

THE ART OF EXPLORATION

Gaelin Rosenwaks MEM '04, Applies a Creative Lens to Bring
Science to Society from Some of the Most Remote Corners of the Planet

by Tawnee Milko MEM'12

Gaelin Rosenwaks first set foot on Antarctica during a research expedition with the Woods Hole Oceanographic Institution studying the overwintering patterns of Antarctic zooplankton. Two months cruising the rough Southern Ocean may seem like an impressive feat in itself, but for Rosenwaks MEM '04, it was the culmination of a lofty personal goal to visit all seven continents before she turned 25. She was 22.

In the decade since that trip, Rosenwaks has conducted fieldwork on more than a dozen scientific expeditions from the Bering Sea to Southeast Asia, investigating many critical marine issues including ocean acidification, the Deepwater Horizon oil spill and overfishing.

But now her eyes are locked on a different but no less formidable goal: harnessing the power of modern media to communicate the experience of these often-remote expeditions, and the science behind them, to the general public. In 2008, she founded Global Ocean Exploration Inc., a company dedicated to bringing expedition research science to homes and classrooms through film, photography and writing.

"My goal is to educate people about the ocean and marine resources so they have the tools and understanding to make informed choices," Rosenwaks says.

In this era of global climate change, strained fisheries, constant pollution and degrading coastal environments, many scientists believe that such education is sorely needed. Yet the scientific community as a whole has long been chastised for its ineffective communication with the public—the very constituency funding many researchers' projects through such tax dollar-driven programs as National Science Foundation grants.

As a result, in a stringent economy, often science has found itself on the chopping block.

"Science doesn't have a constituency," says **Jeremy Mathis**, supervisory oceanographer at the NOAA Pacific Marine Environmental Laboratory. "We need to do a good job of communicating to society the value what we're doing has, both at a pure science level, but also from an

economic and societal impact level."

As both a scientist and visual artist, Rosenwaks aspires to do just that. Her expedition video footage has gone into the development of a broadcast feature film about Arctic Salmon migration, and she has guest starred as a scientific consultant and angler for the National Geographic Channel television series, *Fish Warrior*.

NO PLACE WAS OFF-LIMITS

A desire to develop her own understanding of the world around her—and the oceans, in particular—kindled at an early age.

Spending part of her youth near Virginia Beach, Rosenwaks caught her first fish when she was three, and became SCUBA-certified at 14 so she could better explore the colors and diversity of life beneath the waves. Her father traveled internationally as a visiting professor of medicine, and when he taught abroad, he brought the entire family along.

She recalls how she and her family would explore remote locations in Indonesia after her father lectured in Taiwan.

"It made all of the world very accessible. No place was off limits," she says. "The places we went were largely unknown. There certainly wasn't a guidebook to many of the places. You just went there and figured it out."

While studying biology at the University of Pennsylvania, Rosenwaks attended an undergraduate summer program at Duke's Marine Laboratory in Beaufort, N.C. She still sings praises about her time in marine mammal expert **Larry Crowder's** conservation biology class and exploring the beaches and estuaries of Core Sound. (Now an adjunct professor at the Nicholas School, Crowder is director of the Center for Ocean Solutions in Monterey, Calif.)

Duke always was at the back of her mind afterward, and when it came time to weigh the options for marine-based Masters and PhD programs, Duke quickly became a frontrunner.

"If I hadn't attended the Nicholas School, I probably would have been in a purely science-based program," she says. "But instead I got an amazing multidisciplinary education that included policy and economics, which has helped me going forward to be a good communicator."

The winter of her first year, she became heavily involved with the Bluefin Tag-A-Giant program, operating out of the Duke Marine Lab. Led by Stanford University's **Barbara Block** PhD '86, one of the world's leading experts on the physiological ecology and evolution of large pelagic fish, Tag-A-Giant scientists electronically tag and study the migratory movements of northern Bluefin tuna.

Rosenwaks remembers first meeting Block during a day of Bluefin tagging. It was a "trial by fire" in cold, rough seas, but Rosenwaks already had become acclimated to such conditions during her Antarctic expedition. At day's end, Block invited Rosenwaks to conduct her Masters Project research on Bluefin tuna.

"Gaelin had a special sensitivity to what was happening in the natural world," says her Masters Project advisor **Dick Barber**, Professor Emeritus of Biological Oceanography. "She could see that the tuna—like she herself—is not hardwired to follow a given track without any deviations."

