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Discovering a Career Niche in Scientific Illustration

A way to interpret and communicate complex concepts, scientific illustration course develops deeper scientists and helped one graduate direct his passion into a career



Nicholas Bezio's illustration of a North American moose with a barn sparrow perched on one of its horn. Image Credit: Nicholas Bezio

September 6, 2018 | By Jill Rodrigues '05

BRISTOL, R.I. – With flowing strokes, Nicholas Bezio strives to capture the golden sunlight bathing a North American moose, drawing the viewer's eye around the composition. And just as much as he entices viewers aesthetically, he uses colored pencils like scientific tools to render with meticulously accurate detail the majestic mammal's distinctive nose, the shape and prongs of its sinewy horns.

When most of us look at scientific illustrations in a textbook or at a museum, we marvel at the lush depictions of exotic flowers and detailed scenes of snow leopard in its wintry habitat. But how often do we realize the painstaking skill, scientific knowledge and accuracy of information that go into these pleasing pictures, beyond their aesthetic value?



By Nicholas Bezio

Scientific illustrations capture the imagination, but they also offer a world of visual data. As scientists study the natural world, they often sketch their subjects to record defining characteristics, shapes and interaction within the ecosystem, providing a deeper understanding of the specimen and its place in the world. It's a critical tool in

communicating complex concepts that's been used throughout the history of science, explains Associate Professor of Biology Loren Byrne.

"Illustrations are a form of scientific evidence and data. It's a different way of thinking about the information to tell our scientific stories," Byrne says. "Being able to create scientific illustration is just as valuable as being able to crunch numbers from a lab report."

Until he took Byrne's Biological Illustration course during his freshman year, Bezio '17 – who has a bachelor's in marine biology – assumed scientific illustrations were produced entirely by artists. When he learned that many are created by scientists who have delved into the intersection of art and science as a vehicle for helping themselves, other scientists and the general public comprehend a difficult topic, he knew he'd discovered his niche.

"I had always wanted to work on both science and art together, but I didn't really learn that it was a career option until I took Byrne's class," says Bezio, who was accepted into the prestigious [California State University, Monterey Bay's Science \(CSUMB\) Illustration program](#). "It was in this class that I learned more about what makes a good science illustration, about the [Guild of Natural Science Illustrators](#), and about CSUMB. Before that, I figured it was just an artist who practiced in portraying realism that did most of the illustrations for textbooks and science publications."



Professor Byrne discusses the technical and creative process in illustrating with biology major Sarah Slowik '18.

Scientific illustrators receive training on how to best represent the specimen, which technique and media would be most suited for illustration, and how to work with lighting and composition. Like any artist, Bezio strives to "make flow happen and to have a good rhythm" in his drawings. But scientific illustration is about more than just making a pretty picture, he says – it has to be accurate, detailed and informative.

"Illustration can emphasize certain characteristics you want to look at, or it can simplify things like take away the noise in a photo to focus on things you might not have seen. You can illustrate the super complex optics in biology or genetics to offer a broader understanding than the lab report alone, explaining the concepts through pictures and visuals," he explains.

Creative Thinkers, Better Scientists

Professor Byrne began offering Biological Illustration several years ago to develop deeper technical skills than what students get in a science curriculum, where they'll spend a few minutes sketching what they see under a microscope or a dissection in lab.

Integrated training in the arts and sciences has a multitude of positive outcomes, Byrne says, citing a [recent study](#) from the National Academies of Sciences, Engineering, and Medicine on its effect in helping college students "enter the workforce, live enriched lives, and become active and informed citizens."

"A class like this helps train students to be more well-rounded in the qualities of the scientific and artistic mind. Learning how to draw is learning how to see," says Byrne, who has illustrated the work of paleontologists for the journal *Nature* and other scientific publications.



Cassandra Moon displays her sculpture of a fish dissection.

For students in his spring class, this training shed a new light on seeing and thinking like a scientist.

"This course teaches you how to look at things more objectively and to see things as they really are," according to environmental science major Alejandro Mayorga. "With science, it's important to not make assumptions about how things should be, but to take a really good look at the way things are."

Marine biology major Cassandra Moon said her intention for crafting a foam-board sculpture dissection of Blue Chromis was to illustrate its internal organs without having to euthanize a fish.

"This is about making scientific knowledge more accessible to the public by showing them something tangible," says Moon. "It makes it more real and inspires you to learn more about it."

