

Expedition artists paint a picture of science exploration

Carolyn Beans, *Science Writer*

Patrick Kikut watched as the 18-foot raft carrying his supplies down the Green and Colorado Rivers headed into white water. Then the raft flipped. The walls of Utah's Cataract Canyon rose above him; his belongings, strapped to the capsized raft, bobbed along in the river before him. Seated in a nearby raft, Kikut was most concerned about the dry box containing his watercolor paints and compositions. "If water gets in there," he recalls worrying, "all of the watercolors in all the little tins are going to bleed out and I'll have tie-dye."

Kikut, a painter and lecturer at the University of Wyoming in Laramie, was on the Sesquicentennial Colorado River Exploring Expedition (SCREE), a 70-day, 1,000-mile journey. It was summer 2019, and the expedition marked the 150th anniversary of geologist John Wesley Powell's first passage down the Green and Colorado Rivers. Paleoecologist Thomas Minckley of the University of Wyoming organized the trip and invited researchers, conservationists, writers, and artists along.

As lead artist and one of the few adventurers making the entire journey, Kikut was following in a centuries-old tradition of painters joining researchers on expeditions. Starting in the 1700s, artists became

"crucially important members of scientific expeditions," says Daniela Bleichmar, a professor of history and art history at the University of Southern California in Los Angeles. Researchers relied on painters to depict plants and animals as they studied new species and, in the following centuries, sweeping landscapes as they explored new terrain.

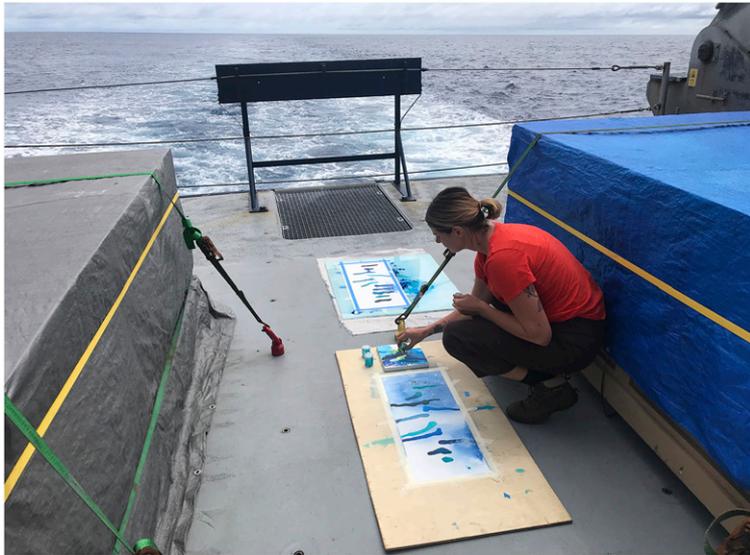
Today, the painter is no longer essential personnel on every expedition. Yet painters continue to join researchers in the field, whether through individual partnerships or artist-in-residence programs, acting as storytellers more than data collectors. The painters have artistic freedom, sometimes even shifting into the abstract. It's a role that requires not only recording but also interpreting complex, changing phenomena as well as raising awareness via media that may attract more public attention than research reports and statistics.

An Evolving Role

Early expedition painters were important players in the quest to classify species. "What CRISPR is today, the thing that everyone is excited about, taxonomy was in the 18th century," says Bleichmar. Because no single researcher could classify all living things,



Expedition painter Maria Coryell-Martin hopes that her work helps audiences empathize with the plight of animals and ecosystems in the changing Arctic. In *Cooper Island Pond* (2019, field watercolor), Arctic light shines on black guillemots, whose population is being decimated by climate change. Image credit: Maria Coryell-Martin (artist).



In her *Movement Painting* series (2019, acrylic on canvas), abstract painter Bailey Ferguson created a “visual barometer” of weather conditions during her time with the Schmidt Ocean Institute’s Artist-at-Sea program. The rocking boat moved the paint on her canvas. Image credit: Mathieu Caffin on behalf of Bailey Ferguson/Schmidt Ocean Institute.

researchers across the globe collaborated. They needed painters to create detailed images of plants and animals to confirm that they were talking about the same thing, Bleichmar explains. As scientific pursuits changed, so too did the compositions. In the 19th century, many researchers became interested in geology, says Bleichmar. “That’s when landscapes become much more important.”

