



Taco sushi with cilantro
crème fraîche, with smoked
Alaska salmon.

BY KATIE AYOUB

In January, *Science* magazine published a study advising consumers to cut back on their intake of farm-raised salmon. The directive has caused concern both for diners and chefs. Salmon of the Americas, a Princeton, N.J.-based organization of farmed-salmon producers in Canada, Chile and the United States, reports a significant dip in sales since the report was first published and then amplified by the media.

Indeed, the study was alarming. It reported that farm-raised salmon contain significantly more dioxins and other potentially cancer-causing pollutants than salmon caught in the wild. But for some chefs committed to sustainable seafood, pollutants are only one reason among many why they choose wild-caught salmon.

Should chefs be menuing farm-raised salmon? Is wild-caught salmon a viable option? A side-by-side industry tasting conducted by Boston-based Chefs Collaborative, a national network of members of foodservice that promotes sustainable cuisine, overwhelmingly indicates that the taste of wild-caught salmon is preferred over farm-

raised. But the industry's palate is perhaps more sophisticated than that of the average diner's. And, of course, cost and availability often govern the decisions in the business of professional cookery. Here, then, is a long, hard look at that perennial favorite—salmon.

PCBs and the FDA & EPA

The *Science* magazine study, sponsored by the Pew Charitable Trusts, tested contaminants in 700 wild and farmed salmon bought around the world. It found the highest level of toxins in salmon from offshore farms in Scotland, Norway and the Faeroe Islands (located between Iceland and Norway) followed by North America and then Chile. Most farm-raised salmon sold in the United States comes from Chile, and the pollutant level in this salmon was not too much higher than that found in some wild-caught salmon. The difference, the researchers say, is the feed. They found that the oil from fish (part of the feed of penned salmon) caught in the South Pacific, far away from the industrialized north, was the least contaminated.

The farm-raised salmon analyzed for the study contained significantly higher concentrations of 13

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Safety concerns and taste fuel the debate on farm-raised vs. wild-caught salmon.

organochlorine pollutants, including dioxins, which are released when industrial waste is burned, and PCBs (polychlorinated biphenyls), once commonly used as insulating material. The average dioxin level for farm-raised salmon was 11 times higher than for wild salmon—1.88 parts per billion (ppb) compared with 0.17 ppb. For PCBs, the average was 36.6 ppb in farm-raised and 4.75 ppb in wild salmon.

These levels in farm-raised salmon are far below the safety threshold set by the federal government. The Food and Drug Administration (FDA) has determined that total PCB concentration in fish must not exceed 2,000 ppb. The *Science* study did not follow the FDA's guidelines, but rather the stricter guidelines of the Environmental Protection Agency (EPA). The EPA says that fish containing PCB levels between 24 and 48 ppb should be limited to 8 ounces a month. The discrepancy is due to the body each agency protects—the FDA monitors commercially sold fish while the EPA issues its guidelines for recreationally caught fish. The assumption is that people who eat fish they catch themselves are more likely to consume a lot more of one species, and eating fish from a single source increases exposure to any one particular contaminant. Also, the argument goes, PCB levels tend to be much higher in fish from "contained" waters where recreational fishermen generally fish. Some argue that the FDA, which established its guidelines in 1984,

needs to update its research. The EPA's guidelines were established in 1999. The FDA's message to consumers is not to alter their consumption of wild or farmed salmon. The EPA stands by its guidelines.

Sustainability vs. economy

Sustainability and economy are two forces often at opposite ends of the table. For many chefs, a wholesome link from food source to plate is essential, but so are profitability and the bottom line. Does farm-raised salmon break that link? Can wild-caught salmon fit into a profit model?

Environmental concerns about farm-raised salmon include danger to marine ecosystems and to wild salmon from farm pollution. Atlantic salmon make up most of the farm-raised salmon industry because of their quick growth and ability to thrive in crowded pens. Escapes from these pens have many environmentalists concerned that the Atlantic salmon will push the local wild salmon out of their habitat, or impact the ecosystem in some negative way. Pollution, in the form of fecal matter from the farmed salmon falling to the ocean floor, is another worry. Alex Trent, executive director of Salmon of the Americas, refutes that claim.

"Disturbance of the sea floor is something we take seriously. We keep the farm in one location for a year and a half, then tow it to a new location. Within six months of the pen being moved, the sea floor is okay," says Trent.

Henry Lovejoy, president and founder of Portsmouth, N.H.-based EcoFish, a seafood distribution company that sells seafood only from environmentally sustainable fisheries, says the way to prevent escapes and pollution is to eliminate farms at sea. "They should bring the tanks on land, but there's a challenge for the farmer to do that and remain competitive in the marketplace," he says.

