



# Sushi as We Know It Will Be Wiped Out by 2050



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**Climate change will likely make good sushi incredibly expensive, and cheap sushi will be really gross.**

*This story is part of VICE's ongoing look at how climate change will have changed the world by the year 2050. [Read more about the project here.](#)*

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In 2050, your average trip to a sushi joint will most likely be demonstrably worse in one of two ways thanks to climate change: It'll either be **ruinously expensive** for those outside the One Percent—particularly if you enjoy tuna—or you'll be gobbling down all-you-can-eat sushi made of mostly unrecognizable fish byproducts.

A drop in the quality and abundance of a luxurious restaurant meal won't have an everyday impact on your your life **unless you're some kind of Hollywood douchebag**. But what the topic of sushi lacks in earth-shattering urgency—in contrast to the deadly **flooding that will hit New York**—it more than makes up for in inconvenience.

Sushi might be a bougey luxury, but it's worth talking about because world of the future won't just be torn apart by disasters, it'll suck in a million tiny ways.

William Cheung, an associate professor and researcher at the University of British Columbia's Changing Ocean Research Unit and director of science at the Nippon Foundation-Nereus Program, crunched the numbers on fish and climate change **for a 2010 report** that forecasted as far into the future as 2055. "After we compiled all the data, the first thing that struck us was that we would be seeing really different fish on a sushi table in a couple of decades time," he told me. "Some of the fish that we can easily get in the average sushi restaurant across the street may not be so easy to get in the future, as they become really premium fish."

Cheung is familiar with how the supply of fish changes over time. "In Hong Kong, where I grew up, there were a bunch of fish we ate every day, but now it's become like a delicacy—things like yellow croaker, a fish that used to be one of the [most plentiful]," he said. "Now it's become so expensive that wild-caught yellow croaker is really difficult to have on the dinner table even in a restaurant."

Cheung and his colleagues at the Nippon Foundation-Nereus Program created a guide for the Japanese sushi market—essentially which fish stocks to buy, and which to sell. Their video is in Japanese, but it's pretty self-explanatory. Squid, shad, tuna, ark clams, shrimp, and salmon are all in trouble.

That's most of the sushi menu.

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**Warmer water** and **greater water acidity**—both indicators of climate change, according to the EPA—will make life in the ocean tough or even impossible for many of the animals people like to eat with rice and tsume sauce. But these trends also dovetail with overfishing and habitat destruction, which will make these critters even scarcer.

Hotter weather may be the easiest part of climate change to wrap your head around, but the effect of all that carbon in the atmosphere is especially hard on the oceans, which act as carbon sinks. "Right now, a lot of it is staying absorbed by the oceans," according to Prosanta Chakrabarty, an ichthyologist at Louisiana State University. Much like that dorky friend who hangs onto your weed because the vice principal won't search his backpack, the oceans temporarily hold onto our carbon emissions for us. But that doesn't mean that metaphorical weed won't cause problems for your metaphorical buddy in the meantime. To wit: "It makes the water more acidic," Chakrabarty said.

Ocean acidification is wreaking havoc all over the sea, including in coral reefs. "As acidification happens, corals are bleached—they turn white and die because they can't

maintain the symbiotic relationship with the invertebrate," Chakrabarty told me. You've probably heard this part before: Corals are **dying** quickly, so **quickly they may soon be gone**. Unless you're one of the relatively few people who visit coral reefs, this is an invisible consequence of climate change (you don't eat most of the reef fish that make up the colorful subterranean neighborhood at the beginning of *Finding Nemo*). But you'll notice acidification when you go out for sushi.

Right now, sushi fans mostly eat bigger fish like bluefin tuna—for those juicy, fatty toro rolls—and certain kinds of mackerel, sold as shiny, salty-sour "saba." According to Chakrabarty, these are in trouble. "Because they're at the top of the food chain, they rely on those coral reefs," he said.

When I spoke to Daniel Pauly, principal investigator for the Sea Around Us, a research initiative at the University of British Columbia, he doubted the shortage in tuna food would present too much of a problem for consumers by 2050, because tuna is "opportunistic." Additionally, since they're in such high demand, he figures fishermen will find them wherever they decide to spawn.

But a recent finding showed that acidic oceans may have a more direct impact on the reproduction of sushi fish. Cod—a non-sushi species **thought to have** been rendered endangered by overfishing—**were shown last year** to have been devastated by ocean acidity, he pointed out. "What it does to tuna eggs, I don't know," Pauly said. But, Pauly added, "I wouldn't bet on tuna being very abundant in 2050."

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Pauly's forecast for shellfish sushi was similarly dire. Clams and scallops, he said, have a hard time creating the calcium carbonate they need so their shells can form and take root. Aquaculture farms in the Pacific Northwest—systems designed to churn out clams in large numbers—are watching clams fail to thrive, and it's an indication that young shellfish throughout the oceans are struggling to create shells. "They're having a hard time now, not later," Pauly said, and that means the price tag on your "akagi," or "surf clam" sushi morsels, could skyrocket in the very near future.

If there's any hope for the future of sushi, it may lie in creativity. "There may be new inventions of new sushi using new fish that may become available," Cheung suggested.

To cope with the disappearance of popular fish, some sushi chefs like Bun Lai of Miya's restaurant in New Haven, Connecticut (see the Munchies video above), are tossing out unsustainable fish like salmon and tuna and physically going out and gathering more ecologically conscious options from their surrounding ecosystem. In Lai's case, those options include invasive local crabs, Asian carp, insects, and foraged Connecticut plants for vegan rolls.

Sushi chefs who don't go Lai's route will be in for a rude awakening, according to Chakrabarty. He says in the sushi markets he visits for his research, the trends don't look good. Bluefin tuna are reaching outrageous prices—one fish recently sold for more than **\$600,000**. Meanwhile, fishermen are plumbing deeper and deeper into the depths for fish that used to be abundant at shallower levels. In the process, Chakrabarty told me, they're also pulling out higher quantities of less popular deep-sea monsters like **anglerfish**. "You can tell that they're going deeper, and that's the future of fishing in the long-term."

According to Cheung's forecast, other options for keeping future sushi shops alive include something called "surimi," which his report encourages Japanese sushi chefs to use freely, since it's derived from an otherwise un-tasty fish called pollock, and it's what Cheung calls "a really low-priced sushi product." You've had surimi. It's that stuff they cobble together from odds and ends and call "artificial crab" or "krab"—essentially the seafood version of a hot dog. In the future Cheung sees, all-you-can-eat sushi buffets will have to get more creative than ever with the ways they market their surimi.

Citing a dark joke from one of his colleagues, Chakrabarty gave me an equally unappetizing long-term forecast: "The yuppies of the future are going to be eating jellyfish, because there aren't going to be enough fish to eat," he told me.

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