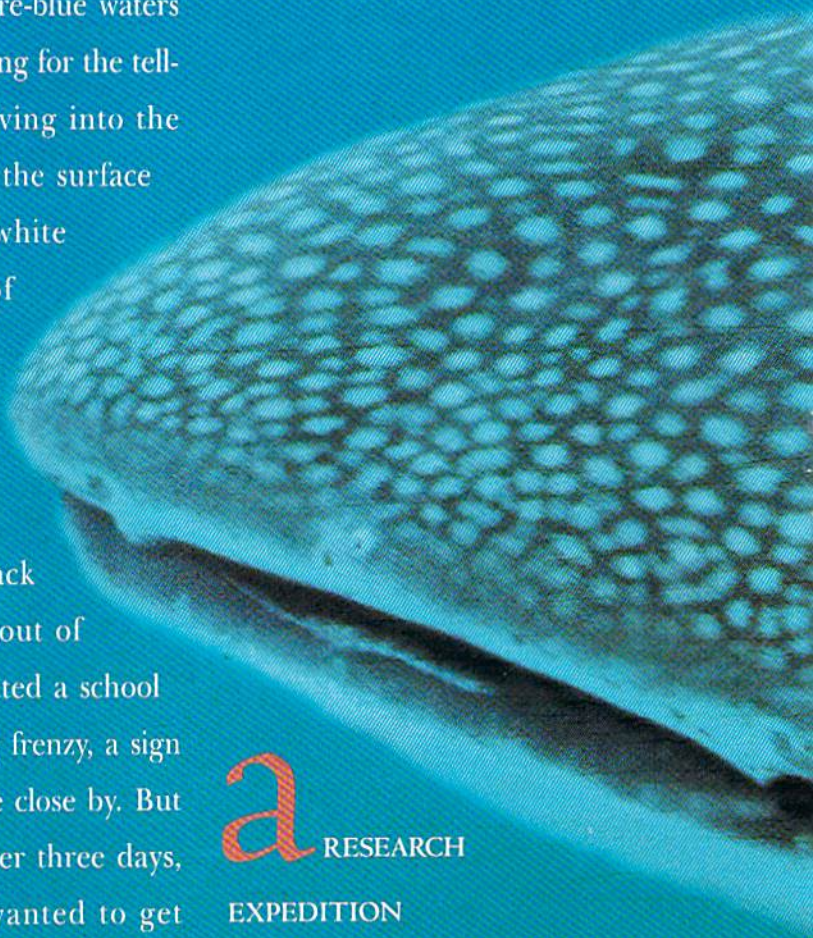


On a vessel off the island of Utila in northeast Honduras, Jonathan Friedman (CC'98) looked anxiously at his watch. For three days, he and his seven boatmates had been staring into the sapphire-blue waters of the Caribbean Sea, searching for the tell-tale signs. Pelagic birds diving into the water; slight differences in the surface color of the ocean; small white caps indicating schools of feeding fish: These were the clues that would indicate the possible arrival of their quarry.

With its four-foot-wide mouth, a whale shark could swallow a diver whole—fortunately, the species feeds on nothing larger than plankton.

