

Ocean Gazing: Episode 47
Dotted shrimp and sugary fish

<intro music>

Ari: This is Ocean Gazing. It's the podcast where a curtain of bubbles parts to give way to the watery world all around us. I'm Ari Daniel Shapiro.

Curran: I think science is very important, and I think it teaches you how to think. Students should be well versed in it.

Ari: Carla Curran is an associate professor in marine science at Savannah State University. And she's introducing students of all ages to more science. Stay tuned.

<cross-fade music with classroom noises>

Ari: Curran frequently finds herself in classrooms like this one at Thunderbolt Elementary School. We're on the east side of Savannah in a class of about fifteen 4th graders.

Curran: And what do you think I brought you today?

Students: Fish? Shrimp.

Curran: Shrimp.

Ari: Curran's brought in a few small tanks of live grass shrimp.

Student 1: What are those little black things on the shrimp?

Curran: The black things are the parasites...

Ari: She's talking about how the shrimp move, and the parasites that live on and in them. The students are full of questions.

Student 2: So they don't use their legs to help them swim around?

Student 3: What do shrimp eat?

Student 4: Are they at the bottom of the food chain?

Curran: Oooh, that's a great question.

Student 5: Um, how do the eggs look?

Curran: Students really find parasites interesting because they're yucky. And also because grass shrimp are cannibals, they like learning about cannibalism. We've had nice

discussions and feedback about students' perspectives of what cannibalism is and what it means.

Ari: Back at Savannah State, Curran researches – among other things – the parasite-host interactions associated with these grass shrimp.

Student 6: I got kinda, like, a different texture than...

Curran: What did you get?

Student 6: Well, it feels kinda soft and squishy...

Ari: She publishes her research in scientific journals and she supervises student projects on the topic. But she's also found a way to make that research project accessible to students of all grade levels.

Curran: I do feel that part of my responsibility is outreach, and going into classrooms. But I also either need or want to do it to test the activities before we actually submit for publication.

Ari: Because Curran's also publishing her ideas for K-12 classes in education journals to get the word out and encourage others to use and adapt her activities. <fade out classroom ambi> She got her start connecting young people to science about 10 years ago.

Curran: I was teaching a non-majors marine science class back when I was at the University of South Carolina-Beaufort, and noticed that a lot of the undergrads were very uncomfortable with the metric system and some basic math calculations. So before taking them out on a field trip where I would expect them to seine and identify fish, we pretended to go through that same exercise in the classroom using Swedish candy fish. And we would measure them using the fish measuring boards we would use in the field. So they were using the metric system in an uninhibiting way.

Ari: I see. And then at the end of the activity, do the students get to eat the fish?

Curran: Usually with the college kids, I said, "Sure, you could eat them *after*." Once we collected all the data and it was on the board, and we knew there were no math errors, I didn't care what happened to the fish.

Ari: Then when they went out into the field, they were already familiar with it – you had kind of primed them on it?

Curran: Yes, so it was much more successful, much more likely that we would get good data. We found younger students could count and measure just as well as someone with a Ph.D.

Ari: And where did this idea to do the Swedish fish activity come from?

Curran: Just my head. It was a shame to see so many students so uncomfortable with math in general, let alone learning this metric system that seemed very intimidating to them. What I really wanted them to be able to do is to just think about science, and think about the natural environment in a way that's translatable to others.

Ari: Since the success of that initial activity, Curran's also been introducing science to underrepresented groups too, including African Americans, Hispanic Americans, and women. Savannah State is a Historically Black College that aims to serve all of these populations at the undergraduate and graduate levels. I asked Curran why it's important to promote diversity in ocean science.

Curran: If everyone looks and acts the same and has the same training, it's probably less likely that innovation will occur. So the more different groups of people you can bring into any discipline, it's probably more likely that those interesting connections and idea sharing could really open up new fields and new perspectives and new ways of approaching problems.

