experience for beginner to technical SCUBA divers; oversaw boat deck and delivered dive briefings.

Honors and Awards

2012 - present - National Science Foundation Graduate Research Fellowship, $132,000: Three years stipend plus tuition for academic merit and hard substrate research proposal.

2011 - Distinguished Major, High Distinction: High distinction for undergraduate distinguished
majors thesis.
2009 – 2011 - **NOAA Hollings Scholar**, $20,000: Academic merit scholarship and shipwreck research fellowship
2007 – 2011 - **Echols Scholar**, University of Virginia Honors Program: 1 of 200 selected from 3,000 incoming students.

**Research Grants**


2010 - **Harrison Research Grant**, $3,000: University of Virginia grant for shipwreck research. Paxton, A.B. (PI).

2009 - **College of Arts and Sciences, Small Research Grant**, $500: University of Virginia grant for shipwreck research. Paxton, A.B. (PI).

**Publications and Presentations**


**Outreach Experience:** Scientific Research and Education Network (SciREN) – executive team and scientist coordinator; Beneath the Waves Film Festival in Carteret County – organizing team; UNC IMS Graduate Student Association – founder and chair; Scientists with Stories – student leader.

**Media Coverage:**

- ‘Life on the Rocks,’ UNC – TV Science Now segment by Frank Graff, July 2014
- ‘Scoping out the sea for science,’ WCTI-12 News by Ellen Bacca, June 2014
- ‘Sea turtles relocated to NC shipwreck,’ WCTI-12 News by Ellen Bacca, June 2014
- ‘Giving sea turtles a lift,’ UNC Research by Mary Lide Parker, June 2014
- ‘Carolina’s IMS divers pitch in with sea turtle transport,’ UNC Gazette by Courtney Mitchell, April 2014
- ‘Beneath the Waves Film Festival,’ Public Radio East by Jared Brumbaugh, March 2014
Alyse Anne Larkin
alyse.larkin@duke.edu
135 Duke Marine Lab Road, Beaufort, NC 28516

EDUCATION

• **Duke University**, Durham, NC
  *Doctor of Philosophy*, Expected May 2016
  *School- Nicholas School of the Environment and Graduate School; Division- Marine Science and Conservation; Concentration- Marine Biology; Certificates- College Teaching*
  Dissertation: “The Composition and Activity Response of Genetically Diverse Prochlorococcus sp. Communities to Increasing Ocean Temperature.”
  *Current GPA: 4.0/4.0*

• **Vassar College**, Poughkeepsie, NY
  *Bachelor of Arts*, Awarded *cum laude* May 2010
  *Major- Environmental Studies; Concentrations- Biology and Anthropology; Minor- French*
  *Senior Thesis: “Algae-Based Biodiesel as a Source of Economic Development,” **Awarded a grade of “Distinction”*
  *Overall GPA: 3.83/4.0*  
  *GRE: Quantitative 740, Verbal 690, Analytic Writing 5.0*  
  *Honors: Phi Beta Kappa Society Member, General (cum laude generalis) and Departmental (cum laude subjectiva) Honors, NYSWCAA All-Academic Team (2008-2010)*

RESEARCH EXPERIENCE

• **Duke University**, Durham, NC  
  August, 2011 – Present
  *PhD Candidate and Research Assistant to Dr. Zackary Johnson, Marine Science Dept.*
  Conduct research on the influence of temperature change on open-ocean Prochlorococcus community composition and metabolic activity using 454 ITS sequencing, qPCR and RTqPCR. Maintain culture library of Prochlorococcus strains. Helped develop 16S rDNA primers for Prochlorococcus.

• **Vassar College**, Poughkeepsie, NY  
  September, 2009 - August, 2010
  *Research Assistant to Dr. John Long, Biology Dept.*  
  Conducted research on Triakis seminfasciata swimming biomechanics. Tested the usefulness of an original tracking program in “Mathematica.” Created a standard operating procedure for analyzing images sequences for the “reconfiguration error” and “unsteadiness index.”

