

## **Ocean Gazing: Episode 38** *Reflections*

<fade up intro music>

**Ari:** This is Ocean Gazing, the podcast where we peer through the brackish mists and into the salty abyss. I'm Ari Daniel Shapiro. I'm standing here on the California coast in Monterey looking out onto the Pacific Ocean. And I thought this was kind of the perfect setting to do this particular episode of Ocean Gazing. It's a lookback on the first 37 episodes – well, not all of them – but I'll be playing clips from some of them to think about where we've come from and what we're all about. So stay tuned.

<fade up music and sustain until end>

COSEE, which stands for the Centers for Ocean Sciences Education Excellence, is all about connecting up ocean scientists and educators who then work together to teach people about the ocean. And COSEE's got five cornerstone themes revolving around that basic mission. Here's how Ocean Gazing has tackled each one of them so far.

Number one. The workforce. Basically, encouraging people to enter the fields of science, technology, engineering and math. For COSEE, there's a special emphasis on ocean science and engineering.

In the episode "Adroitly adrift," I profiled the collaborative work that Southern Maine Community College is doing with drifters. Drifters that track ocean currents. The science is engaging all types of people.

**Ari:** The drifters were on their way pretty quickly and Kara Lolamia, who helped build them, looked delighted.

**Lolamia:** <laughter> That's trucking along pretty good, isn't it? Oh my goodness!

**Ari:** So what are you thinkin'? Does it look good?

**Lolamia:** It looks good, yes. It looks very good. And it's nice to be able to see the two side by side and compare how they're floating for right now. We'll have to see what happens here.

**Ari:** We watched the drifters move off for a couple of minutes. Then Tarbox grabbed the steering console, pushed the throttle forward, and guided us expertly back to the dock. I turned back to Lolamia. So what's it like to kinda come out here and say good-bye to them? To kinda put them in the water, and set them free?

**Lolamia:** It's always very exciting, it's very exciting. I like to be part of coming out here to let them go. I've worked on them for so long, and it's just great to see them go out. <transition boat noise to returning to dock noises>

**Ari:** When we got back to the dock, I was about ready to go, but before leaving campus, I dropped by Thomas Long's office to make sure the transmitters on those two drifters we'd deployed were working okay.

**Long:** As you can see, we've got two relatively pings off of our drifters, which is a good thing.

**Ari:** So this must be kind of exciting, I mean this is exciting for me: we just went out on the boat to put these things in the water, and you're already getting data right here in your lab.

**Long:** Well, I get excited every time we do it. And it engages the students too.

**Ari:** Catherine Chipman agrees.

**Chipman:** It's like you learn one thing and then you keep wanting to know more about it 'cause there's really no end. It's like seeing something interesting and then being like, "Oh, I wonder what that's all about." And then actually getting to really try and figure it out, I think that's awesome.

**Long:** It's almost like having pets out there that you can watch, you know? People get very interested in it, in following it, in where they're going.

**Ari:** Number two. Informal education and outreach. That's education that happens outside of the classroom, in settings that are, well, informal. Museums, aquaria, that kind of thing. Or in the case of sound artist, Halsey Burgund, online and at a handful of live performances. He was working on a piece called Ocean Voices when I interviewed him.

**Ari:** The kids you're about to hear responded to the prompt, "Describe a world without oceans." <fade up music clip, and then fade under next graphs>

**Ari:** You know, one of the things that strikes me about "Ocean Voices" is it's almost like the voices are bobbing in the water.

**Burgund:** I love that idea. I hadn't thought of that, but I love that idea of voices bobbing up and down. I think a lot about waves in the broadest sense of the tides and that kind of things, and of course the smaller, more chaotic ones, the swells and the ripples and all of that. And I do think a lot about how those undulate up and down, and it for sure is incredibly musical. <fade up music, and then back down>

**Ari:** What do you hope the outcome of "Ocean Voices" is?

**Burgund:** The most important outcome, honestly, is I collect enough voices that have inspirational moments in them for me so I can create a cohesive piece of music that is musically interesting and satisfying to me, but also communicates to people who experience it some sense of urgency and importance of conserving the oceans. So that would be success if I get there.

**Ari:** Number 3. Excellence in education. Ocean literacy for students from Kindergarten to 12<sup>th</sup> grade. A few episodes ago, I talked about a program at Rutgers University called Ocean Day. It's for elementary schoolers all over New Jersey. I asked the students some questions.

**Ari:** So I understand that you've kind of been kind of like scientists this year. So can you tell me about that? What was that like?

**Student 1:** It felt really good because we were actually learning something with strong experience. I never really learned something that hard, and it made me feel really good about myself.

**Student 2:** It was nice because I didn't know science could be this much fun.

**Student 3:** I thought, I always thought science was boring, but it's not.

**Student 4:** The only thing I like better than science might be gym. I mean, who doesn't like gym? But I like science a lot because there's a lot of experiments. And with all the other classes, you really don't do experiments.

**Student 5:** It was really cool being actually known as, like, a scientist. You don't have to be famous to be, like, a really good scientist. Like, if you learned about something that you're really good at, you may just be a scientist about that.