No painters were present on Powell’s 1869 venture into what was then a blank space on the map. “That first trip was a real ragtag group of mountain men and desperados,” says Kikut. “Folks that were adventurous enough to just see if they could make it.”

On Powell’s second passage a few years later, painters and photographers signed on. The celebrated painter Thomas Moran followed along, mostly on horseback, collecting photographs, watercolors, and sketches that would later inform massive oil paintings and influence the public’s perception of the West (1). “[Powell] was advocating for water use and development of the arid West,” says Minckley. “He realized that the visuals were going to sell this space.”

Kikut’s dry box did its job, and he too returned with a trove of watercolors to inspire oil paintings. These works were hard earned. He had paddled his own raft nearly the entire stretch while enduring sand storms and punishing heat. “It was really difficult to focus under those conditions,” says Kikut, “to sit on a rock that is 150 degrees and get the drawing.”

Like many modern-day expedition painters, Kikut often uses his craft to convey stories rather than document specimens or romanticize landscapes. His work, although inspired by Moran, is more focused on spaces where humans and the wild intersect. In his *Glen Canyon Dam* watercolor, the canyon walls glisten green and black, a troubling indicator that “the

sandstone is absorbing the water from the reservoir,” he says. In *Powell Reservoir, Crossing of the Cultures*, three smokestacks from a coal-fired power plant in its last weeks of operation rise up in the distance, dwarfed by billowing white clouds. The title nods to an event known as The Crossing of the Fathers, when two Franciscan friars crossed the river there in 1776.

“Expeditions need art,” says Minckley. “It should be part of the communication that we do.” Minckley’s own research focuses on changes in arid landscapes in response to variable climates over the past 20,000 years. In Kikut, he sees a partner in communication who similarly studies landscape change, although through a different lens and timescale. “When we speak, we’re talking about space and time and our language is really similar,” Minckley says. “It’s just that his is a visual language and mine is an analytical language.”

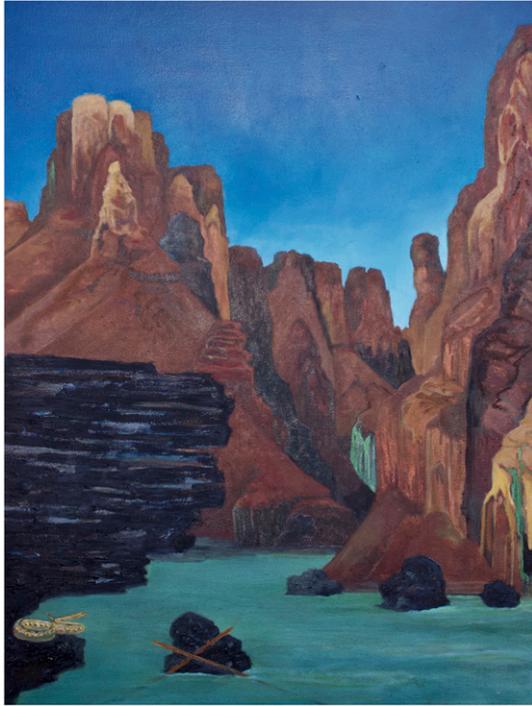
Painters as Storytellers

Sometimes art evokes themes and lessons that are hard to capture with that analytical language. In the summer of 2019, painter Maria Coryell-Martin spent two weeks alongside Arctic ecologist and ornithologist George Divoky on Cooper Island off the northern coast of Alaska. For 46 years, Divoky, of Cooper Island Arctic Research, has studied a colony of black guillemots on the island. As the planet warms, he’s tracking these seabirds as they lay eggs progressively earlier (2) and their colony size and breeding success decline as a result of the loss of ice-associated prey (3). “The real long-term nature of his dataset I think is remarkable,” says Coryell-Martin, who’s based in Port Townsend, WA. But she is also drawn to the human angle: what it takes to pursue science in an extreme environment. Divoky’s story is “one of persistence and one of survival,” she says.

Coryell-Martin has built her career on capturing science in extreme environments with the support of private sponsorships, foundations, and self-funding. In the field, she follows an “expedition ethic” of always pitching in, whether schlepping gear or volunteering for kitchen duty. Divoky called on her to weigh chicks. “[Fieldwork] isn’t easy,” says Divoky. Coryell-Martin was with him during a major wind storm and for the occasional bear encounter. “It takes some guts and fortitude,” Divoky adds.