PUBLICATIONS


PRESENTATIONS


Lin Y, Larkin A, de Oca M, and ZI Johnson. *In situ* activity of a dominant Prochlorococcus

STUDENT MENTORSHIP

• Samantha Rose, Drury University Undergraduate Student June - August, 2012
  NSF Research Experiences for Undergraduates (REU) Program, Duke University Marine Laboratory, Beaufort, NC

TEACHING EXPERIENCES

• Teaching Assistant for “Invertebrate Zoology” (BIO377/ENV777), Instructor: Dr. Cindy Van Dover, Duke University, Beaufort, NC, Fall 2014,
• Teaching Assistant for “Coastal Watershed Science and Policy” (ENV822), Instructor: Dr. William Kirby-Smith, Duke University, Beaufort, NC, Spring 2014
• Teaching Assistant for “Analysis of Ocean Ecosystems” (BIO272A/ENV787A), Instructor: Dr. Zachary Johnson, Duke University, Beaufort, NC, Fall 2012
• Teaching Assistant for “Sea Change: Human Interactions with the Ocean” (BIO49S), Instructor: Dr. Eric Palkovacs, Duke University, Durham, NC, Spring 2012
• Guest Lecturer for “Skype in the Classroom” Program
  Tustin High School (California), Gilmer High School (Georgia), The Hereford Academy (United Kingdom), Fall 2013 and 2014
• Guest Lecturer for the North Carolina Science Festival’s “Invite a Scientist” Program
  Havelock Middle School, Morehead Middle School, Atlantic Elementary School, Broad Creek Middle School, Spring 2013 and 2014
• Guest Lecturer for “Analysis of Ocean Ecosystems” (BIO272A/ENV787A), Duke University, Beaufort, NC, Fall 2012 on Sept. 17th, Nov. 7th, and Nov. 26th
• Chemistry Tutor, Santa Monica College, Spring 2011, Santa Monica, CA

SERVICE, LEADERSHIP, AND OUTREACH

• Scientific Research and Education Network (www.thesciren.org), Executive Team
  Member, Coast Team Member, 2013-Present
• Seminar Series Coordinator, Duke University Marine Lab, PhD Student Service, 2014-2015
• Community Outreach Coordinator, Duke University Marine Lab, PhD Student Service, 2013-2014
• “Island Life” Coordinator, Duke University Marine Lab, PhD Student Service, 2012-2013
• Vassar College Women’s Swim Team, Varsity Member, 2006-2010; Captain, 2009-2010
• The Jane Goodall Institute, Founding Member of the California Roots & Shoots Youth Leadership Council, 2004-2006

PROFESSIONAL ORGANIZATIONS

• Association for the Sciences of Limnology and Oceanography, 2014 – Present
• American Association for the Advancement of Science (AAAS), 2012 – Present
• Phi Beta Kappa Society, 2010 – Present
PROJECT ESTIMATE

10/24/2014

Avery Paxton
PhD Student
Biology Department
Institute of Marine Sciences
University of North Carolina at Chapel Hill
apaxton@live.unc.edu
http://www.averypaxton.org

Website Login Features

$14,800

This will include:
+ Meeting with you, and all other project stakeholders, to determine audience, features, and visual style
+ Communications with current web administrator to get access to site
+ WordPress setup of subpages
+ Login setup
  + Three custom page templates within login
  + Database of searchable lesson plans
  + Interactive directory of researchers and educators
  + Form for researchers to ask questions (blog setup)
  + Responsive styles and testing
  + Training and documentation
  + Project management/communications

If edits or other elements of the project begin to approach the limit of the estimate, we will let you know, and estimate any cost that could go over. Conversely, if a project takes less time than the estimate, you are only billed for time spent. Our web work is billed at the rate of $90/hour in increments of 0.25 hours. Please note that hosting fees will be additional, if applicable.
ESTIMATE FOR

WordPress Theme Development

For The

Interactive Online Networking Site

On Behalf Of

SciREN

SciREN
TO: SciREN (Avery Paxton)  
FROM: TheeDesign Studio (Mike Morris)  
DATE: October 24, 2014  

TheeDesign welcomes the opportunity to provide this proposal for our professional web design, search engine optimization, and internet marketing services to you and your team at SciREN.

In business since 2004, we have the resources and expertise to design and develop a search engine friendly website for you with an easy-to-use content management system, blog, green screen video, and internet marketing program tailored to meet your specific needs.