**Ari:** So if you had a recommendation to give to science teachers about how they should teach science, what would you tell them?

**Student A:** I would say that you should let students figure things out on their own sometimes instead of just giving them the information.

**Student B:** I would say that to not do it the boring way and just do it yourself.

**Student C:** Make the student feel like he's actually a scientist cause when people read out of the book, it's less exciting. It makes them not want to take the tests: makes them feel bored.

**Student D:** I would challenge the students and if they get stuck, I would come and help them a little bit to see if they would actually get it right. And if they did, it would be really great.

**Student E:** I'd tell them to be more hands-on, and more one-on-one attention to their students.

**Student F:** Give more projects to your students. Lots and lots of them.

**Student G:** Exactly. It's, it's awesome when you do the projects. It makes it way easier to remember.

**Student H:** I'd probably tell them: get your kids more involved in stuff 'cause you never know, they may have stuff that you don't know. Like my teacher always says, like, we can surprise with stuff and she can surprise us with stuff.

**Ari:** Number 4. Diversifying the ocean science community. Two episodes come to mind. One featured the Lake Sturgeon Bowl competition about ocean science between high schoolers in Wisconsin. Daja Boyd is a success story from the Bowl. She graduated from Clara Mohammed, an Islamic affiliated high school in Milwaukee. She's in the middle of her freshman year right now at the University of Wisconsin-Milwaukee, and decided to major in microbiology *because* of her involvement with the Lake Sturgeon Bowl.

**Boyd:** I tried my best and I tried to make it more of a fun activity than work. And by doing that, it kind of steered me towards microbiology, and it helped me pick my profession.

**Ari:** I asked Nadira Nasir about that. She's a science teacher and the coach of the team there. Nasir said the Bowl is hands down one of the most positive experiences for her students.

**Nasir:** Oh, yes, because they need to be exposed to the environment here, which they rarely experience that because our school is very small so most of the time they stay in school. I don't care about whether they win or not: I want them to be exposed to the world.

**Ari:** The second clip is from an episode about a new effort to begin COSEE-China. The podcast featured students in China talking about how ocean science can be improved in their country. Here are some undergrads from Xiamen University in the south.

**Student 1:** What we concerned about is to find a way to use ocean sustainably and to make full use of ocean without harming it.

**Student 2:** Hi. I think maybe our department may provide more basic courses introducing ocean to other major students like environmental science, math, economics or law. Okay, thank you.

**Chen:** Thank you.

**Student 3:** At this moment, who should take the responsibility to protect this ocean, this area? I want to know when can we cooperate together. I mean we all human beings in the world. I hope that in the future, we can have students do research together, we can fly to each other's university, and we explore the ocean and protect them together.

**Ari:** And finally, theme number 5. Building partnerships between science and education communities. I interviewed Mary Cook, a science teacher at Ahlf Junior High in Searcy, Arkansas, about her involvement with NOAA's Teacher at Sea program.

**Cook:** There was one particular voyage that was going to be looking at climate and climate change and gathering data and deploying buoys on tsunamis. And those were things that I teach. And so I just thought, "Okay, I'll apply for it. Maybe they'll pick me, maybe they won't."

**Ari:** They did pick her and just like that – Cook's dream gave way to the reality of getting ready to go to sea for 3 weeks far off the coast of Chile. Every day, Cook wrote a blog with stories and pictures for her students. She told them about how the science team was studying the Earth's climate by using buoys and drifters and probes to measure the ocean and the atmosphere. Her students emailed her back. And Cook was sure to let them know when the buoy they'd adopted as a class was released into the ocean to track the temperature and pressure of a particular current. It was this buoy more than anything else that caused her students' interest to skyrocket.

**Cook:** They signed these stickers, and then I took the stickers with me. And when I got to the ship and to the little buoy, I put all their stickers on. Then I took pictures, and I posted them on the Internet. The interest in ocean currents quadrupled among my students because of that. And I think if you can make it more personal for the teacher and the students, they're going to remember it. I've talked to those students that I had five years ago. And one of them, I saw him a couple of weeks ago. And he was talking about his graduation night. He wore his NOAA pin on his graduation gown. So to me, it made a great impact on them. It's so personal to me. I mean, I had read about research but now I know about it. And I've participated in it.

**Ari:** 37 episodes in, Ocean Gazing has traveled to Alaska, Arkansas, California, Florida, Hawaii, Maine, Maryland, Massachusetts, New Jersey, North Carolina, Oregon, Rhode Island, Washington, and Wisconsin. To the UK, Antarctica, and to China. We've talked to senior scientists, educators, schoolkids, and the public. We've engaged each of COSEE's 5 central cornerstones aimed at enhancing ocean literacy. We've grown our listenership. And we've only just begun. <fade up transition music>

I've got a question for you: Where do you want Ocean Gazing to head in the upcoming months? Write a blog post, send an email, leave a voice mail. I'm eager to hear from you. Just visit our website – [oceangazing.org](http://oceangazing.org) – to send in your thoughts.

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