Coryell-Martin’s artistic influences include Edward Wilson, a naturalist, artist, and doctor whose expedition work ended in tragedy when his team, led by Robert Falcon Scott, failed to return from the South Pole in 1912. From his journals, Coryell-Martin learned to mix vodka with her watercolors to prevent freezing. She also learned to cultivate multiple styles. “He was doing these wonderful watercolors of the environment and also wonderful caricatures of life on the ship,” she says.

Her own portfolio from Cooper Island includes luminous landscapes, detailed depictions of scientific tools, and graphic novel-style cartoons of daily life. Many works share the same colors, a “palette of place” that she feels “captures emotional nuances of



As lead artist on the Sesquicentennial Colorado River Exploring Expedition, Patrick Kikut practiced his art in challenging terrain, including this site captured in his *Matkatamimba Camp (deep in the Grand Canyon)* (2019, oil on canvas). Image credit: Patrick Kikut (artist).

the setting” in a way that her camera might miss. “I see color and experience it differently on site,” she explains.

But the work can also capture the humanity of science. In *Checking Nests*, a series of panels show moments in Divoky’s day, from a warm drink to checking on the colony with a gun slung over one shoulder for polar bear protection. “That is exactly what it feels like to me,” says Divoky, noting that Coryell-Martin’s work “captures well what I’m doing and also why I am doing it. It doesn’t try to make it romantic.”

Truth in Abstraction

Faalty to scientific accuracy was a hallmark of early expedition painting, often at the expense of artistic vision. “There was often this tension between the scientists and the artists,” says Bleichmar. Researchers “were really directing the work—the content and also the style,” she adds. “Don’t make it fancy. Don’t make it aesthetic.”

The landscape painters of Moran’s time were informed by science but afforded artistic freedom, finding their own balance between “the real and the ideal,” says Katherine Manthorne, an art history professor at The Graduate Center of the City University of New York. Today’s expedition painters remain committed to accuracy with the freedom of unrestricted strokes. Minckley reserved creative time each day for researchers, many from the United States Geological Survey (USGS), and artists to collect snapshots of the

river, whether in bat call recordings, water samples, photographs, or paint. “That was really critical to the artists,” says Minckley, “not to rush them but to make sure that they had the space and agency.”

Artist-in-residence programs at field stations and aboard research vessels similarly offer space to explore. “By bringing artists onboard to engage in ocean science and ocean data, they can share and represent the science in a unique way that engages audiences that otherwise wouldn’t necessarily take an interest in science,” says Carlie Wiener, the director of communications and engagement strategy for the Schmidt Ocean Institute. Wiener founded the institute’s Artist-at-Sea program in 2015 at the behest of the institute’s co-founder Wendy Schmidt.

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—Deborah Smith

The program supports artists as they travel to the institute’s research vessel and then join researchers onboard for weeks at a time. Like many artist-in-residencies at scientific research institutions, the program draws painters, as well as artists exploring a wide range of other media. Participants—now 33 and counting—have worked in paint, folded paper, three-dimensional printing, comics, thread, robot-assisted ink drawings, and more. The institute shares the works in an online gallery as well as a traveling exhibit that visits science museums, aquariums, and other sites.

“My main mission was to support the research and communicate what was being discovered,” says Hawaii-based abstract painter Bailey Ferguson, who travelled nearly 3,000 nautical miles from Hawaii to Fiji in 2019 as part of the program. Ferguson observed Deborah Smith, a Schmidt Ocean Institute marine technician, map the seafloor using multibeam sonars that determine depth with sound waves. The institute contributes these data to the Nippon Foundation-GEBCO Seabed 2030 Project, an international effort to map the entire ocean floor by 2030.

“The first two days when we had left port, I was experimenting and understanding my medium in this new environment,” recalls Ferguson. Her process typically involves pouring paint onto a horizontal canvas. “The boat was swaying and pitching and rolling,” she says. “I had to learn how to time when to pour the pigment.”

Ferguson couldn’t see the terrain they mapped with her own eyes as Moran had, but she could watch on a screen as data came back in real time, presented as three-dimensional images. “I was interested in that moment of the reveal,” she says, “of when that data come back and we’re able to see what is truly below us.”

