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Tuna Fight Muddies Waters Over Damage From BP

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By Jeffery Ball

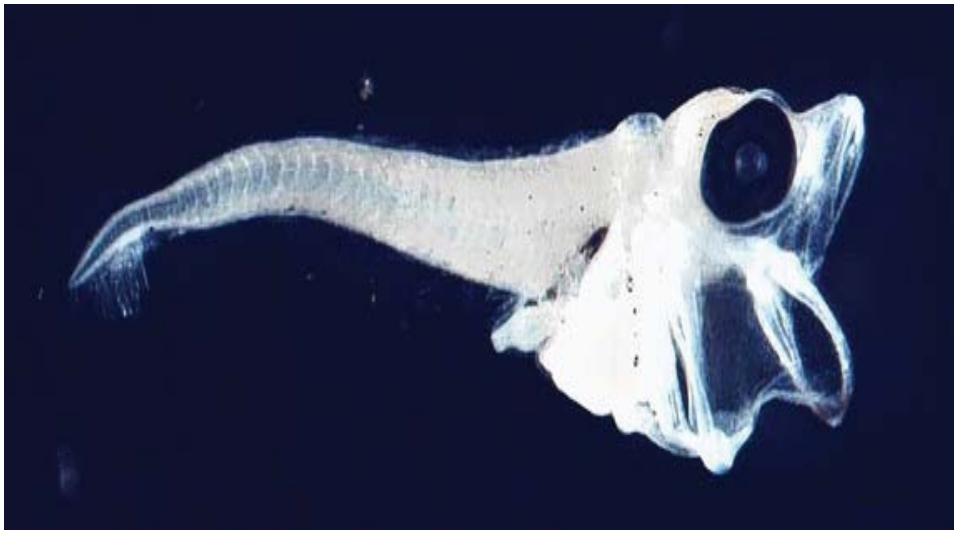
The bluefin tuna is one of the most majestic and prized creatures in the sea. Last week, one caught off Japan sold in Tokyo for $396,000, to be used as sushi.

Now the fish is the subject of a scientific fight that shows how hard it will be to gauge the environmental fallout of the biggest offshore oil spill in U.S. history.

The U.S. government will wrap up public meetings next week on whether to recommend declaring the Atlantic bluefin an endangered species. If the government declared the fish endangered, it would bar fishermen from targeting the fish in U.S. waters. An environmental group filed the request last year, claiming in part that the western-Atlantic stock of the fish, long believed to spawn only in the Gulf of Mexico, would "be devastated" by last year's spill from a blown-out BP PLC well.

But scientists disagree about what portion of last spring's crop of young tuna, or larvae, were hit by oil. They disagree about whether the Gulf is the only place where the western-Atlantic bluefin spawns. In short, they disagree about virtually every aspect of the spill's effect on the fish.

Hundreds of experts are studying the BP spill's impact on the Gulf, one of the richest ocean ecosystems in the world. What these scientists conclude will help determine how much money—potentially billions of dollars—BP will pay in environmental damages. Their conclusions also could shape future rules governing industries crucial to the Gulf economy, such as fishing and oil-and-gas drilling.



Bluefin Tuna Larva

Among the marine life scientists are examining are ones vital to Gulf businesses, such as shrimp, oysters and snapper. But experts also are trying to put a price on whatever damage the spill caused to species from microscopic plankton to massive whales. Under federal law, the government can tally ecological harm from a spill, and push those responsible to pay for it—money that's in addition to compensation for losses to businesses and residents.

Measuring the ecological impact of oil spills and other industrial mishaps is notoriously difficult. A dizzying array of factors—natural and man-made—shapes an ecosystem.

More than two decades after the oil tanker Exxon Valdez dumped some 260,000 barrels of oil into Alaska's Prince William Sound, experts continue to argue about whether the spill was responsible for a subsequent crash in the local herring population.

The decline in the world population of bluefin tuna is the subject of a debate among research groups. Scientists disagree about the environmental impact of the biggest offshore spill in U.S. history -- the BP spill in the Gulf of Mexico.

"In hindsight, no one can say," said John Incardona, a scientist at the National Oceanic and Atmospheric Administration, who has spent years studying how oil spills harm fish. "It is a major challenge, trying to distinguish whether one pollutant overrides all of the others and causes an ecological effect."