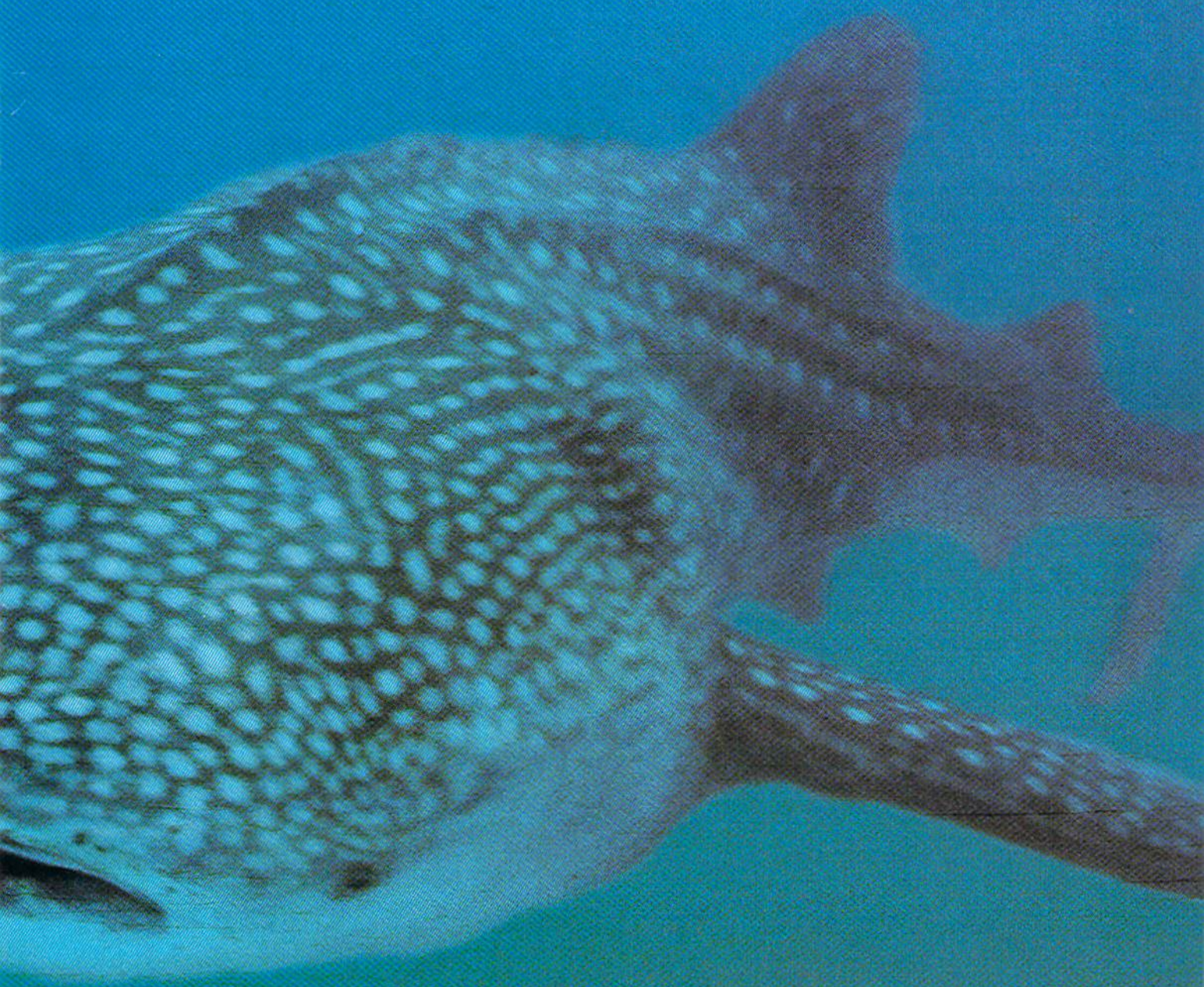


Friedman settled back into his seat for another bout of tedium, when someone spotted a school of blackfin tuna in a feeding frenzy, a sign that a whale shark might be close by. But after several false alarms over three days, no one wanted to get their hopes too high. “We’ve all seen those *National Geographic* specials, where everything seems to happen at once,” says Alex Antoniou, the leader of the April tagging expedition. “I think we all got a greater appreciation for how patient you



a RESEARCH EXPEDITION BRINGS RUTGERS STUDENTS FACE TO FIN WITH THE “GENTLE GIANTS” OF THE OCEAN—40-FOOT-LONG WHALE SHARKS.

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ARKHUNT *by Bill Glovin*

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need to be when you're working with nature."

As the boat turned to pursue the school of feeding tuna, all eyes scanned the water for a large, dark shadow cruising the surface or for the slow sweeping back and forth of a giant tail. As the two- to four-foot swells rolled by, Friedman, Antoniou, and their companions could look into the oncoming waves as if looking into an aquarium. Suddenly, it appeared: a 30-foot-long whale shark—the largest species of fish in the world—churning through the tuna, its mouth agape and swallowing everything in its considerable path. Recalls Friedman: "From where I was standing, the shark looked like the front of a 1985 Honda."

