Catching up with our Coastal Research Fellows

In the coming months our two Coastal Research Fellows are due to complete their year-long Fellowship: Justin Ridge, a doctoral student at the University of North Carolina Institute of Marine Sciences (UNC IMS), and Shannon Brown, a masters student in biological oceanography at North Carolina State University (NCSU). The Fellowship, offered by the N.C. Coastal Reserve and North Carolina Sea Grant, is designed to foster research within the 10 Reserve sites and address coastal management issues. After a year of field work, number crunching, and seemingly endless writing, Shannon and Justin take a moment to discuss their work and share future plans with Reserve Communications Specialist, Emily Woodward.

What is your area of study?

Shannon Brown

Shannon: I work in Dr. David Eggleston's Marine Ecology and Conservation Lab, where I am studying estuarine soundscape ecology. Simply put, soundscape ecology is a field in which scientists characterize the different sounds of an environment and investigate how those sounds may affect the organisms living there.

Justin: My background is in biological oceanography. I'm studying oyster reef growth, particularly intertidal oyster reefs and how they're growing in the lower parts of estuaries in N.C. I'm co-advised by Dr. Antonio Rodriguez, whose lab specializes in coastal geology and Dr. Joel Fodrie, whose lab studies coastal fisheries ecology.

Tell me about the project you're working on through the Fellowship.

Justin: The project I'm working on is a component of my dissertation. I'm studying intertidal reefs, and this project involves looking at the growth of oyster reefs next to saltmarshes, which are called fringing reefs. We've found that these fringing reefs seem to be growing differently than oyster reefs growing on a sandflat, which are called patch reefs. I'm trying to determine which came first, the reef or the marsh.

Shannon: For the Coastal Research Fellowship, I am characterizing the underwater summer soundscape of eight sites within the Middle Marsh portion of the Rachel Carson Reserve. I'm focusing on relating characteristics of the soundscape (what types of sound are there, how loud the sounds are) with seascape characteristics (habitat type, distance to navigation channels, tides, etc).

Why is the Rachel Carson Reserve an ideal location to conduct research?

Shannon: The Rachel Carson Reserve is interesting because of the diversity of habitats found there. I studied eight sites in Middle Marsh, which contained seagrass beds, oyster reefs, sandy bottom, and salt marsh habitats. Because the Reserve also permits recreational use, I may be able to measure the effects of sounds produced by human activity, such as boating wakes and motors, at my sites. It's neat to see so much variety in a relatively small location.

Justin Ridge

Justin: The Rachel Carson Reserve is ideal for my research because it's so diverse in terms of coastal landscapes/habitats. I can also look at habitat interactions without having to travel long distances, which is highly beneficial considering the type of equipment we use in the field. For examples, our 3D laser scanner that measures reef growth and the jackhammer we use to collect sediment cores are tough to transport over long distances.

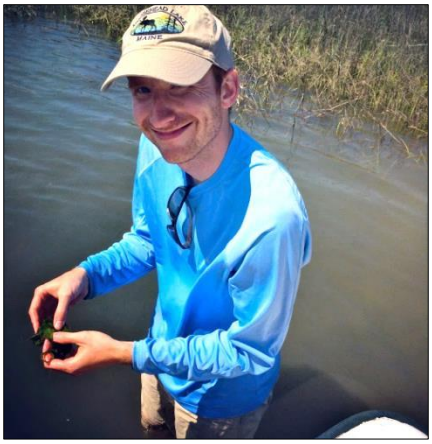
In 1-2 sentences, how would you explain the impact or value of your research to local residents?

Shannon: Soundscape ecology is an emerging field, so a lot of the research that I'm doing has not been done many times before, and it allows us to explore a previously unexplored dimension of the environment. My research is valuable because I can provide baseline information about the soundscape ecology here. I'm hopeful that my work will inform future soundscape monitoring programs in the area.

Shannon Brown and colleague

Justin: Some of the oyster reef restoration projects in the past 10 – 15 years tried to restore reefs next to saltmarshes and they're not growing. But, there are clearly areas where reefs will grow really well next to saltmarsh, so we're trying to figure out what the characteristics are at a particular site that lead to a healthy reef. If we're going use reefs for shoreline erosion control, we need to understand what makes a good reef before we just throw shell out there. Reefs are really good at buffering waves and protecting shoreline, as are saltmarsh, so having that extra layer of protection makes the shoreline more robust. The combination of an oyster reef and saltmarsh makes for an ideal shoreline stabilizer.