In her *Mapping the Line* series, Ferguson captured this process of discovery through abstract art. She first washed her canvas in acrylic paint. She then laid down

masking tape representing the ship's planned route and painted contours suggesting the team's vague understanding of what lay below. Once they passed over the route, she ripped the masking tape off and filled in the narrow space with finer strokes evoking newfound knowledge of topography thousands of meters below. In a performance art component of the piece, Ferguson conducted this masking tape reveal process in front of researchers and marine technicians, including Smith. "It was an intriguing process," recalls Smith, "using that kind of creativity." After her many years of research, Smith appreciates the different perspective that artists like Ferguson can offer. "I find it really a great breath of fresh air to see their perception of what we are doing and how we are doing it."

Ferguson hopes that her works will help nonscientists interpret data without requiring them to digest numbers on a page. In her *Movement Painting* series, she created a "visual barometer" of weather conditions during her time at sea. Each day, she poured paint onto canvas laid flat against the boat deck. She then allowed the movement of the boat to direct the paint's movement on the canvas. On sunny days, it baked onto the canvas quickly. On stormy days, rain mixed with paint, creating a halo effect. "I tell people about how the conditions created the paintings," she says. "Their eyes light up." When Ferguson exhibits the work for nonscientists, she plans to include images of the actual topography before and after mapping for context.

Taking Science to the Public

For expedition painters, the work continues after the adventure. In studios, they create pieces inspired by photographs, field paintings, and sketches. They then present the work, often to audiences beyond art gallery goers. Ferguson showed some of her paintings at exhibitions in Hawaii and California. But she also has a painting of coral—less abstract than her typical work—mounted to the Schmidt Ocean Institute's "SuBastian," a remote-controlled submarine.

Coryell-Martin is developing educational events with Katie Morrison, a science educator in Seattle, WA, who accompanied her into the field with Divoky. The team already shared their experiences at the Pacific Science Center in Seattle in February 2020 as part of the center's Climate Change Curiosity Expo. Their exhibit included Coryell-Martin's field paintings, Divoky's tools, and the chance for kids to learn about bird banding by making bracelets for themselves that represented bands for specific species.

They're planning more events, including an exhibit at the Jefferson Museum of Art and History in Port Townsend, WA, expected to run in fall 2021. Divoky himself looks forward to attending. "It's a nice way to engage people," he says, "and let them know how quickly the Arctic is changing due to increased global temperatures from CO₂ emissions." Coryell-Martin hopes that by using pen, paper, and watercolor she can reach people through a fresh lens to "create that empathy, particularly with the Arctic and polar regions." Indeed, a 2014 National Academies report on enhancing the value and sustainability of field stations and marine laboratories suggests that fostering empathy is a key step in translating scientific findings into policy change and action (4).

Kikut and other SCREE artists presented pieces in museums along the river during the voyage. Kikut's paintings also hung at the USGS National Center in Reston, VA, from March through July 2020, although public access was restricted starting in mid-March because of the pandemic. In contrast to Thomas Moran's idealistic portrayals of the West, Kikut hopes his works evoke the "tension between nature and culture."

It's a different agenda from the early expedition painters—to a point. In preparation for his expedition, Kikut explored the Green River in Dinosaur National Monument. He came across a flat rock and sat down to sketch. Later that night, flipping through a book of Moran's sketches, he found one from the same site. "We had the exact same composition," says Kikut. "He had sat on that same rock. There was no question."

- 1 P. Kikut, "Powell expedition—Art. Then and now." United States Geological Survey (2020). https://www.usgs.gov/center-news/powell-expedition-art-then-and-now?qt-news_science_products=1#qt-news_science_products. Accessed 13 November 2020.
- 2 D. Suave, G. Divoky, V. L. Friesen, Phenotypic plasticity or evolutionary change? An examination of the phenological response of an arctic seabird to climate change. *Funct. Ecol.* **33**, 2180–2190 (2019).
- 3 G. J. Divoky, P. M. Lukacs, M. L. Druckenmiller, Effects of recent decreases in arctic sea ice on an ice-associated marine bird. *Prog. Oceanogr.* **136**, 151–161 (2015).
- 4 National Research Council, *Enhancing the Value and Sustainability of Field Stations and Marine Laboratories in the 21st Century* (The National Academies Press, Washington, DC, 2014).