On cue, Cecil Lyons, the island's freestyle diving champion, grabbed the tagging instrument, and Antoniou, director of aquatics research at Rutgers' Sonny Werblin Recreation Center, snatched his digital video camera. Sliding off the boat, the pair snorkeled to within an arm's length of the massive creature, and Lyons attached the thin, rod-shaped tag to the whale shark near its first dorsal fin. Attached to the tag was a fluorescent yellow streamer, which signified the time and location of the tagging.

As soon as the rod found its mark, Friedman and the rest of the crew—which included five other Rutgers undergraduates—put on their masks and snorkels and joined the pair in the water for an up-close look at a creature that can reach more than 40 feet in length. The whale shark, now sporting a tag that will help scientists track its movements, swam through and around the group several times before disappearing into the murky depths.

"I was more exhilarated than afraid," says Friedman, who helped tag a second shark two days later. "Whale sharks are filter feeders and uninterested in human prey. Even the man-eating sharks we saw are not used to coming into contact with people. Unless a shark is provoked, it's highly

unlikely that it will ever present a problem. The 'Jaws' films were hardly based on reality."

Friedman, an environmental sciences major at Cook College, first learned about the expedition this past February when Antoniou guest lectured in "Shark Biology Studio," a course offered by Rutgers' Institute of Marine and Coastal Sciences. Antoniou told the class that he had spotted whale sharks on two recreational scuba-diving trips to Utila Island and had reported the sightings to the Shark Research Institute in Princeton. He learned that the Institute, a nonprofit scientific organization dedicated to research on and conservation of sharks, was

seeking experienced divers for their ongoing, worldwide effort to tag and study whale sharks. Antoniou offered to organize a group of experienced Rutgers divers for an April expedition to the western Atlantic, where whale sharks had yet to be tagged. Six undergraduates, each with scuba-diving experience and a scholarly interest in marine sciences, signed on for the excursion.

"Because they ensure diversity and help control populations,

whale sharks are essential to the health of the oceans," says Antoniou. "Right now, we're killing whale sharks faster than they can reproduce. Scientists predict that if the carnage continues, a species that has lasted more than 400 million years could vanish within the next 50 to 100 years."

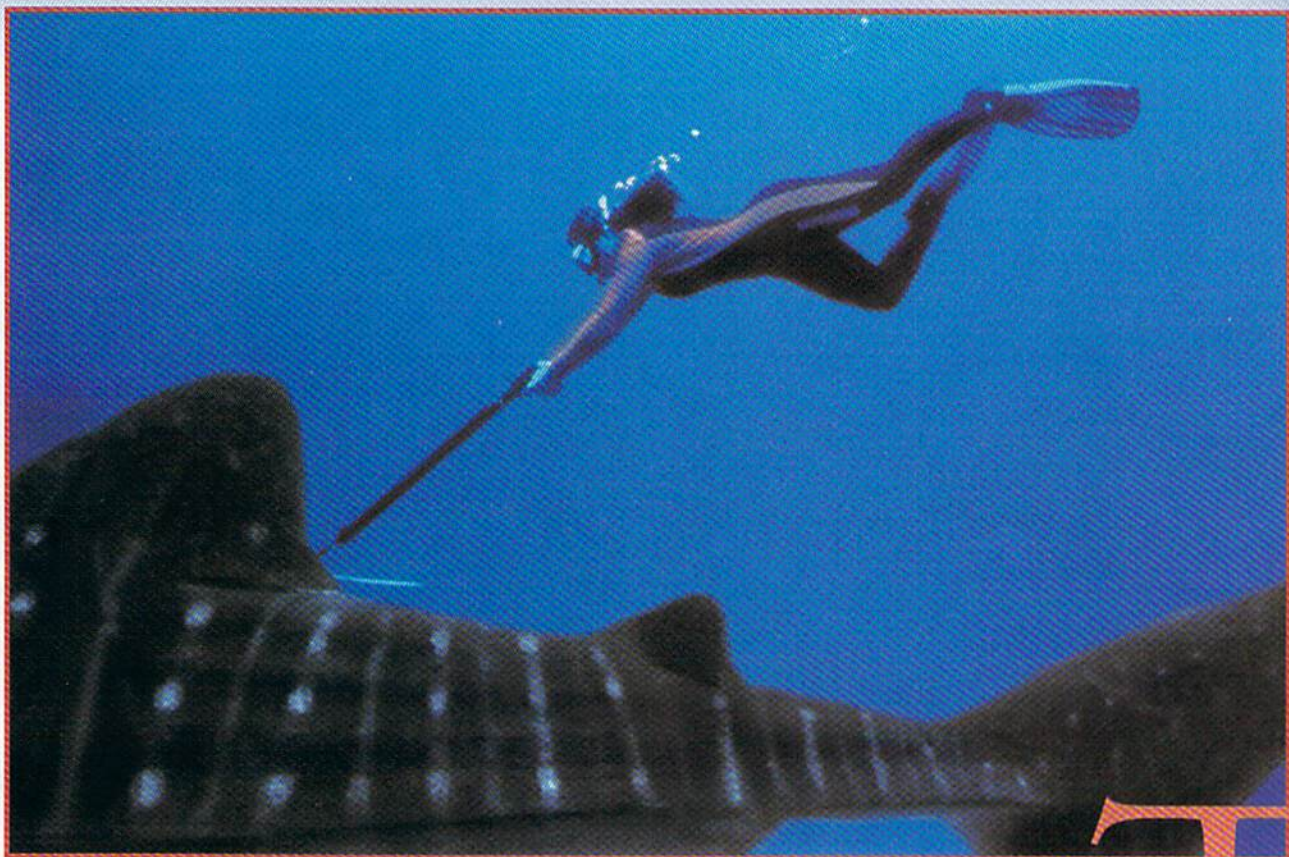
The Shark Research Institute has tagged over 200 whale sharks, says Marie Levine, executive director. "The institute began tagging sharks off the coast of South Africa in 1993, then expanded to east Africa and the Seychelles. The joint project with Rutgers has brought our work into the Caribbean."

