



UNDER THE SEA

Leveraging the expertise of its diving program—one of the country’s oldest and largest—IU has become a leader in efforts to protect and preserve shipwrecks and the coastal environments in which they are found. How exactly did a landlocked university manage to be a go-to resource when, for example, one of Captain Kidd’s ships is found off the coast of the Dominican Republic?

BY STEVE KAEUBLE

ILLUSTRATION: TIM McDONAGH

Nestled in a mostly landlocked state, Bloomington, Ind., is hundreds of miles from salt water. Not exactly where one would expect to find one of the nation's most prominent academic scuba diving programs. Or a hotbed of expertise on ancient shipwrecks. Or a researcher who's been hailed as a "sea hero."

And to think it all started when a popular recreational fad that turned into a PE class grew into a very serious scientific pursuit: Indiana University's Center for Underwater Science. The center has made an international name for itself researching and preserving submerged historical and biological treasures.

Charles Beeker, BA'75, MA'03, is the "sea hero," a title bestowed upon him a few years ago by *Scuba Diving* magazine. He's the longtime director of the Center for Underwater Science, a crusader against wanton and destructive ocean treasure hunting, a partner with governments hoping to preserve their cultural and natural heritage, and a role model who has inspired countless students to dive into a different career direction.

Under Beeker's guidance, IU's center has helped establish multiple "living museums of the sea" in underwater places far from the Bloomington campus. These institutions are created amid the wreckage of ancient ships, providing legal protections for the sites, generating a wealth of data, and inviting divers to visit places that treasure hunters might otherwise tear apart.

The latest living museum launched in 2019 amid the wreckage of the *Nuestra Señora de Begoña*, a Spanish merchant vessel that went down off the coast of the Dominican Republic in 1725. It's accessible only through scuba diving or snorkeling, and it's a gold mine of interesting underwater sights—archeological artifacts and marine biology thrive in this kind of setting.

TAKE A DIVE

Watch members of IU's diving program explore the *Quedagh Merchant*, a ship belonging to Captain Kidd that went down in the 17th century. The site is an underwater reserve, and IU's Charlie Beeker says: "[The goal is] that 20 years from now, 50 years from now, 100 years from now, we still have these underwater sites. They're not salvaged, they're not brought up to the surface. Instead, they're living museums underwater."

Explore with IU at bit.ly/IUdivers.



"The shipwreck itself acts as substrate for reef growth and attracts a host of marine organisms," Beeker explains. "When diving on one of the Living Museums in the Sea sites, you are able to experience both the cultural past and environmental present."

This is the fifth partnership between IU and the Caribbean nation's government to protect and preserve a historical underwater site. It's the latest in a series of initiatives that have taken students and faculty far from Bloomington and dry land.

So, exactly how did IU get so involved in the world of underwater archeology and other ocean environments? And how does this specialization impact the students who put on the scuba gear and dive in? It all started with an activity intended primarily for sport and enjoyment, and it grew like coral on the deck of a shipwrecked galleon.

DIVING IN AS HOOSIERS

"Indiana University started scuba training in 1963," says Beeker, who also serves as a clinical professor of kinesiology in the School of Public Health. Scuba was a growing fad back in the 1960s, starting to catch on as a recreational sport. The university's water polo coach, Art Mindheim, PEdir'79, decided to start offering scuba classes, according to Samuel Haskell, BA'15, MS'18, assistant director and diving safety officer of the Center for Underwater Science.

Mindheim hired Beeker in 1974 to assist with the Introduction to Scuba class, and Beeker has spent the past four decades training IU students interested in scuba. The diving program, which Beeker has led since 1984, may have had recreational roots, but as its popularity grew, so did its academic focus. "I decided scuba was the tool for underwater research, and [I] began developing the program we now have at IU today," Beeker says.

"Our program teaches scientific methodology—we use scuba as a tool for data collection," explains Tori Galloway, BA'19, a PhD student in the Department of Anthropology and visiting lecturer for the Center for Underwater Science. Galloway is a prime example of the kind of student who thought diving might be a fun pastime, but then saw it grow into a passion. She says she kind of fell into it, so to speak—taking a diving class, then heading to the Florida Keys on field project, then hanging around the program more and more until finally landing on the Underwater Science staff while pursuing graduate studies.