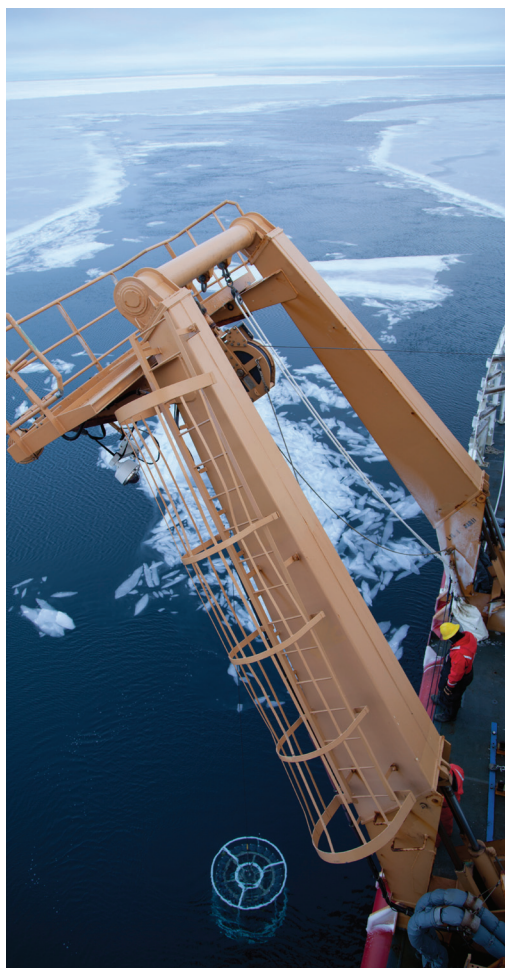
A SINGULAR REALIZATION

Such a notion aptly summarizes Rosenwaks' career path. After graduating from the Nicholas School's Master of Environmental Management program, Rosenwaks was accepted for doctoral study at Duke, but decided to postpone it, continuing her work with the Tag-A-Giant program. It was on one Bluefin tagging cruise off the North Carolina coast that she experienced her "ah-ha moment."

"I thought, so many good, capable scientists already are working hard to answer the big questions the media's posing, like, 'What's going to happen with climate change?' 'What's happening to world fisheries?' " she says. "So I said to myself, 'They don't need another person to do the science. They need a conduit to help communicate what they're doing to answer these questions.'"

That singular realization launched Rosenwaks' career in science photojournalism.

Returning to her hometown of New York City, Rosenwaks studied at the International Center of Photography. She



wrote as often as she could, publishing such articles as the Green Planet Series, which appeared in Canadian newspapers and described the state of the country's oceans. When former Woods Hole colleague and advisor **Carin Ashjian** asked her to accompany her on an upcoming Bering Sea ice expedition in an outreach and communications capacity in 2008, Global Ocean Exploration Inc. was born.

Any given day in the field will find Rosenwaks filming footage of her client research team at work, photographing and blogging about the day's activities, connecting with media outlets, and Skyping into classrooms to share the science of the expedition with schoolchildren. She makes a point of interviewing everyone on the ship—a great morale booster—and even lends a hand with data collection and analysis.

"If someone's slaving over their computer unable to figure out how to crunch their data properly, I'll step in and say, 'Can I take a look at it?' And often I'm able to help because I had so much data experience from my time both at Duke and Woods Hole," she says.

Overcoming technical difficulties is only one component of the challenges facing seafaring scientists. Oceanographic expeditions can last anywhere from several weeks to several months; extreme weather, endless days of open seas, and a demanding, highly physical and often round-the-clock sampling schedule round out the demands placed upon research crews.

"I find I never sleep on expeditions because there's just so much I want to do. I never want to miss something," Rosenwaks says. "When in the Arctic's 24-hour light, I constantly work."

Simply maneuvering through a research vessel can be an undertaking, and Rosenwaks details the efforts required to navigate the passageways of the U.S. Coast Guard cutter *Healy* during two research trips above the Arctic Circle: travel between the ship's lab and the galley requires opening and closing five heavy steel doors, designed to help keep the boat airtight. Reaching the bridge involves even more doors, as well as climbing five steep flights of stairs. For a 5'2" woman, it can be an impressive

workout.

"I think the bottom line is knowing your limits and knowing when you can't do something," she says thoughtfully. "I don't know that I have very many limits, but I certainly know what I can and can't do."

At an expedition's end, Rosenwaks returns to New York, where she edits video footage and photos from the trip and provides them to client scientists like **Jeremy Mathis**. Mathis hired Rosenwaks to accompany his research team from the University of Alaska-Fairbanks to the Chukchi and Beaufort Seas to document their work on ocean acidification in the Western Arctic Ocean, a project on which Mathis was chief scientist.

