

Nuclear war could take a big bite out of the world's seafood

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A new international study argues that, if managed sustainably in advance, global fisheries could alleviate food shortages even after a nuclear war. Credit: NOAA

A new study reveals the damage that a nuclear war might take on wild-caught seafood around the world, from salmon and tuna to the shrimp in

shrimp cocktails.

The aftermath of such a conflict could put a major strain on [global food security](#), an international team of scientists reports. The group estimates that a [nuclear war](#) might cut the amount of seafood that fishing boats are capable of bringing in worldwide by as much as 30%.

In short span of time, in other words, those impacts could rival the toll that climate change is taking on fisheries across the globe, said study coauthor Nicole Lovenduski.

"It's similar to what's going to happen by the end of the century, and that's already concerning," said Lovenduski, an associate professor in the Department of Atmospheric and Oceanic Sciences at the University of Colorado Boulder. "To have something of the same magnitude happen over such a short period of time is really remarkable."

The researchers published their findings today in the *Proceedings of the National Academy of Sciences*. The effort is part of a multi-year project led by CU Boulder Professor Brian Toon and Alan Robock of Rutgers University to examine the global costs of a potential nuclear war. The team's latest findings, however, come with a rare silver lining, said Kim Scherrer, lead author of the new study.

With a bit of planning and proper management today, humans could help to keep fisheries productive, even in the event of a nuclear war—potentially allowing these vital sources of food to make up for the loss of crops on land. For Scherrer, a graduate student at the Autonomous University of Barcelona in Spain, the results are a wake-up call.

"This is the extreme example of how our technology has made us capable of influencing the oceans, and how that could lash back at us,"

she said.



A school of western Atlantic bluefin tuna. Credit: NOAA

Darkening skies

The team's findings come just weeks after United Nations Secretary-General António Guterres declared that "the world continues to live in the shadow of nuclear catastrophe."

In this case, that shadow can be a literal one.

Previous research from Toon and Robock's team has revealed that even

a relatively minor nuclear conflagration could loft humungous amounts of black soot high into Earth's atmosphere. There, the debris would cause the globe to grow darker and colder. Farmers, in turn, would likely struggle to grow important crops like corn, wheat and rice.

"If we ran out of food on land, would we have enough food in the ocean to feed the world's populations?" said Lovenduski, also of the Institute of Arctic and Alpine Research (INSTAAR) at CU Boulder.

She and her colleagues wanted to find out. To crunch the numbers, the team first used complex computer simulations to estimate how a large-scale nuclear war could affect what Lovenduski called "the thing that everybody else in the ocean eats."

That means plankton—or floating organisms, from single-celled algae to tiny crustaceans like krill. Like corn plants, many of these organisms need sunlight to thrive.

"Because the amount of sunlight reaching the surface of the ocean is reduced so much, the growth of plankton is also reduced," she said.

The team discovered that a full-scale nuclear conflagration, such as a fight between the U.S. and Russia, could shrink the growth of plankton around the world by almost 40%.

Emptying seas

A lot of fish could go hungry as a result. But what happened next would likely depend on people, said Scherrer, a fisheries scientist.

If humans fished like normal after such a globe-altering event, hauls of wild-caught fish might fall by anywhere from 3-30% in the decade after a nuclear war, depending on the severity. That could amount to tens of

millions of tons of lost seafood every year.

But these losses are not inevitable. Many fisheries around the world are already struggling because of overexploitation, climate change and other factors. If these resources were all managed sustainably, however, they could act as a much more reliable source of food. Such healthy fisheries might even be able to replace roughly 40% of the protein that humans currently get from land animals for a few crucial years.

"I was surprised by how big those numbers were," Scherrer said. "It's a great challenge to effectively manage the world's fisheries, but this shows that beyond all the other benefits, strong management would also help to buffer against global food crises."

The team's findings carry extra meaning for the researchers now that the world is in the middle of a different kind of disaster: the coronavirus pandemic. Lovenduski remembers walking through grocery stores in March and seeing completely empty shelves.

"It was terrifying to live in that world," Lovenduski said. "It made me wonder if we are prepared for a disaster like a nuclear war as a global society. I think the answer is 'no.'"

More information: Kim J. N. Scherrer et al., "Marine wild-capture fisheries after nuclear war," *PNAS* (2020).

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