As sport divers sight the tagged sharks, explains Levine, they report the information back to the institute. The data collected will provide insight into the species' feeding habits, migratory patterns, and breeding cycles—knowledge that could contribute to



The tagging expedition—which included Rutgers students and instructors—became the first to find and tag whale sharks in the western Atlantic Ocean.

"I was more exhilarated



conservation efforts. For example, whale sharks live in both the Atlantic and Pacific Oceans, but scientists are unsure whether there are two separate populations or if the animals migrate between the two oceans. If a whale shark tagged in the Pacific Ocean is later sighted in the Atlantic, science will have its answer.

To prepare for the trip, Friedman and his classmates learned as much as they could about whale sharks and the area's weather patterns, geography, and culture. Friedman also brushed up on his Spanish. "The chance to interact with sharks without a cage, especially since whale sharks had never been tagged before in this region, was hard to pass up," says Friedman, who used the tagging expedition to create an independent study project within his major.

Friedman says that the island's proximity to the Continental Shelf makes it an ideal location to spot whale sharks. The ocean's depth from the island gradually declines from 30 to 60 to 90 feet, then falls abruptly to 3,000 feet. "Along each rift, upwelling, or currents from greater depths, bring nutrients to the

surface," he explains. "This promotes the food chain and fosters an extraordinary number of primary and secondary consumers, which whale sharks find very appetizing."

To relieve some of the tedium, part of each day was spent scuba diving and snorkeling. The group spotted a 400-pound loggerhead turtle; snorkeled alongside a school of seven-foot-long tarpons; identified tiger, mako, thresher, and bull sharks; and explored a blackhill seamount, an unusual geological formation that Friedman describes as "an underwater pyramid."

Friedman, who graduated this past May, plans to pursue a career in marine-animal husbandry in a park or aquarium. The tagging expedition gave him the kind of real-world experience that few recent graduates can bring to the employment market. "Last year I was an advanced intern for Disney in Orlando, where I was thrilled to have scuba dived several times in the tank at the Living Seas Pavilion at Epcot Center," says Friedman. "Until this trip, I didn't think I'd ever be able to top that." □

The color of the tag placed by marine biologist Susan Kim Smith indicates where this whale shark was first sighted — Mozambique.

ed than afraid. . . .”