Same deal for Kirsten Hawley, BA'16, lab coordinator for the center and a visiting lecturer in academic diving. She, too, got connected as an undergrad. After graduating from IU and working elsewhere as an archeologist, she returned to recruit others into the work of underwater science.

ON THE TRAIL OF TREASURE

It's remarkable to consider just how dangerous seaborne travel has been through the course of history. The bottoms of all navigable bodies of water, from the Great Lakes to the world's oceans, are littered with thousands of shipwrecks spanning centuries of sailing. "Not all are treasure ships, not all had precious cargo, but they're all historical and important," Beeker says.

Beeker became interested in shipwrecks well before officially establishing the Center for Underwater Science. Of course, he's far from the only person intrigued by ill-fated voyages, though his interest is for different reasons than most: Beeker wants to study and preserve, but many others want to loot.

Not surprisingly, the shipwrecks that were loaded with coins, jewels, and other valuables attract a lot of interest from treasure hunters, especially when the availability of scuba gear made diving for doubloons (Spanish coins) more feasible. By the 1980s, the free-for-all treasure wars attracted an increasing amount of interest and concern. Beeker became part of a federal task force that ultimately created and passed the 1988 U.S. Abandoned Shipwreck Act, which set up protections for historical shipwrecks and outlawed private looting by treasure hunters.

That coincided with Beeker's work with governmental entities hoping to preserve historical sites and create marine protected areas. His first project was in Florida.

In 1733, a Spanish fleet loaded with treasure encountered a hurricane off the coast of what would become the state, and many ships went down. Treasure hunters had been looting these shipwrecks for years. But in the late 1980s, an IU team collaborated with Florida State University to assess the sites for preservation potential.

The researchers focused their initial efforts on a ship called the *San Pedro*, and by the spring of 1989, the *San Pedro Underwater Archaeological Preserve* was open for public visits. Today, the *San Pedro* site is within the Florida Keys National Marine Sanctuary, a stop on what's known as the Shipwreck Trail. The trail includes several protected shipwrecks scattered a few miles offshore—some in relatively shallow water, some a hundred feet down.

Score a major victory for the marine environment, thanks in part to IU's "sea hero." No surprise, though, that the treasure hunters weren't happy about losing access to some enticing loot.

"Many went on to the Dominican Republic," Beeker says, "and I followed them there."

The Dominican Republic was particularly appealing to treasure hunters because it was one of the remaining places where salvaging was



IU's Charlie Beeker observes the plaque that marks the site of the remains of Captain Kidd's *Quedagh Merchant*. Located in shallow water near the coast of an island in the Dominican Republic, the wreck was discovered by a snorkeler in 2007.

In the inset photograph, IU researchers examine one of the ship's cannons.

COURTESY PHOTO

BEEKER: COURTESY PHOTO / JAMES BROSHER, INDIANA UNIVERSITY

Tori Galloway, a PhD student in the Department of Anthropology and visiting lecturer for the Center for Underwater Science, conducts lab work at the center.



The inset photograph shows a closeup of a bag of coins. All that's left of this one is the clump of coins, as the bag was degraded by the sea. These coins come from the *Nuestra Señora de Begoña*, an 18th-century Spanish merchant ship that was owned by the governor of the Canary Islands. IU researchers believe the ship carried large amounts of contraband silver. Taking a diving course as an IU undergraduate got Galloway started in the field. "Before [learning about the] center," she says, "I didn't know underwater archaeology was even an option."

allowed. The deal: Find a shipwreck, and half of what you salvage is yours. The government gets the other half.

Problem is, what can the government of the Dominican Republic do with an ancient cannon that's been brought up from the ocean floor by treasure hunters? It's not like one can take it to the bank and cash it in, and it's also not practical to simply put it on display in a government-owned building. Artifacts, once removed from their archeological resting place, need complicated—and sometimes costly—care to keep them from disintegrating into a heap of dust.

That's one reason it's much more attractive for the government to work with an academic institution, rather than free-market treasure hunters. IU knows what to do with artifacts from below the waves, Beeker says. "We can work on them and conserve them."

It turns out that one of the best ways to conserve an item is to leave it under the sea.

"We study it where it is, with minimal disruption of the environment," Hawley says. That makes it all the more important to ensure that others also refrain from disturbing artifacts and shipwreck environments. "We create the marine protected areas, and they're preserved [in place]. The concept is a model for protecting underwater cultural heritage and the associated biology."

