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As Tuna Vanish, Sardines Rise

by Erik Stokstad on 18 February 2011, 6:24 PM | Permanent Link | 0 Comments

WASHINGTON, D.C.—The last century has not been good for large, tasty fish like tuna and cod. Numbers of these and other top predators have plummeted because of overfishing. At the same time, populations of smaller fish, such as sardines and anchovies, have boomed by 130%, according to a new study of marine ecosystems around the world. This shift in the balance of the food web isn't healthy or sustainable, the researchers argue. And one way to help, they say, would be to shift from eating predators to species lower on the food chain.

ENLARGE IMAGE

Credit: Denis Radovanovic/Thinkstock

The researchers, led by Villy Christensen of the University of British Columbia in Canada, analyzed models of about 200 food webs around the world. These models depict marine ecosystems at various time periods from 1880 to 2007. Christensen's team then estimated the distribution of biomass in ecosystems—how many tons of tuna or shrimp, for example—and extrapolated to cover all of the oceans.

The biomass of large fish has declined by two-thirds over the last 100 years, they reported today at the annual meeting of the American Association for the Advancement of Science (which publishes *Science*NOW), although at this point they can't quantify absolute amounts. In the last 40 years, the biomass declined by 54%, though the drop has been less severe in the past 2 decades. Not surprisingly, the fish that were once preyed on by these large fish have increased. The rise in their biomass is just 0.85% per year, but that has led to more than a doubling over the past century.

"It's a very different ocean," Christensen says. In many places, these smaller fish are suitable for eating, but off southwestern Africa and other places, the predators were replaced by undesirable fish. By opting for anchovies and their ilk, say, rather than species like swordfish, Christensen says, consumers could take some pressure off of the declining top predators.

The changes in biomass are worrying, says Michael Hirshfield, chief scientist of the advocacy group Oceana, based in Washington, D.C. Populations of small fish tend to boom and bust—making ecosystems less stable—much more when the ranks of top predators have been gutted.

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