

How Will Commercial Fishing Pressure Affect Skipjack Tuna?

The world's most abundant tuna is resilient, but can the fish outswim our demand?



Skipjack tuna at a fish market in the Philippines (Obsidian Soul via Wikimedia Commons under CC BY-SA 4.0)

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smithsonianmag.com
March 23, 2021



This article is from *Hakai Magazine*, an online publication about science and society in coastal ecosystems. Read more stories like this at [hakaimagazine.com](#).

On the western fringes of Tuna Alley, the skipjack are about to fly.

As a fishing boat moves through the Molucca Sea, off the coast of the Indonesian island of Sulawesi, two crewmen fling shovelfuls of tiny baitfish overboard, stoking a foaming tuna feeding frenzy. More than 20 fishermen—barefoot, cigarettes clenched in teeth, and not a life jacket in sight—perch on the prow, whipping long, flexible fishing poles overhead. They hook and pull the tuna out of the water in graceful arcs, releasing the fish onto the deck of the boat and returning their barbless hooks to the ocean with a fluid, uninterrupted motion. Not a single line ever seems to get crossed as about 100 of the torpedo-shaped, purplish-blue-backed fish hit the deck every minute.

Catching one tuna at a time by a crew of individual fishers on a boat—referred to as “pole and line” on some canned-tuna labels—is about as sustainable as tuna fishing gets. It avoids the massive by-catch of sharks, turtles, and other sea creatures associated with many other tuna fisheries, and guarantees the fish are in immaculate condition for market, since they’re immediately put on ice.

After a day or two on the water, the boat will return to harbor at Bitung, a city in North Sulawesi. The tuna are destined for a local cannery, where they will be cleaned, cooked, canned, and ultimately shipped to supermarkets across the European Union and North America, the two largest markets for canned tuna in the world.

The fishermen’s quarry, the humble skipjack, is the smallest commercially exploited tuna and the most abundant of the world’s 15 tuna species. Even if you don’t recognize the name, there’s a good chance that if you have tuna in your cupboard, this is it.

At a maximum weight of just over 30 kilograms, about the size of a bull terrier—but reaching maturity at less than two kilograms—skipjack seem unremarkable next to the charismatic and much-desired Pacific bluefin, which can grow to three meters and weigh as much as a large grand piano. But skipjack possess twin superpowers—fast growth and impressive fecundity relative to their bigger tuna cousins—which has helped to sustain their abundance despite being the most caught tuna on Earth. Skipjack accounted for about half of the nearly seven million tonnes of tuna (and tuna-like species, including some mackerel) harvested globally in 2018, the most recent year for which catch numbers exist.

Skipjack are found throughout the world’s tropical and subtropical waters, including the Atlantic and Indian Oceans, but most are now caught in the western and central Pacific Ocean (WCPO), along an approximately 7,400-kilometer band of tropical water known informally as Tuna Alley, which stretches like an aquatic thoroughfare from Indonesia eastward through the exclusive economic zones of Pacific Island countries and territories including the Solomon Islands.

But despite their remarkable resilience as fast-growing breeding machines, some researchers are warning it’s only a matter of time until skipjack, representing one of the planet’s last great oceanic biomasses, are fished into decline in a way similar to the cod of Newfoundland or any number of bigger tuna species in the Atlantic and Indian Oceans.

“All industrial fisheries, with very few exceptions, are ultimately drained of life after a certain time,” says Daniel Pauly, a University of British Columbia fisheries biologist. “They increase and push, push, until they collapse. Why should skipjack tuna be any different?”

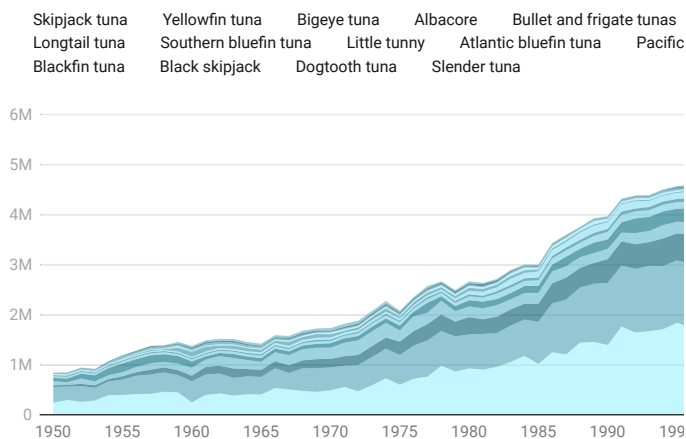
At stake is the future of these fish—which fuel the food chains of billfish, shark, and other larger tuna—and the future of a pantry staple that most North Americans take for granted as something that will always be one shopping trip away.

The rise of canned tuna as a fixture in American kitchens began over six decades ago when mismanagement of one fishery drove industrial tuna fishers to the world’s tropical oceans.