"Gaelin makes that connection between the science that's being done and answering questions that are going to have a real impact on real people's lives," he says. "With her presence and her participation in the programs, it just increases the effectiveness and quality that comes out of it by an order of magnitude."

Mathis has incorporated Rosenwaks' work in presentations to the National Science Foundation. Her photos and videos add a humanizing element to slides otherwise filled with bar charts and Excel graph plots, he says, contributing to his ability to "communicate the science in a really relevant way."

THE "FISH LADY"

Through Global Ocean Exploration, Rosenwaks also has embarked on a more personal mission to increase awareness of an issue near to her heart: the connection between overfishing and people's insatiable appetite for seafood throughout the world.

Global Catch: Portraits of a Precious Resource, a photographic journey exploring global fish markets, was exhibited this spring at the Liman Gallery in Palm Beach. Rosenwaks captured images of fish markets from Japan to Hong Kong, showing how different cultures approach fish and the ocean as a marine resource. She hopes to compile the work into a book, all in the name of helping the public to understand and appreciate the intrinsic value of the ocean and its resources.

Her outreach work is already paying off in unexpected—and career-affirming—ways. Months after guest starring on National Geographic's *Fish Warrior*, Rosenwaks was visiting Turkey with her brother when a man who worked in a nearby market recognized and approached her. Calling her "the Fish Lady," he excitedly recounted the episode of *Fish Warrior* on which she had appeared, which, coincidentally, had just aired locally.

"I had my wife watch it," he told her enthusiastically. "I wanted her to see that women shouldn't be afraid of being in the wilderness and going on expeditions."

The moment was a profound example of the impact a single person's message could have on someone literally on the other side of the world. "It was really amazing," Rosenwaks recalls. "It shows how important it is to have not just positive male role models on TV, but also women doing things that are unconventional in so many cultures—things we take for granted here in the U.S., because we have every opportunity."

"EXPLORATION IS AN ATTITUDE"

Rosenwaks is no stranger to bursting traditional gender stereotypes. A U.S. Coast Guard licensed boat captain and NAUI- and PADI-certified rescue SCUBA diver, Rosenwaks also spends her limited free time rock and ice climbing, angling, and snowboarding extreme backcountry terrain. She also is a fellow of the Explorers Club and Royal Geographical Society, century-old professional organizations dedicated to the scientific exploration of land, sea, air and space, and in 2012 became Secretary of the Explorer Club's Board of Directors.

Both exploration communities have provided her with a strong network of like-minded individuals, most of whom face the same challenge of financially supporting their passions and desire to make the planet a better place through exploration.

"Making it all work can be really difficult," Rosenwaks acknowledges. "But nobody at the Explorers Club thinks you're crazy when you say you want to go to the Arctic in the middle of the winter. Instead, they say, 'Oh, I've

done that; you should go.'"

Fellowship within the elite groups has given Rosenwaks the opportunity to carry the Explorers Club Flag on two expeditions to the Arctic, an honor granted to club members going on expeditions to locations unknown to science or conducting research that is groundbreaking or unusual for that geographic area.

"Exploration is really an attitude," she says. "No matter where you're traveling, it's the questions you ask when you're there that make it exploration versus travel, and that holds for trying to understand a place from a scientific viewpoint as well."

"I always want to learn more, so wherever I'm going, I'm always asking those questions and delving farther in. Wherever I go, I'm exploring."

And, thanks to a cameras, computers and communications savvy, Rosenwaks is providing the rest of the world the chance to experience the science—and art—of exploration right along with her.

TAWNEE MILKO MEM'12 IS THE NICHOLAS SCHOOL'S COORDINATOR FOR THE NICHOLAS AMBASSADOR INITIATIVE AND AN ALUMNI BLOGGER AT BLOGS.NICHOLAS.DUKE.EDU/AGGREGATING_AUTHENTICITY/.

IMAGES

P30 Clockwise from top left: Gaelin inside the NYC-based Explorers Club, of which she is a member; The USCGC Healy cuts through the sea ice in McClure Strait in the Northwest Passages; Gaelin tagging white sturgeon on the Fraser River, British Columbia, Canada; The CTD is deployed to collect water samples and data in an ice-covered Beaufort Sea aboard the USCG Cutter Healy; A tank filled with wild-harvested marine ornamental fish in Hong Kong, part of Gaelin's project, *Global Catch: Portraits of a Precious Resource*.

Portraits of Rosenwaks by Judy Rolfe. All other images courtesy Gaelin Rosenwaks.
