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National Geographic Daily News

More Big Whales in Ocean Could Mean More Fish, Scientists Find

New study reveals how scientists and fisheries managers underestimated the massive mammals.



The return of large whales—such as sperm (pictured), blue, right, and gray—could help ocean fish populations recover.

PHOTOGRAPH BY STEPHEN FRINK, CORBIS

By Brian Clark Howard
National Geographic

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Scientists and fisheries managers have long underestimated the valuable role large whales play in healthy ocean ecosystems, a new study suggests. And, scientists add, those commercial fishermen who complain that whales steal fish from their nets have it

wrong.

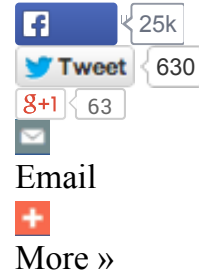
An increase in the number of large whales—like blue, sperm, right, and gray—around the world could lead to a healthier ocean and more fish, a team of scientists report in a review study published this month in the journal *Frontiers in Ecology and the Environment*.

The underestimation occurred because "when oceanographic studies were started, large whales were largely absent from the ecosystem—because we had killed most of them," says the study's lead author, Joe Roman, a biologist at the University of Vermont in Burlington.

Large whales were heavily hunted until the 1970s. At that point an estimated 66 to 90 percent of the animals had been removed from ocean waters.

But since then, great whales have been slowly recovering. There are now more than a million sperm whales, and tens of thousands of gray whales.

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Watch as a mother gray whale and her calf migrate past a pack of killer whales.

Yet blue whales—the largest animal ever known to have lived on the planet—have been slower to rebound. In fact, they remain at about one percent of their historic range in the Southern Hemisphere. Roman says scientists think their absence may have altered the ecosystem in a way that made it harder for all life to survive there. (Watch a video of blue whales.)

In recent years, as whale numbers have increased and technology has advanced—especially the ability to tag and track seafaring animals—we've begun to gain a better understanding of how important cetaceans are, says Roman. (See video of humpback whales.)

"Whale Pumps and Conveyor Belts"

The scientists report that when whales feed, often at great depths, and then return to the surface to breathe, they mix up the water column. That spreads

nutrients and microorganisms through different marine zones, which can lead to feeding bonanzas for other creatures. And the materials in whale urine and excrement, especially iron and nitrogen, serve as effective fertilizers for plankton.

Many great whales migrate long distances to mate, during which time they bring those nutrients with them. When they breed in far latitudes, they make important nutrient contributions to waters that are often poor in resources. Even their placentas can be rich sources of feedstocks for other organisms, says Roman, who calls whale migration a "conveyor belt" of nutrients around the ocean.

A baby sperm whale learns to swim alone while its mother hunts deep below.

Whale deaths can be helpful too. When one of the massive mammals dies, its body sinks to the sea bottom, where it nourishes unique ecosystems of scavengers, from hagfishes to crabs to worms. Dozens of those scavenger species are found nowhere else, says Roman.

"Because [humans] took out so many whales, there were probably extinctions in the deep sea before we knew those [scavenger] species existed," says Roman, who adds that he's working on a new study to estimate how many of those scavenger species were lost.

Maddalena Bearzi, a marine biologist and president of the California-based Ocean Conservation Society who was not affiliated with the study, calls the paper "a great and interesting piece" that could help us better understand the role marine mammals play in the ocean ecosystem.

Fishers vs. Whales

For decades some commercial fishermen have complained that whales eat the fish that they're trying to catch. Japan's government has been particularly vocal, going as far as to say that whaling is necessary because "whales are threatening our fisheries." (See "Japan's Commercial Whaling Efforts Should Resume, Says Prime Minister.")

Masayuki Komatsu, one of Japan's international whaling negotiators, famously told the Australian Broadcasting Corporation in 2001 that "there are too many" minke whales, calling them "the cockroach of the ocean."

Roman disagrees.

"It's far more complicated than that," he says, referring to the whale pump and the conveyor belt. "Our new review points to several studies that show you have more fish in an ecosystem by having these large predators there."

The next step, he says, is to conduct more field studies on those processes. That could help scientists better understand exactly how plankton and other organisms respond to the presence of whales.

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