It was only with the collapse of California’s offshore sardine fisheries, a boom-and-bust fishery immortalized by John Steinbeck’s *Cannery Row*, that coastal Californian canneries increasingly turned their attention to tuna—first albacore and eventually other more plentiful species like yellowfin and skipjack.

Bob Shanahan, senior vice president of global procurement at food supplier Camerican International and a fish buyer with over 30 years of experience sourcing tuna for American markets, says that canned “tuna fish” became a hit with Americans mostly because it was a cheap and healthy form of protein that was mild on the palate. “Americans don’t like strong-tasting fish. That’s why the consumers in this country gravitate toward things like sole and mahimahi, and why canned tuna took off in such a strong way.”

Tonnes of tuna caught by species



Source: [Sea Around Us](#) • [Get the data](#) • Created with [Datawrapper](#)

Tuna fisheries have steadily grown over time, with skipjack tuna making up more and more of the total volume as other species were fished out. Data by the Sea Around Us

Most of the tuna Americans ate was sourced off the coast of California at first, Shanahan says, but as canned fish became more popular, imports started coming from sources farther afield, including Thailand, Japan, and South Korea. He points to the marketing of canned tuna as “chicken of the sea”—both a major tuna brand and an advertising catchphrase—as a marketing coup that connected the mild taste of tuna with a mainstream aversion to all things fishy.

The demand for canned tuna in the United States peaked years ago and is currently declining, COVID-19 stockpiling aside. To attract new customers, pouches of flavored vacuum-packed fish are replacing unflavored fish in cans—a potential appeal to time-harried modern families and people who do not own can openers. (StarKist, one of the most popular canned-tuna brands in the United States, is leading the transition, currently offering at least 17 flavors in pouches, including hot buffalo, bacon ranch, and spicy Korean.) The industry is also looking to growth markets in Latin America, Asia, and Eastern Europe, places where low cost per unit is even more critical to success than in the United States.

With this demand—current and potential—skipjack remains the most caught tuna species; in the United States alone, at least 60 percent of all canned tuna is skipjack, according to Shanahan.

Most of the skipjack caught in the WCPO today is harvested by purse seining, an industrial fishing method in which dense schools of fish near the surface are encircled with a large net and scooped out of the ocean. Beginning in the early 1950s, fleets from the United States, South Korea, and Taiwan were the primary tuna purse seiners in the Pacific, but by the 2000s, vessels from China, Ecuador, El Salvador, New Zealand, Spain, and the Pacific Islands became active, too.



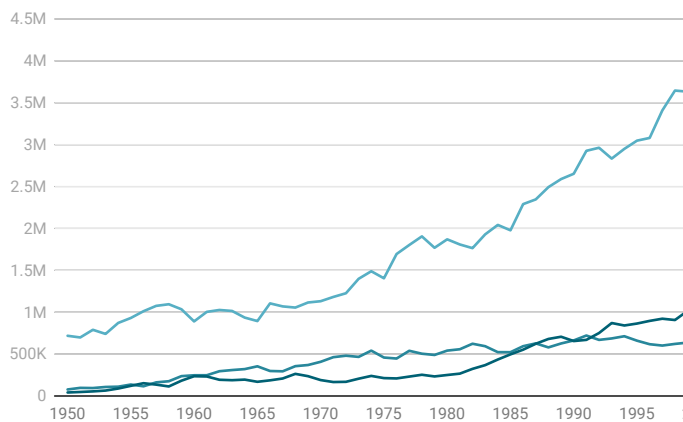
Most tuna are caught using purse seines. In this method, a large net deployed around a school of fish is “pursed” on the bottom to prevent the fish from escaping. (Ser

Purse seining became even more efficient at catching tuna by the widespread use of fish aggregating devices (FADs), which float on the surface and naturally attract skipjack and many other marine creatures. Millions of FADs are currently employed in the Pacific, where many become lost or abandoned but continue to attract fish. Ecological concerns about the by-catch associated with FADs, brought to the public’s attention primarily by environmental groups, has led some regulators to ban this approach for purse seiners across much of the Pacific.

Catching by pole and line—a more selective fishery and the primary way tuna were caught prior to purse seining—is a more sustainable fishing method, but is of limited popularity with consumers.

“Pole and line fills only a fraction of the global demand for canned tuna, supplying sustainability markets in countries that are willing to pay more, primarily in North America and Western Europe,” says Keith Symington, fisheries advisor with World Wide Fund for Nature in Vietnam who has worked on tuna management and sustainable seafood in Asia-Pacific since 2004.

Tonnes of tuna caught per ocean



Source: Sea Around Us • Get the data • Created with Datarwrapper

Tuna are caught throughout the world's oceans, but most of the current volume is harvested in the Pacific Ocean. Data by the Sea Around Us

American currently sources a limited supply of skipjack caught by pole and line from Tuna Alley—including from fisheries in Indonesia—which is sold at Aldi supermarket outlets in the United States. Shanahan feels it's important to support sustainable pole-and-line fishermen, but notes that this fishing method accounts for a tiny percentage of canned skipjack. (Cans or pouches marked "FAD-free" or "free school caught" mean the fishermen did not rely on FADs to locate the fish.)