Fishing for Atlantic bluefin isn't a big industry in the U.S., largely because of efforts to protect the fish. Limited fishing for Atlantic bluefin is allowed along the East Coast. But targeting bluefin is banned in the Gulf, mostly because the Gulf is an important spawning area for the fish. The oil spill in the Gulf hasn't so far hurt the catch, which in 2009 brought U.S. commercial fishermen $13.3 million, NOAA officials said.

The question is whether the spill hurt or killed enough young bluefin that it will reduce the population in future years.

Bluefin hatch in the northern Gulf from roughly May through June—in the general area, and at the general time, of the BP spill. Eggs and larvae in the oil almost certainly died, scientists say.

That doesn't address the bigger issue: how the spill affected the bluefin population as a whole. Answering that would require knowing all the places bluefin spawn—in the Gulf, and beyond.

Accepted wisdom has held that there are different stocks of Atlantic bluefin. One, which regulators call the western variety, spawns only in the Gulf. Another, the eastern variety, spawns only in the Mediterranean Sea.

As adults, both stocks forage for food in the Atlantic, where most bluefin are caught. But, the thinking goes, the two stocks are genetically distinct.

That's the basis for the concern that the BP spill could decimate the western-Atlantic bluefin.

Some scientists, though, increasingly question that view. Citing recent modeling, NOAA now concludes most of last spring's Gulf spawn was far from where the oil hit. "Some of the bluefin probably got hit a little bit, but [the oil spill] probably was not a significant impact on the population," said John Lamkin, a NOAA scientist.

Other tuna experts cite evidence that large numbers of western-Atlantic bluefin may spawn beyond the Gulf—in the Caribbean, for instance, and as far away as the Azores.

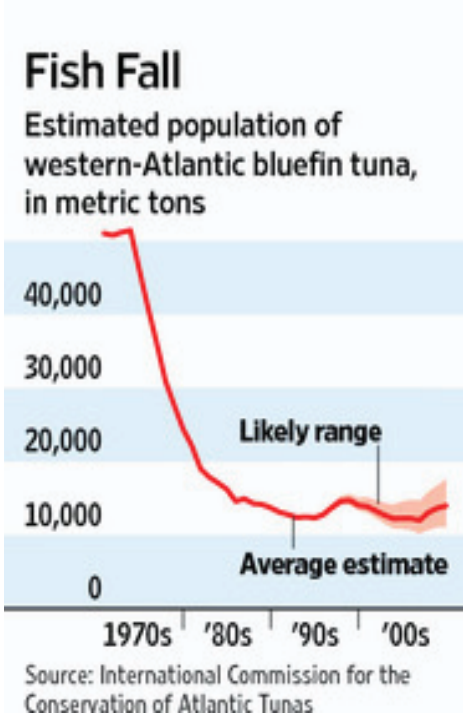
Still, for whatever bluefin did run into BP oil, the spill could prove enormously damaging, scientists say.

Research by NOAA scientists since the Valdez spill has found that even small concentrations of oil can be deadly for fish. It can cause heart problems that can kill fish years after a spill. And it can kill or taint organisms fish eat.

Humans have caught bluefin for millennia. Archaeologists in southern Europe have found cave paintings of the fish they say date back several thousand years.

By the 1960s, commercial-fishing techniques, including modern versions of massive nets known as "purse seines," vastly improved efficiency of the bluefin catch. By 1966, concerns about overfishing led to the creation of the International Commission for the Conservation of Atlantic Tunas, which works with governments to regulate the fishery.

Despite these efforts, the western-Atlantic bluefin population plummeted more than 70% between 1970 and 2009, the commission estimates. Gauging fish populations is an inexact and controversial science, relying in large part on reports of the number of fish caught. Last year, when the commission published its latest Atlantic-bluefin populations estimate, it noted "uncertainty" in the calculations.



An Atlantic bluefin tuna. Washington may declare the fish an endangered species. Photo Paul Murry

Many environmentalists and regulators blame overfishing for the bulk of the fish's decline. Many in the fishing industry blame a range of factors including climate change, which they say is pushing the bluefin to waters the industry hasn't found

Each side has sponsored scientists whose work bolsters its view. A major point of contention is whether western-Atlantic bluefin spawn beyond the Gulf. If they do, then under U.S. and international fishing rules, there might be less justification for declaring the fish endangered.

Stanford University tuna expert Barbara Block's work has helped underpin the just-in-the-Gulf view.

In the ocean, she and her research team catch bluefin, and ease the live fish into a boat. They insert tracking devices, either by incision into the fish's belly, or with a dart at the base of one of the fish's fins. Within minutes, they release the tagged bluefin. Since the 1990s, Ms. Block has plotted the tracks of hundreds of tuna.

