UC SANTA BARBARA
THE Current

October 13, 2017
Julie Cohen

Worth Their Weight

Almost as large as a Smart car, giant sea bass can weigh more than 500 pounds and grow longer than 6 feet. At this size, they are the largest bony fish found along the California coast.

Once commercially important, these gentle giants were overfished in the 1900s, leading to the collapse of the fishery in the 1970s. Now, they are classified as critically endangered by the International Union for Conservation of Nature, making them as imperiled as the black rhino.

In a new study, UCSB researchers investigated the different economic values of giant sea bass — paradoxically both a flagship species to the recreational dive industry and regularly sold in California's commercial fisheries when incidentally caught — to two key stakeholders: commercial fishers and recreational scuba divers. Their findings appear in the journal Aquatic Conservation: Marine and Freshwater Ecosystems.

"Analyzing commercial catch data, we found that the average annual value of the giant sea bass fishery to fishers in California was $12,600," said lead author Ana Sofia Guerra, a graduate student in UCSB's Department of Ecology, Evolution, and Marine Biology (EEMB). "This represents less than 1 percent of the value of the non-endangered fish commercial fishers are actually targeting: white sea bass and California halibut, which are healthy and sustainable seafood options."

While giant sea bass can no longer be targeted by commercial fishermen, if one is caught in a gill net during the capture of other species, it can be sold, which is why this endangered fish still appears regularly on restaurant menus and in fish markets.

Using self-reported fishery catch location data, the researchers identified seasonal bycatch hotspots, where commercial fishermen were not catching white sea bass or halibut but accidentally caught a lot of giant sea bass. According to co-author Douglas McCauley, an EEMB assistant professor, managing such ocean pockets as seasonal giant sea bass sanctuaries would likely have minimal or no financial impact on California's important fisheries but might create a lot more worth for the dive industry.

Although the economic value of a species generally is equated with consumption, the growth of ecotourism has expanded the range of value to include animal interaction — think photography or wildlife viewing.

"Approximately 1.38 million dives are done in California on an annual basis," Guerra said. "Annual direct expenditures from scuba diving in California range from $161 to $323 million."

Giant sea bass are to California divers what a bison sighting might be to a visitor in Yellowstone National Park. An iconic part of the state's underwater wilderness, giant sea bass have a curious gentle disposition, yet some divers go years without seeing one.

To ascertain the value of giant sea bass in the scuba community, the scientists surveyed recreational divers in Southern California online and in person. They rode along on recreational dive boats to determine the worth divers place on a rare face-to-face encounter with these unique creatures.

The researchers estimated that average annual value at $2.3 million. This amount does not represent a direct cash flow to the diving industry but rather is derived from how much value divers assign to a sighting of this gigantic fish. The high value to divers demonstrates the potential for an industry centered on giant sea bass viewing, which could be more lucrative than their consumption potential.

Similar values have been estimated for other charismatic ocean species. Reef sharks in Palau were found to be over 17 times more valuable alive as an ecotourism attraction in their lifetimes than dead in the market. Globally, the estimated annual

economic value of manta ray tourism is $140 million, which substantially exceeds the annual $5 million value of the manta ray gill raker trade.

Viewing value in this way highlights the importance of giant sea bass beyond a fishery and stresses the importance of considering all stakeholders in policy and management plans, Guerra noted. “Fishing and ecotourism or wildlife viewing are *not* mutually exclusive activities,” she said. “The paper highlights ways to strategically maximize the value of giant sea bass to both stakeholders.”

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