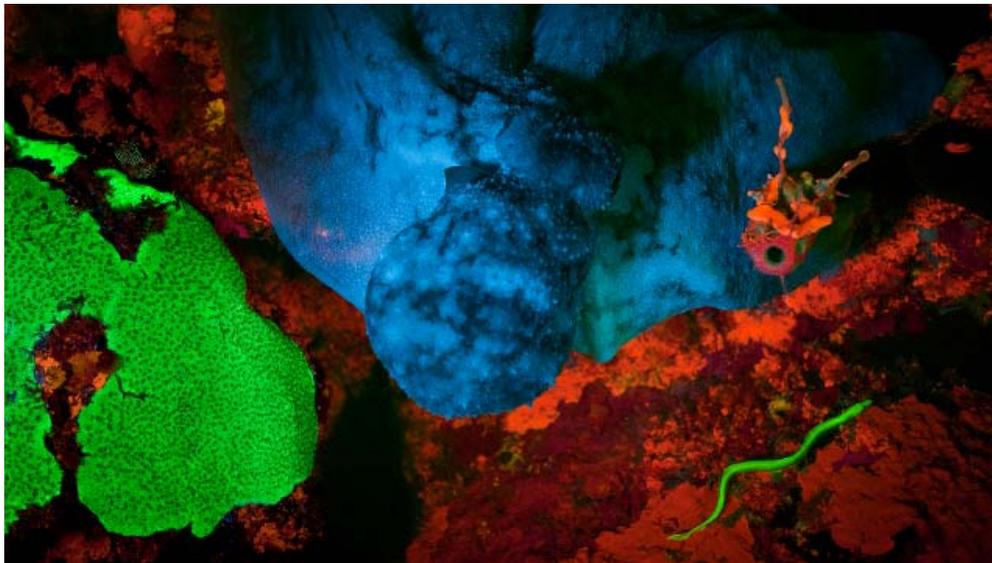


DayGlo Science

Biologist David Gruber studies radiant creatures and their fluorescent proteins.



This photograph spurred David Gruber and his colleagues to the Bahamas where they searched for the glowing green eel and other bioluminescent fish. Image: Jim Hellemn, blueoceanart.com

By Laura Geggel --

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Glowing green and swimming off the corner of the picture, the eel looked unnatural, as if it had been Photoshopped with DayGlo colors. “That darn eel,” says biologist David Gruber, led to a weeklong eel-catching expedition near the sandy beaches of Lee Stocking Island in the Bahamas.

Gruber teaches biology and environmental science at Baruch College in Manhattan, but his passion is scuba diving with dinoflagellates, a phylum of single-celled organisms that contains some species that glow brightly, lighting up darkened seas. His group’s photographs of other radiant Caribbean creatures—including sea anemones, coral and fishes—illuminate the new “Creatures of Light” exhibit, an American Museum of Natural History show that celebrates all things bioluminescent (producing their own light) or biofluorescent (absorbing light and reemitting it as a different color). “When you swim in the water at night,” Gruber says of his tropical study sites, “it’s like a disco party.”

In addition to the photos of glowing coral reefs off of Little Cayman Island, he worked with museum staff to perfect the three-foot plastic dinoflagellate and jellyfish models. Gruber, who trained as a journalist and has a reporter’s passion for accuracy, even brought in a spectrometer to ensure the light in the exhibit matched nature’s luminescent wavelengths.

Live flashlight fish, filled with bioluminescent bacteria, inhabit the exhibit as well, blinking what looks like a secret code to passers-by. “They’re so stressed out right now,” Gruber says, looking concerned as he leans closer to their tank. “It’s a really energetic process to glow.”

It takes energy to pursue glowing coral and fish, too—and to discover new eels. When Gruber saw his colleague Jim Hellemn’s photo of the green, serpentine fish, he thought Hellman was playing a practical joke. Skepticism

turned to enthusiasm when the researchers realized the eel was a previously undescribed species living in a biofluorescent reef.

His dive team flew to the Bahamas, zipped on their wetsuits and spent hours catching and cataloging fish. They gave most of the specimens to the museum, but Gruber kept one eel, storing it in a freezer at his Gramercy lab. He is purifying its fluorescent proteins and hopes they can someday be used as luminescent tags in biomedical research.

At 39, Gruber is a real up and coming guy, says Vincent Pieribone, a neurobiologist at Yale University School of Medicine. Pieribone would know. The two spent a month in Australia collecting fluorescent creatures in 2002 and co-wrote a book, *Aglow in the Dark*, about how bioluminescent jellyfish helped to change the face of modern biological science. “He’s a practicing scientist, but he’s got a knack for the communicating aspect, which is rare in our field,” Pieribone says.

Gruber’s love of the water began as a child in New Jersey. At the University of Rhode Island, he surfed with friends before morning oceanography classes.

He found his calling in Belize, studying reef fish during his junior year. He spent hours every day catching fish, suturing glow sticks to their bodies and tracking their movements in the reef at night. “You start to see there’s a community down there,” he says. “You come across the same fish every day and you know which rock he’s under. You know where the eel is, where the octopus is.”

A master’s degree in coastal environmental management at Duke University led him to a job measuring the water quality and sea grass in Florida Bay. The project was constantly in the press, and Gruber offered to share a firsthand account about the restoration effort.

But “nobody would publish my work because they said I wasn’t a journalist,” he says. “So I applied to journalism school.” One of his journalism professors at Columbia University, Sig Gissler, remembers Gruber as earnest, engaging and energetic. “We called him a man of science with a soul of a reporter because while he didn’t have a lot of experience—he was total rookie—he made up for it with tenacity.”

But the ocean again called to Gruber, and he powered through the next six years of school, earning his doctorate in biological oceanography at Rutgers University. Few scientists knew the complete history of fluorescent protein research, so he and Pieribone wrote a book about it.

After publishing *Aglow in the Dark* in 2005, Gruber moved to Brown University for postdoctoral study on ways to use fluorescent proteins as biological sensors. Researchers can introduce these glowing proteins into cells to track all kinds of activity, including the growth of tumors or chatter between nerve cells.

In his quest to learn more about deep reefs, Gruber is designing a remotely operated vehicle, says Dan Tchernov, head of marine biology at the University of Haifa, who calls his colleague “a very promising researcher who can successfully bridge sciences.”

Now at Baruch, Gruber pursues an ever-expanding array of projects on the side. He blogged about a summer trip to research coral in the Solomon Islands, and is co-producing an IMAX film about bioluminescence. He, Pieribone, and colleagues have published a cascade of studies about fluorescent proteins, including a 2010 paper describing the world’s brightest—a glowing green protein from a warm water coral.

Pieribone praises his friend’s creativity, but says it impedes Gruber’s career. “He doesn’t stress the things in an academic career that will make him a full professor at Harvard,” Pieribone says. “You have to be really focused, and Dave just doesn’t want to focus that heavily on one thing. He’s like the indie film director. He’s not the one who sells a lot of movie tickets, he’s not the Michael Bay, but he makes the better movie.”