In addition to traditional desktop and laptop friendly website development we also provide responsive web design to serve your smartphone and tablet computer visitors as well with a pleasing experience. You will save a lot of time by maintaining only one website that serves your visitors on mobile, tablet, and standard size monitors at the same time. Therefore, you won’t need to update three different websites to serve the three main device user groups.

Our in-house team is comprised of highly educated web designers, developers, programmers, and internet marketing experts. We pride ourselves on providing top-notch customer service and on making ourselves available to our clients whenever they need technical support either by phone or by visiting our office conveniently located off Glenwood Avenue in Raleigh, North Carolina.

This is a partnership — your success is our success.
PROJECT OBJECTIVE NO. 1: CREATE YOUR WEB PRESENCE IN USER-FRIENDLY WORDPRESS.

- To provide SciREN with the high-level web development skills that you simply do not have and cannot adequately learn quickly enough to cater to the growing SciREN network.
- Build a contemporary social-networking site that properly communicates important information, uniqueness, and value to prospective educators and researchers.
- To merge best-practices Web 2.0 design, simplified content, and improved navigation to increase online traffic, brand recognition, and continual customer engagement.
- To customize a robust, but intuitive content management system (CMS) that empowers you ownership of your website and the ability to quickly edit page content as necessary.
- Essential Site requirements
  - Network requires functional file upload and download functions for the database of lesson plans.
  - The directory of researchers and educators requires social-network type programming.
  - The forum is simple yet must be linked to the database and directory for seamless integration and ease of use.
  - a year subscription to DropBox Pro to store our existing lesson plan resources during the creation of our interactive online network
  - one year of website and domain name hosting costs

PROJECT OBJECTIVE NO. 2: FIND AN EXPERIENCE WORDPRESS SITE DEVELOPMENT PARTNER CAPABLE OF WORKING WITH SHORT DEADLINES

- To partner with an established full-service WordPress website agency that is dedicated to your mission, and is principled to provide strategic, results-oriented recommendations.
- To outsource web design responsibilities to industry specialists, therefore legitimizing SciREN while also increasing exposure and bottom-line revenue via the web.
- To alleviate your web development responsibilities, allowing you to continually focus on your day-to-day responsibilities of managing SciREN and the SciREN community.
THEEDesign Studio WILL PROVIDE

SCIRED

WITH THE FOLLOWING PRODUCTS AND SERVICES

1. RESEARCH, PROJECT PLANNING, AND CONSULTATION

TheeDesign will consult with you to fully understand your vision, special requirements, scope of your project, target audience, current market position, short term goals, and long term expectations.

We will research your competitors and examine your industry-specific trends and standards. These methodical front-end approaches will allow our team to best comprehend and conceptualize SciREN, culture, products, and services before it reaches the phases of design, development and promotion.

2. PURCHASE WWW.MYSCIRED.ORG AND WWW.MYSCIRED.COM URLS

TheeDesign will help Sciren purchase the two above names for the associated social media Site My SciREN. Or any other two names for the new website.

3. SETUP OF MYSCIRED.COM SOCIAL MEDIA WEBSITE BASED ON PROVIDED DESIGN

TheeDesign will setup a one page social media site based on a provided design.

4. SITEMAP AND WIREFRAMES SETUP

Following our initial meeting and consultation, TheeDesign’s project manager will assist you to complete our web design questionnaire that empowers you, the customer, to outline your identity, values, and vision.

Based on the completed web design questionnaire and collected information about MySciReN.Com, we will prepare a sitemap plan for your new website and add additional sub-page wireframe mapping your homepage design. This wireframe will be a visual blueprint representing the skeletal framework of your pages in black and white — focusing on how your website is constructed rather than the finalized, colored style.

After approval of your homepage wireframe, we will work with you to set up the following:

- Wireframe for generic sub page
- Wireframe for educations category and search results of Researchers in that category
- Wireframe for Researchers details page
✓ Wireframe for login and registration page
✓ Wireframe for my account page
✓ Wireframe for admins to create new Researchers accounts

5. WEB DESIGN AND CUSTOMIZATION OF THE CONTENT MANAGEMENT SYSTEM

TheeDesign will create a professional Photoshop or Fireworks screenshot based on your completed web design questionnaire, specific requirements, the outline of SciREN, approved wireframes, company logo, website content, target audience, and our industry research.