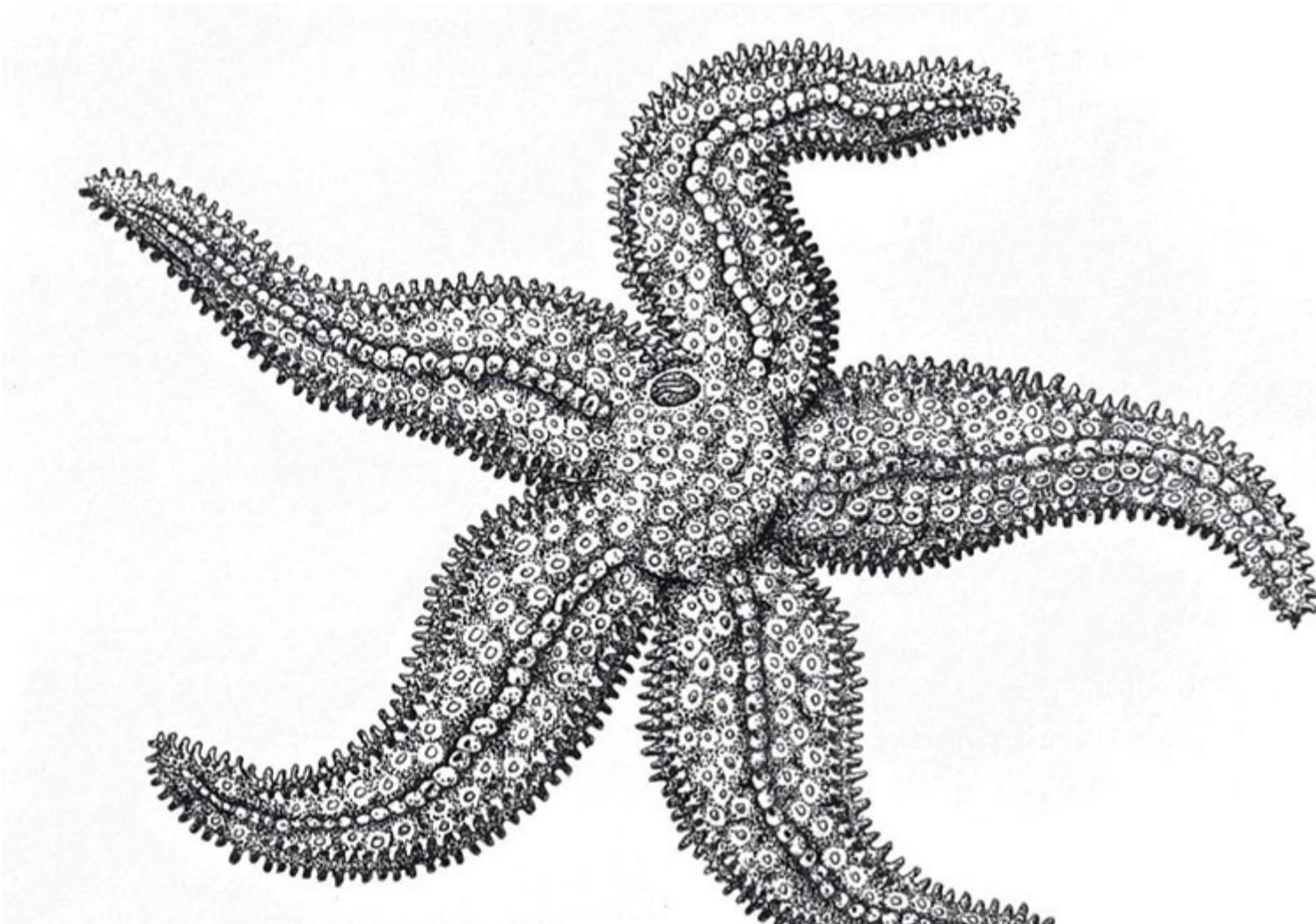
Making Creative Scientists



Illustrating for Public Knowledge

Bezio travels everywhere with a journal and pencil. A true scientist, he collects his own “resource material,” snapping photos of cactus leaves in a garden shop, a red-tail hawk sighted on a walking trail, or scooping hydromedusa with a plankton net from a dock. He networks with scientists across the country to confer on specimen identification and share resource material.

His ardent curiosity and innate talents landed him in a unique collaboration between RWU and the Audubon Society of Rhode Island’s Bristol center. Byrne recruited Bezio and Kevin Martin to produce scientific illustrations for the center’s marine and coastal exhibits. Bezio and Martin spent two years consulting and planning with the Audubon folks, and creating the illustrations that provide context and visuals for each exhibit.



Bezio's illustration of the common seastar, rendered in the Audubon Center's selected technique and tool – stippling with pen and ink. He says, "It's a method that isolates the individual and focuses primarily on the patterns and morphology of the animal."

“The Audubon project was an eye-opening experience,” Bezio says. “My artwork is contributing to something as a tool to help an institution with their project and goals. My hope is that my illustrations play a part in understanding a concept and to make it known more broadly known to the public.”

Bezio followed his passions through the unique opportunities for collaborative research and hands-on learning experiences at Roger Williams. It’s earned him résumé credentials like professional illustrations for a national science educational center, but also his first major publication – *Effects of capture surface morphology on feeding success of scyphomedusae* – co-authored with Professor Sean Colin.

“Professor Byrne gave me more knowledge of technical skills, the knowledge that this field exists, and the most priceless thing was the confidence I needed to know I can do this,” Bezio says. “It’s like finding your own niche, and scientific illustration was the niche I was looking for.”

After he completes CSUMB’s Scientific Illustration program, Bezio plans to deepen his scientific studies in marine science at James Cook University. He says the two programs will make him a stronger scientist and artist. Of course, he’ll travel to both with a journal and pencil.

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