Ms. Block's research funders include the government and environmental groups. In a speech last spring, she said there was "outstanding science" for listing the Atlantic bluefin as endangered under the Convention on International Trade in Endangered Species, something the Obama administration also has supported. This week, Ms. Block said that "we can't really clearly establish how many tunas remain" until scientific models assessing the fish's population improve.

"The Gulf of Mexico has a unique stock of bluefin," which raises concerns about the spill's effects on the fish, even if bluefin traditionally described as part of a western-Atlantic stock are spawning beyond the Gulf, she said. "There's absolutely a question of what the impact" of the spill on Gulf-spawning bluefin will be, she said.

In early May, two weeks into the spill, in a blog post titled "Hot Tuna and Oil" on the website of a tagging program she helps run, she featured a map of the Gulf with a black blob showing the area hit by BP oil. Through the blob ran a yellow line: the path that data showed one of Ms. Block's tagged tuna had traveled in 2009.

On May 24, the Center for Biological Diversity, an environmental group, filed a legal petition asking the Obama administration to list the Atlantic bluefin as endangered—which would ban fishermen from targeting the fish in U.S. waters.

The bluefin population "will be devastated" by the spill, the document said. "The Gulf provides the only spawning ground known to the western-Atlantic bluefin tuna," it added. The document frequently cited Ms. Block's work.

Two days later, another scientist fired off a contrasting view.

On May 26, Molly Lutcavage, a longtime tuna tagger now at the University of Massachusetts, Amherst, published with several colleagues a peer-reviewed paper reporting that some bluefin they had tagged were swimming beyond the Azores during the spring, when the fish are known to spawn.

Based on her research, Ms. Lutcavage thinks as many as one-third of all western-Atlantic bluefin tuna could be spawning outside the Gulf. "They are not putting all their eggs in one basket," she said.

Ms. Lutcavage got her start in bluefin research in the 1990s with money from the New England fishing industry, which was fighting environmentalists' calls for tougher bluefin limits.

She said her scientific conclusions aren't influenced by that industry backing. Since that initial project, she said, she has gotten all her research money from the government.

NOAA is growing increasingly persuaded by the possibility western-Atlantic bluefin may spawn in significant numbers beyond the Gulf.

Each spring for three decades, the agency has dispatched a research ship to estimate the size of the annual spawn. Traditionally, it has sent the ship only to the northern Gulf—the only place where most scientists have said the fish spawns.

"It's like the drunk looking underneath the light to find his keys," said Frank Muller-Karger, a scientist at the University of South Florida who helps analyze data from the NOAA cruise.

Two years ago, the agency began extending the cruise south, to the Gulf's Mexican waters. Sure enough, said Mr. Lamkin, NOAA's tuna-spawning expert, the cruise found tuna larvae there. This spring, he hopes to broaden the search to the western Caribbean.

Even if scientists can determine conclusively that spawning takes place outside of the Gulf, that won't resolve how damaging the spill was to the tuna in the Gulf.

Last October, the European Space Agency published a study estimating the spill killed more than 20% of last spring's Gulf bluefin spawn. The agency did the study to tout its technology, Olivier Arino, an agency official, said.

The study set off alarms within the Obama administration. Mr. Lamkin said a high-ranking NOAA official emailed him saying Jane Lubchenco, the agency's administrator, wanted areport within days on whether it was right.

Mr. Lamkin's conclusion: It was wrong.

The European study was based on a computer model. One of the model's key assumptions was that bluefin like to spawn in waters full of organisms called zooplankton—waters that satellite data suggest were hit particularly hard by the spill.

The rationale: Young fish eat zooplankton, and adult fish tend to spawn where there's lots of food for their young, said Patrick Lehodey, an oceanographic modeler in France who worked on the study.

But that assumption doesn't hold for tuna, NOAA's Mr. Lamkin said. For reasons scientists don't fully understand, he said, tuna tend to spawn in waters that aren't teeming with food.

When Mr. Lamkin and his colleagues ran their own computer model, they concluded the spill probably killed less than 10% of last spring's Gulf bluefin spawn. A NOAA spokesman said the agency wouldn't release the analysis until it was peer-reviewed.

Mr. Lehodey said he stands by his assumption that tuna like waters filled with zooplankton.

It's clear spills are "very bad news" for fish, NOAA's Ms. Lubchenco said. It's less clear how this particular spill affected this particular fish. "We probably won't know for a number of years," she said.