You have been involved in several education and outreach initiatives during your Fellowship period. In your experience, what are the benefits of educating local students and others in our community about marine science research? What have you learned from being a part of these events?



Justin Ridge

Justin: Being at IMS has allowed me to be involved in a number of outreach events – students tour IMS, and often times we're invited into local classrooms. Through these exchanges, a colleague and I realized the need for more science in classrooms, which led to the development of The Scientific Research and Education Network, or SciREN. This effort focuses on connecting educators with researchers who have created ready-made lesson plans that can be shared in classrooms. I think it's important for us to be transparent about all of the research we're conducting. The community should be aware of what we're finding, especially since we're conducting research in their backyard. I think it's also important for us to be involved in

the classroom because kids decide whether they like or don't like science at an early age. If we're going to foster the next generation of scientists, we should get them engaged and excited about science at an early age by coming into classrooms and providing them with an opportunity to participate in science activities.

Shannon: I've come to realize that I really enjoy working with the public so I try to take advantage of any outreach opportunity. Events like SciREN and working with museum staff at the N.C. Museum of Natural Sciences provide me with opportunities to connect with and inform the community about my research. Since most of my work is funded by the public, it's important that they're informed about what I do. Also, after sitting in the lab and processing data for days at a time, it's really nice to get out and attend these events and explain why I'm doing this type of research. I get re-inspired by what I'm doing through my exchanges with members of the community. I also get to meet other scientists interested in outreach, as well as educators interested in research, talk with them about their experiences, and learn how to better communicate science.

What has been your favorite part of the Coastal Research Fellowship?

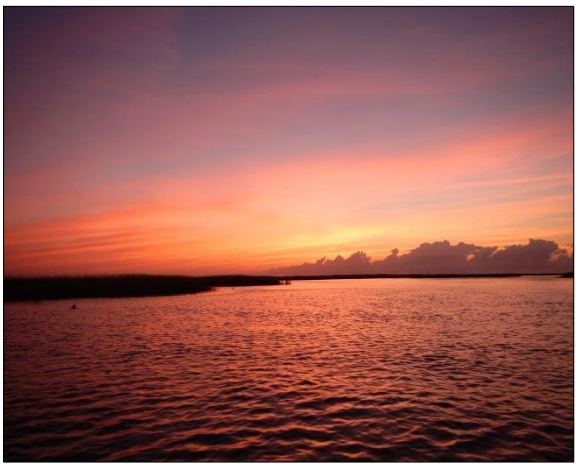
Shannon: Getting to know more people. By working with people from two great agencies (NCCR/N.C. Sea Grant), I made a lot of connections and got a lot of outreach experience. These experiences and relationships will be important throughout the rest of my career.

Justin: My favorite part has probably been being a mentor. Hiring someone and giving them experience in science research and seeing their excitement as the project develops into something substantial is gratifying. The UNC undergraduate student that I hired is developing a complementary project based on the work she did on my study and it will become part of her honors thesis. It's nice to know that the work she did through the Fellowship will propel her forward in her studies.

Tell me about a memorable field experience at Rachel Carson Reserve.

Justin: My most unnerving moment occurred when I was out surveying reefs in Middle Marsh. The tide was coming in and it was just above my waist. I was on my way back to the boat, which was about 50 yards away, and I found myself caught in the middle of a school of fish. Hundreds of fish were circling and it looked like smoke under the water. It was a little unsettling at the time, but pretty cool in hindsight. I also got peppered by a territorial nesting least tern one morning. That was pretty entertaining, especially to my lab mates who witnessed the incident. It's also a good reason to steer clear of nesting shorebirds.

Shannon: Well, my most memorable moment was on my last trip to the Rachel Carson Reserve. I was going to collect field equipment, and I got to my site just as the sun was rising over Middle Marsh. It was one of the best sunrises I'd seen and it was the perfect start to my last day of doing research in the field. I also enjoyed seeing the abundance of wildlife – I saw everything from dolphins feeding to sea urchins to nesting shorebirds.



Sunrise at Rachel Carson Reserve, photo by Shannon Brown

What's next, now that your Fellowship is almost complete?

Shannon: Although the Fellowship is complete, my work is not. I have a lot of data analysis and writing to do before hopefully defending my thesis in June. After graduating, I'd like to find a career that blends research, outreach, and communication. I love research and I want to continue to do it, but I feel like something would be missing if I wasn't involved in outreach.

Justin: I'll still be examining the reefs within the Reserve over the next year or two, but a majority of my work for my dissertation is complete. My immediate next step is to process all of this information and get it published. Hopefully the information produced by this project will be used to guide future oyster reef restoration projects.