One of the most celebrated events from years of this work was the discovery and identification of notorious

pirate Captain William Kidd's 1699 *Quedagh Merchant* shipwreck.

"But I believe our most important work is on the Taíno people of the Caribbean," Beeker says. "The Taíno were the indigenous population that greeted Columbus in 1492, and through extensive archaeological investigation, we have been able to answer important questions about Taíno society and ceremonial cave and cavern use prior to the arrival of European colonists."

SCIENCE BENEATH THE WAVES

"Shipwrecks are part of the environment," Beeker observes.

When a ship sinks to the bottom of an ocean or lake, it transforms from an accident scene into a marine habitat, populated by countless different species of fish, coral, anemone, seaweed, sponges, shrimp, and more. Beeker's visits to shipwrecks were inspired by his interest in archeology, but it's impossible to dive through the wreckage without noticing the amazing things living there now. "That got me started looking at the biology of shipwrecks. I look at these sites from an archeological and anthropological view, but I recognize the biology."

Hawley agrees: "The underwater world and submerged archeology sites are very integrated into their environment." And that's why the Center for Underwater Science isn't just about archeology and ship-

JAMES BROSHER

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—CHARLIE BEEKER

wrecks. "Underwater Science is really cool because it's an interdisciplinary center. We're archeology-heavy, but we collaborate with biologists and geologists on any research endeavors that require being in the water."

Galloway says many of the 150 to 250 students who touch the program in a given year get into diving for the fun of it, or so they believe. Initially, many ponder, "I don't think it really relates to my major," she says. But then they see how diving is not just a sport but an academic pursuit, and they start thinking, "Maybe I can incorporate this into my career." That's really rewarding.

Students in the program learn what they can in the university's classrooms and pools, and many then sign up for field experiences in the ocean itself. Common destinations include the Florida Keys, the Dominican Republic, and even Thunder Bay on the Great Lakes. They're not just swimming through shipwrecks but getting involved in mapping and photogrammetric modeling and other research activities.

IU students and researchers in the field immerse, or perhaps submerge, themselves in the center's work of studying and preserving sites and then preparing them as living museums.

At the site of Captain Kidd's *Quedagh Merchant*, Beeker's team counted more than a hundred colonies of elkhorn coral, an endangered species. The emphasis on the animal and plant life surrounding this and other ships, Beeker says, makes for significant environmental research.

Out of the water, he says, the most rewarding part of the Captain Kidd adventure was in the laboratory and archives.

"It was the archival research and laboratory analyses of the ballast stones, hull fragments, and ship construction that ultimately allowed IU to identify it as Captain Kidd's lost ship," he explains. "I've been on thousands of shipwrecks, but the *Quedagh Merchant* is the only one I've had the pleasure of working on where all the data and all the research lined up so perfectly."

Beeker notes that while much of the effort is aimed at leaving artifacts and habitats intact underwater, there are occasions to bring some artifacts to dry land and preserve

them for displays that don't require scuba equipment. There are land-based exhibits in the Dominican Republic, and even at the Children's Museum of Indianapolis.

As with so many other parts of life, the coronavirus pandemic temporarily halted the center's field research in 2020. Projects in Lake Huron, Lake Michigan, the Florida Keys, and the Dominican Republic all had to be postponed until 2021. But dive training and local course offerings have continued, following industry and IU safety guidelines.

PROTECTING THE ENVIRONMENT

With living museums now welcoming divers in multiple places, the Center for Underwater Science is making a difference in the way that people, and their governments, look at shipwrecks. "This is a major theme IU has been promoting in the Dominican Republic, and it's really starting to take off," Galloway says. "Local communities are really starting to take care of them."

"The multidisciplinary approach to marine resource management brings together people interested in cultural history, heritage tourism, ecotourism, environmental science, marine biology, fishing communities, hotel associations, dive shops, and more," Beeker adds.

And divers are fully on board, too. Beeker says the request is that underwater visitors "take only photos and leave only bubbles."

"We've worked closely with the local dive centers to make sure they have the resources they need [for] their divers to comply with this philosophy," he says. "We revisit these sites every year and conduct rapid assessments to ensure no damage is being done."

Compared to the treasure wars, it's a whole different way of looking at the underwater environment, a different motivation. "You're not going to find treasure," Beeker says. "You're going to find history, which to me is the treasure." ■

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