From the designed prototype, we will create a search engine-friendly HTML template with a state-of-the-art cascading style sheet (CSS). The end result will be a professional, versatile, and visually appealing website template that emulates the ongoing vision and desired image of SciREN.

Based on the HTML/CSS template, we will build a contemporary WordPress theme for SciREN. Your new content management system (CMS) driven website will allow you and your appointed staff to manage most of your web page content. You will have the ability to edit text content or add additional pages, blog entries, and images as well as embed YouTube videos without advanced programming knowledge.

6. WORDPRESS ADMINISTRATION BACK-END USER GROUPS

Your WordPress website will support the following default user groups.

✓ **Administrators**: these users can access most features and setting options
✓ **Editors**: these users can access and edit all pages and blog posts regardless the author
✓ **Authors**: these users can access and update only their own pages and blog posts
✓ **Researchers**: these users can access and update only their own pages and posts and they can’t publish their content, a higher level user needs to approve and publish their new posts
✓ **Educators**: these users can comment on posts but they have no access to add or update pages or posts. These users can access lesson information, and search by categories but must submit a contact form to become a recipient of a Researchers data download.

*Please note additional user groups can be developed as an additional request.*

7. REGISTER, LOGIN, AND PASSWORD REMINDER CAPABILITY

TheeDesign will customize the registration, login, and password help reminder pages to match with the look and feel of your entire website. Website visitors will be able to register and login to their accounts.

8. RESEARCHER SEARCH VIA SEARCH PORTAL

TheeDesign will customize a database that will allow the Educators to search and find the Educator according the category of study required. They will also have a secondary search capability like slideshow, video, lesson plans, Word document or other so the format of the materials can be sorted into the database. This will have the additional functionality to filter by lesson type.
9. Social Sharing Tool for Blog/News Posts

Social sharing is one of the easiest and most effective ways to provide your visitors with a one-click tool to submit your content to the most popular social networking sites like Facebook, Twitter, LinkedIn and Pinterest. Let your visitors “promote” SciREN within their network.

TheeDesign will integrate and customize the Shareaholic WordPress plugin to your website and enable the following sharing options:

✓ Facebook
✓ Google+
✓ LinkedIn
✓ Pinterest
✓ Twitter

10. Site Content Search Form Integration

TheeDesign will develop a search tool that will allow you to search for page and blog post content on your website. We will display the title of the pages and a part of the content on the search results pages.

11. Content Setup Based on Provided Content and Onsite Search Engine Optimization

TheeDesign will engage with you to optimize the content you provided to us. We will adjust your text content to make it more keyword-rich. It is important for search engines to find quality content on your website with the right key- phrases, but in the meantime we need to maintain the real-world information you sought by your site’s visitors and prospective customers.

In short, we will make your content search engine friendly to please Google but it needs to be enjoyable for your website visitors as well. We will adjust your content for humans not only for robots.

These are a few tactics we will utilize to optimize your website:

✓ Keyword Research: We will engage with you to determine which words and phrases prospective customers and/or the general public would use to find your website. We will utilize keyword research tools to identify keywords to improve your ranking for the right keywords.

✓ Site Structure: We will ensure your site structure and coding is clean and done correctly. All codes will be search engine friendly to make sure your content is easy to crawl by search engines.

✓ Meta Tag Development: Customized page titles and meta descriptions are important to improve your ranking on search engines. We will develop unique page titles and descriptions for each of your web pages.
✓ **Alt Tag Development:** Since search engine spiders can't crawl and understand images, we will utilize keyword-rich Alt Tags for images on your website visibility. We will also add SEO friendly image titles where it's applicable.

✓ **Page Linking:** A well-constructed link structure makes your site easier to use for your site visitors and assists search engines better with the indexing process. We will create SEO friendly page links and add keyword reach link titles to your content.

TheeDesign will setup content for up to sixteen (16)* web pages for the proposed investment.

*Please note you will be able to create “unlimited” number of pages and we will train you to use the content management system. We can also create additional pages at our regular hourly fee.

12. **PAGE NOT FOUND / 404 PAGE SETUP**

TheeDesign will develop a 404 page for website visitors who get to a broken link because of your previous site link structure.

13. **FAVORITE ICON (FAVICON.ICO) DESIGN**

TheeDesign will create a visually appealing favorite icon, allowing visitors to immediately recognize and create a visual connection to your site. Favicons are displayed in most browsers' URL bar and next to the page name in the list of your saved / bookmarked websites.

