Ocean Gazing
Episode 15
Tiny glider meets huge ocean

<fade intro music up>

Ari: Well, look who I've found. Welcome back. This is Ocean Gazing, and I'm Ari Daniel Shapiro. On today's podcast, I'm gonna play for you a piece I produced for IEEE Spectrum, the magazine for technology insiders, which later aired on Living on Earth. The sonic stumper's revealed inside the piece. Enjoy!

<fade up intro music to full; sustain until end>

Jeff Young: A team of students and professors from Rutgers University recently launched a project they hope will make seagoing history by remote control. They're sending a little underwater robot across the Atlantic from New Jersey to Spain to learn more about changes affecting our seas.

<fade up outside ambi>

Ari: At 6 in the morning just as dawn was breaking, Scott Glenn, an oceanographer at Rutgers University, was bristling with excitement.

Glenn: Yes, this is a big day. The launch of one of these long duration missions is something you work for for months. And when it's finally there, it starts a whole new phase of the project. And so, it's about to start a great day.

<continue soft morning chatter ambi>

Ari: Glenn's talking about the launch of the glider RU27. This underwater robot looks like a mini yellow submarine and it's about 6½ feet long. It can stay at sea for months because it has no people onboard. It's piloted remotely from a lab at Rutgers, on shore. RU27 zigzags slowly up and down underwater, taking the temperature of the ocean and measuring how salty it is, among other things. Every time the glider surfaces, it uses a global cell phone to call the lab – literally – to send in the data it's collected and receive instructions on where to go next. The information it's collecting might tell us something about the impact of climate change on the ocean.

<fade up boat ambi>

Ari: Later that morning, Glenn and part of the glider team were on a boat headed off the coast of New Jersey to do the launch.

Glenn: Gliders are changing the way we go to sea. I used to come out of this field station and we'd spend the whole day and we'd do maybe 5 stations. It would take

us all day to do that. We'd come back exhausted. Now we send out a robot to do the same thing. And instead of going out for 1 day, it's gonna go out for 9 months.

Ari: If successful, RU27 will be the first remote controlled object to cross an ocean underwater. The route: New Jersey to Spain. A team of Rutgers undergrads will be the ones piloting RU27 from the lab on shore, using everything they've learned about currents and the oceans to make the mission a success.

<transition from boat noise to lab noise>

Ari: Back in the lab, sophomore and RU27 co-pilot Emily Ragowski says she's excited about the launch.

Ragowski: It's a big day but honestly, it like – it's time. RU27 needs to get out there. We've been working on her for sooo long. I feel like it's time for her to start this mission.

Ari: Ragowski and the other half of the team followed the launch from the lab over speakerphone and a webcam. Everyone was eager to get RU27 in the water and on its way to Spain.

<fade up speakerphone drone>

Ari: When the speakerphone announced the glider had been lowered into the Atlantic, the lab honored the moment.

Speakerphone: Alright, she's free. She's off.

<applause in lab; fade into applause on the boat>

Ari: The same jubilation erupted aboard the boat.

Glenn and others: Good job, good job, good job. You guys build good gliders!

Ari: Basic tests of the glider began immediately. Glenn and the team at sea sent RU27 on short 15-minute missions. But something wasn't right. After diving, the glider was coming up too fast. Tina Haskins helped build RU27 and was assisting the launch.

Haskins: Yeah, the first test – she just didn't dive fast enough. We should've seen her kind of start to descend a little more quickly than what we did.

<cross fade boat and lab ambi>

Ari: Haskins wondered whether there was a weight missing in RU27. She phoned the lab to ask if they had found anything suspiciously heavy lying around.

Lab: I don't see anything there. The room's nice and clean.

<cross fade lab and boat ambi>

Ari: In the end, the team figured out there was actually a typo in the mission they programmed. Scott Glenn says RU27 was just following orders.

Glenn: It's nice that it does exactly what it's told, even if it's wrong. It's probably fine. We'll find that out soon.

<cross fade boat ambi and lab chatter ambi>

Ari: And RU27 *was* fine. The boat team finished their tests, made some last minute adjustments, and transferred control of the glider to shore. Back at the lab, the team waited for the glider to surface and make its first data phone call.

Lab: <phone rings> Oh, there it is! Ahh!

<cross fade lab and boat ambi>

Ari: As the folks in the lab finished their tests, they got ready to send the glider underwater to begin its mission. Those on the boat looked at RU27 bobbing at the surface one last time.

Tina: Alright, bid farewell! She's going. This is the last time we'll see her on the surface for a while!

Glenn: I'm happy. This is a great day.

Ari: Scott Glenn's excitement endured, even through this exhausting day.

Glenn: The kids go out on their own – they're ready to go, they're ready to fly.

<cross fade boat ambi and ambi>

Ari: The 7-month journey is not without danger. Severe weather like hurricanes could damage RU27 or blow it way off course. Sharks might attack it. And it's got limited battery power to make the voyage. Oscar Schofield's an oceanographer at Rutgers.

Schofield: And now, what we'll do, is: when it starts its standard mission, it calls in every 6 hours. And pretty much everyone's gonna be hanging on a phone call every 6 hours for the next 7 months. But that's calmer than it's been the last few months.

Ari: I'm not sure it's gonna be that much calmer. In RU27's first week at sea, the team had to maneuver around a maze of fishing nets and deal with a sensor malfunction. And that was just the first 100 miles, of *3000*.

Young: And that story comes to us courtesy of Spectrum Radio, the broadcast edition of IEEE Spectrum, the magazine of technology insiders. You can follow the sub's journey online - details at loe.org.

<fade up "The Trees Were Mistaken">

Ari: Thanks for listening! Here's next week's sonic stumper.

<fade up sonic stumper>

<transition to outro music>

Ari: Check us out on Facebook by searching for Ocean Gazing. And visit us online at www.coseenow.net. Glide over to the podcast link.

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See you in two weeks!

<fade up outro music and sustain until end>