UC SANTA BARBARA
THE Current

July 26, 2018
Julie Cohen

Spotting Giants

Capable of growing bigger than an average-sized grizzly bear, and as imperiled as the black rhino, giant sea bass are the largest bony coastal fish in California. They can live to be 75 years old and can exceed 7 feet and 500 pounds. Most importantly, their ecological contributions as an apex predator in kelp forest ecosystems likely help to shape how these underwater forests work. UC Santa Barbara and the Aquarium of the Pacific today launched a citizen science program to help these endangered behemoths.

Harmless despite their size, these curious and gentle giants can be the highlight of a SCUBA dive. A previous UCSB study found that giant sea bass are worth more alive than dead: Their value as an ecotourism attraction outweighs their value when caught and sold by gillnet fishermen. Encounters with giant sea bass, however, are rare. In fact, a recent genetic study suggests that fewer than 500 breeding individuals may exist in California.

To effectively recover this species, which is categorized as critically endangered by the International Union for Conservation of Nature's Red List, marine biologists need more and better data. Enter Spotting Giant Sea Bass, a kind of Facebook for fishes, where citizen scientists upload photographs of fish and share information about where and when each individual was sighted.

"Spotting Giant Sea Bass is an example of how we can leverage the power of technology to help solve problems in the oceans," said Douglas McCauley, an associate professor in UCSB's Department of Ecology, Evolution and Marine Biology

and director of the Benioff Ocean Initiative, which funded and designed the Spotting Giant Sea Bass website.

During the launch event, attendees were able to see giant sea bass that have lived at the Aquarium of the Pacific since it opened over 20 years ago and observe a demonstration scan of those fish into the database. As part of its conservation initiatives, the Aquarium of the Pacific was the first aquarium to successfully breed giant sea bass in 2016. “We are pleased to partner with UCSB on this program to help this important and iconic local species,” said Dr. Sandy Trautwein, Aquarium of the Pacific vice president of animal husbandry. “The photos citizen scientists collect and share with UCSB will help us to better understand giant sea bass and to aid in conservation research.”

The idea for the project was born when two UCSB undergraduates, Conner Jainese and Katelin Seeto, discovered that each giant sea bass carries its own unique spot pattern that can be read like a barcode to identify individuals. The Spotting Giant Sea Bass website makes matches by using pattern recognition algorithms first developed by astrophysicists to spot patterns in star constellations and later used by NASA on the Hubble Space Telescope.

Giant sea bass spots form a miniature “constellation” on their flanks. The program leverages the unique spot pattern of each giant sea bass recorded to match up fish sighted on different days and in different places. For example, a giant sea bass named Nimrod was first photographed at a popular dive site off Catalina and then a year later was recorded at the exact same location.

In website testing prior to launch, more than 100 individuals ranging from the Northern Channel Islands to San Diego have been recorded on the website. Some observations have occurred within four different marine protected areas.

“By matching the unique spot patterns of individual giant sea bass in images submitted to the website we can begin to answer critically important research questions,” said ichthyologist Milton Love, a research biologist with UCSB’s Marine Science Institute. Data collected from the project help marine biologists better track the ups and downs of the giant sea bass population, determine whether they are using marine protected areas, identify their spawning grounds, calculate how far these fish move and identify the threats they encounter on their travels.

With California divers logging more than 1 million dives annually, Spotting Giant Sea Bass serves as a portal for citizen scientists to get involved in marine research and create data that could help with the recovery of an endangered species. Reporting data also gives citizen scientists a vested interest in giant sea bass conservation. Divers who upload a photo of a giant sea bass can receive notifications when “their” fish is spotted by another diver. As these fish can live to at least 75 years old, the architects of the Spotting Giant Sea Bass project hope many interesting stories will unfold.

“Staring eye to eye with a fish that is twice as old as you are and is big enough to swallow small sharks is a powerful experience,” McCauley says. “We are really excited about how Spotting Giant Sea Bass can help connect people around that experience and democratize the process of doing research that can help protect the future of this amazing species.”

Additional support for the Spotting Giant Sea Bass project was provided by the Aquarium of the Pacific and the Santa Barbara Channel Marine Biodiversity Observation Network. The Aquarium of the Pacific’s dive team also participates in the program.

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.