14. **WEBSITE TRAFFIC STATISTICS SITEMAP.XML FILE GENERATION TOOL INTEGRATION**

TheeDesign will integrate Google Analytics and Google Webmasters Tools that will help analyze your web traffic sources and visitor behaviors. We will also develop a sitemap.xml file to help search engines index your site and a robots.txt file to block certain sections of your web presence.

15. **BROWSER COMPATIBILITY TEST**

Your site will be compatible with the latest version - at time of agreement - of major browsers, including Internet Explorer, Mozilla Firefox, Google Chrome, and Safari. If responsive design is utilized, we will also test devices such as iPad and iPhone size screens.

16. **INTEGRATION OF CONTACT FORMS**

TheeDesign will install and customize the Gravity Forms WordPress plugin to your website. We will setup a robust contact / lead generation form that will collect submissions in a database and forward the submitted information to your desired email addresses. If requested, we will setup auto-responders, so your site’s visitors receive a polite automatic notification that you received their request and will take the necessary actions.

You will be able to connect to the form submission database at any time and export submission content for marketing purposes. This is one of the most cost-effective ways to generate quality leads from your website. You are making an investment in your site - you should demand your ROI.
17. Browser Compatibility Test

Your site will be compatible with the latest version - at time of agreement - of major browsers, including Internet Explorer, Mozilla Firefox, Google Chrome, and Safari. If responsive design is utilized, we will also test devices such as iPad and iPhone size screens.

18. Employee Training

TheeDesign will present your team at our office with two hours of training and orientation for your new content management system.
COMPENSATION FOR PROVIDED WEB DESIGN AND DEVELOPMENT SERVICES

Find below the breakdown details for the provided products and services included in this document.

- Project planning, consultation and project management 20 Hours
  - Competitor and industry research
  - Sitemap and wire frame setup
- Professional home/sub-page design 16 Hours
- Search engine friendly HTML/CSS theme development 8 Hours
- Content management system w/ standard features 24 Hours
  - First lead generation form w/ database connection
  - Text-based sub navigation on subpages if applicable
  - Basic keyword research, onsite SEO, content setup and improvement
  - Robots.txt file development and auto sitemap.xml file generator
  - Google Analytics and Webmaster Tools integration
  - WordPress training w/ basic SEO consulting
  - Browser compatibility test
- Researcher registration customization 20 Hours
- Unique MySciREN Researcher page, customization and integration 30 Hours
- Content setup based on provided content and onsite optimization 8 Hours
- Social Sharing Integration12 2 Hours

<table>
<thead>
<tr>
<th>TOTAL HOURS (±15%)</th>
<th>128 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL INVESTMENT (±15%)</td>
<td>$14,080.00</td>
</tr>
</tbody>
</table>

Optional Services:

+ Responsive web development for smartphones and tablets 60 Hours
+ Logo design/development 16 Hours
+ Ongoing SEO and online marketing services starts at 16 Hours / Mo.
Ms. Avery Paxton,

The proposed investment point design and custom social media site design and development programming services described above is $14,080.00.

Please note in case the scope of project change or we need to spend additional time with meetings, communications, testing, unexpected challenges, and/or development, TheeDesign will invoice those hours as an addition to your estimated development fee.

We can develop all the above services and features in **approximately 6-10 weeks**. We could start to work on your project within two weeks of signing the agreement.

Payment schedule would be as follows:

- 35% due at contract signing ($4,928.00)
- 35% due at final design approval ($4,928.00)
- 30% (balance) due at site launch ($4,224.00)

TheeDesign also offers a 5% discount and at a reduced hourly rate of $95.00 for full payment via check upon receipt of signed agreement, adjusting the total investment to $11,552.00.

**SPECIAL OFFER**

In case we can sign a contract and receive first payment by January 31st 2015 TheeDesign will provide your company with **free hosting service** until December 30th of 2015.

This proposal will expire on January 31st of 2015

If you have any questions regarding specifications, turnaround time, payment schedule, or anything else, please feel free to contact us at 919-341-8901.

Thank you again for considering TheeDesign for your custom web development and internet marketing needs.

Sincerely,

Michael A. Morris
Sales Manager

We charge for additional updates and maintenance $110.00 per hour.