Ari: Curran's lessons integrate math and language arts, too. She's made modifications for students not living near the ocean. And she's always trying to create opportunities to take students out of the classroom. For instance, she takes her undergrads into the field.

Curran: There've been a few students who say, "I'm not getting out there in the mud," or, "I don't want my nails getting dirty." But almost everyone dives right in. And they laugh, they show each other things, they actually talk about what we're doing there as opposed to being distracted by other things. They'll try to figure out what things are, they'll try to resolve simple problems – if a rubber band breaks or something's getting wet or they fall down.

I mean, my favorite stories are just seeing students falling in the mud and dealing with getting up, and not losing the data – holding onto the data! One of my students – she fell into the pluff mud up to her mid-thigh, and when she tried to get out, because it was mid-thigh, she couldn't. So she just toppled over so her whole chest was also in the mud. So she's covered chest down in mud. She was laughing the whole time.

You forget that enthusiasm of being out in the field the first time. 'Cause I'm out there every month doing the same thing. You bring a new group and they're totally ready to go. They're very enthusiastic and that enthusiasm is contagious.

Ari: Curran's watched a number of her students become interested in graduate school. In fact, her first master's student finished her Ph.D. this year from the University of Miami. And Curran's even partnered with a local radio station to air "marine science minutes" that her undergrad and grad students put together. They're short clips that describe science topics and also give advice about life more generally. Here's a sampling from Ajmal Gordon, Robin Perrtree, Sabrina Bowen, and Eljin Morrison. <"Hello" from each of the students> These clips came from radio station WHCJ at Savannah State.

Gordon: I chose to major in marine science at Savannah State University because I'm very interested in the wonderful world of oceanography and ecology.

Curran: Do you have any advice for students thinking about coming to college?

Gordon: It's imperative that you as young men and young women stay focused. Take school seriously and don't let outside distractions affect your dreams and future goals. Remember that trouble is easy to get into and very hard to get out of.

Perrtree: Well, I study dolphins in the Savannah area, and would like to talk about the importance of not feeding wild dolphins.

Curran: What advice could you give someone who might be interested in marine science?

Bowen: My biggest suggestion is to volunteer and get involved as much as you can. Good grades are important, but I believe that the experience can make a big difference in any career.

Morrison: Well, I chose to major in marine science because being from the Bahamas, I believe I can be an asset to my country by knowing information concerning the ecology and lifestyle of marine life. There are many answers that can be found within the waters of tropical habitats. I plan on being one of the few who pose the right questions to obtain such elusive answers.

Ari: So I'm wondering how all this outreach – does it do anything to you as a scientist?

Curran: I do think it forces me to think more clearly. Being able to translate your work in a way that other people can understand instead of the handful of PhD scientists out there which we tend to focus on. I think that it does give you a greater connection with the community as a whole to be able to talk to them about your work. And it does provide a service in the sense that you are informing citizenry, and hopefully they could make more informed choices...at the voting poll or guiding their own children if they knew a little more about science. And if you can't explain it to them, they're not going to care about it.

Ari: Anything else that we haven't touched on that you want to talk about?

Curran: Just the importance of trying to find your own balance in whatever you think your career is going to be. And because I've always been at teaching institutions, it's what I knew I wanted to do – I love teaching – there are some challenges associated with trying to do research when you're teaching six classes a year. But also doing the K-12 is another way for me to feel like I'm doing something different, maybe setting myself apart a little bit in my ability to do that translation, and demonstrate that university science is translatable to a younger audience.

<fade up transition music>

Ari: To hear the marine science minutes in full, visit oceangazing.org. You can also send Carla Curran a note or a question on our website, and hear her talk about her dreams as a musician...

Curran: Hoping that one day there'll be a need for a backup signer, bass guitarist and a flute player in some little band somewhere...

Ari: Ocean Gazing is a product of COSEE, and we get our financial support from the National Science Foundation.

<sustain music, and then fade down>