But for now, the higher production costs in a cutthroat retail environment for processed tuna makes the more sustainable option a harder sell, as yet another global fishery—and the ubiquitous tins it fills—could be on a now-familiar downward trajectory.

For the skipjack, at least biology is on their side.

If you lined up all the skipjack tuna caught in the western central Pacific in 2018, nose to tail, they would encircle the planet almost 12 times. Or put another way, if you piled all those fish up, nose to tail into the sky, they would touch the surface of the moon—and then surpass it by over 80,000 kilometers.

With such numbers, it's difficult to conceive of the scale of biomass being removed from the WCPO skipjack stock—let alone imagine that any fish population could be resilient in the face of such a harvest.

A key to the skipjack's uncanny resilience is a freakishly prolific sex life: they spawn throughout the year in tropical waters and from spring to early fall in the subtropics. And perhaps most importantly, they grow up fast, meaning females start breeding relatively early in life.

Depending on body size, a female skipjack can release up to two million eggs at a time. They spawn near males that simultaneously release sperm into the water column, and they do it not just in favored spawning locations (as do bluefin), but across much of their global distribution. And while some skipjack spawn several times a year, others can spawn almost every day. They are also not picky about diet—eating squid, fish, crustaceans, and even other skipjack.

Pauly agrees that skipjack are "extraordinary fish that can withstand enormous fishing mortality," but thinks other factors beyond early reproductive age could be bolstering their resilience. The removal of so many sharks and bigger tuna—predators and competitors, respectively—from the Pacific Ocean since the 1950s could be having an uplifting effect on WCPO skipjack stocks. In 2016 alone, more than 80,000 tonnes of blue shark—a species listed as near threatened by the International Union for Conservation of Nature—was caught in tuna fisheries in the Pacific Ocean alone.

He thinks a growing focus on skipjack, and also yellowfin, in places like Tuna Alley portends a familiar and inevitable progression of decline that has already played out for many other overfished tuna species, such as Indian Ocean yellowfin and southern bluefin.

In 2020, the Sea Around Us, a global fisheries research initiative led by Pauly at the University of British Columbia and created in partnership with the Pew Charitable Trusts, updated the first-ever comprehensive global database of commercial tuna catches from 1950 to 2016. Catch reached an all-time high in 2014, when landings of 7.7 million tonnes were reported. (This statistic is for all tuna and tuna-like species, with skipjack and yellowfin—the most caught tuna species—making up the bulk of these numbers.) The pressure is now heavily on Tuna Alley, a place, Pauly says, where you can still reliably and consistently make large catches. "The [Pacific] fishery is hanging on with skipjack and yellowfin like it has done in the Atlantic and Indian Oceans in the past, and it will go down, too, one of these days," he says.

As other tuna stocks are fished down globally, he says tuna fisheries have shifted to the last plentiful species. The global tuna catch database reveals what Pauly and his collaborators call an "ominous progression," showing how fisheries move from ocean to ocean as catches peak and then drop off. Total catches of all tuna species peaked in the Atlantic Ocean in 1994 and in the Indian Ocean in the mid-2000s. Now the focus is in the Pacific, where skipjack and yellowfin catches, currently focused across Tuna Alley, continue to increase, at least for now.

Fisheries managers in the WCPO, however, do not see an imminent threat. In the most recent stock assessment of skipjack tuna by the Western and Central Pacific Fisheries Commission, one of five commissions managing the world's tuna fisheries and the one that manages skipjack catches across Tuna Alley and beyond, the authors conclude that skipjack aren't currently being overfished.

Fisheries scientist Graham Pilling with the Oceanic Fisheries Programme at the Secretariat of the Pacific Community and a coauthor of the stock assessment says that skipjack in the WCPO would only be considered overfished if the reproductive adult fish fell below 20 percent of the estimated population in the absence of a fishery. Even though the volume of fish caught has increased significantly since the beginning of industrial tuna fishing in the early 1950s, including the highest-ever catches in recent years, the current WCPO catch of skipjack is still below the point at which the stock would be permanently harmed and begin to decline irreversibly.

Fisheries managers define a tuna stock as overfished when it has been reduced to levels that place its future in jeopardy, Pilling says, and as the stock assessment makes clear, this point has not been reached.

The question of how to know when we reach that critical juncture is problematic, Pauly says, and therein lies a great, recurring tragedy. As long as a fishery has not collapsed, the people who say it is stable are seemingly right, until all of a sudden, they are not.

"People with industry or regulatory agencies will tend to say things are okay. And people more oriented toward conservation—and I'm one of the latter—will say things are not okay," says Pauly. "The skipjack will decide which side is right."

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