Howard Clark, professor of culinary arts at The Culinary Institute of America, Hyde Park, N.Y., is also an adjunct instructor for the U.S. Department of Commerce National Marine Fisheries Service. He has his concerns about farm-raised salmon, but believes that those concerns are being addressed by the industry. "I really think the problems have been identified and the farms are actively pursuing methods of limiting ocean-floor contamination," says Clark.

The case for menuing farm-raised salmon

Raising salmon in floating pens is a relatively new industry and has helped the fish's popularity soar. More than half the world's salmon now is farmed and is available year-round, while fresh wild salmon is seasonal. Farm-raised salmon sells for about \$4 to \$5 a pound compared with approximately \$15 for fresh wild-caught salmon, depending on the species.

Chef/owner Frank Randazzo of Miami Beach's Talula restaurant sources fresh Atlantic farm-raised salmon grown in Chile for his daily

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salmon offering, but will occasionally menu wild Alaska coho salmon. "We get a consistent, good product with good flavor from the farm. I don't think the PCB thing is a major issue, certainly not one we need to address on our menu," says Randazzo. He sells his grilled Atlantic salmon with creamer-potato/smoked-bacon hash and asparagus in a Dijon garlic vinaigrette for \$21 and runs a 27% food cost. He specials the coho for \$25 and runs a 32% food cost.

"Most people are familiar with the mild taste of farm-raised. It meets their expectations and comfort level. With wild, you notice a more distinct fishy, salty taste, but there is a huge amount of diners out there who appreciate fresh wild salmon," says Randazzo.

At Orlando, Fla.-based Red Lobster, with more than 670 units nationwide, Atlantic salmon is the highest-selling fresh fish offered. The chain does menu wild Alaska salmon from time to time. "We look at the species during their season. The price depends totally on the cost of the raw product," says Keith Keogh, CEC, AAC, senior vice president of culinary and beverage excellence for Red Lobster. "Many people think that wild is drier or has a stronger flavor. This can be true of the wild product, but sometimes may be an indicator of the handling."

The case for wild-caught salmon

Wild-caught Alaska salmon is always the choice for Ann Cooper, CEC, executive chef and director of wellness and nutrition at The Ross School, East Hampton, N.Y. "Wild just tastes better. It's succulent and the texture is wonderful," says Cooper, author of *Bitter Harvest: A Chef's Perspective on the Hidden Dangers in the Foods We Eat and*



SALMON OF THE AMERICAS

Americans eat more than 207,000 metric tons of farm-raised salmon, such as this one, prepared Tuscan style, with sautéed cherry tomatoes and spinach.

er to cover your cost. We don't need to serve more and more food. We need to lead the way on portion sizes."

Cooper handles seasonality by using frozen-at-sea (fas) product most of the time.

What You Can Do About It (Routledge, 2000). At The Ross School, a private school serving 5th through 12th grades, Cooper menus salmon for faculty and students in a variety of ways. "We smoke, cure, griddle, roast it. It's delicious so many ways," she says.

"We all have to start making choices," adds Cooper. "Given flavor differences, most people will choose food that tastes better—you have to respect that. People are willing to pay for it. Make your portions small-

Indeed, the Chefs Collaborative taste test placed fas salmon above fresh. "If I order fresh today, it's probably five days old, but with fas, they freeze it so fast that the cells aren't busted—it's fresher than fresh, but it does have to be defrosted correctly," she says. (See sidebar on defrosting fas salmon.)

Frozen-at-sea salmon is more expensive than fresh, but, of course, is available year-round. EcoFish sells both, and only wild-caught salmon

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How to prepare frozen-at-sea (fas) salmon

Fas salmon should be kept frozen until you are ready to use it. Always thaw the fish gradually in a walk-in refrigerator. It generally takes two days to thaw.

Place the fish on sheet pans in single layers (two to three fish per pan), cover with film wrap or a plastic bag, and turn the fish over twice a day.

Fas salmon should be kept partially frozen around the bone when you cut it. You will have the best results filleting the fish when it is 70% thawed. Skin and portion the fish fillets as you would normally.

The freezing process bursts some cells, essentially beginning a process that takes place during normal cooking. Therefore, cook the fish a half-degree less than you would ordinarily. (For example, if you normally cook fresh salmon medium rare to medium, cook the fas salmon to medium rare and allow it to coast to medium.)

Fas salmon cures and smokes extremely well. The flash-freezing process opens the cells and allows cures and marinades to penetrate easily.

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from Alaska. "It is the most sustainable wild fishery out there," says Lovejoy. For far salmon, the fish is frozen 20 minutes after swimming in the sea. They're stunned in the water, then beheaded and gutted. With a salt-water hose, the salmon are flushed, taking most of the blood out. Then the fish are blast-frozen at 40°F below zero.

Any farm-raised salmon at EcoFish? "They have not been able to present a salmon farm that our advisory board is comfortable with when looking at criteria of pollution and escapes," Lovejoy says. Alex Trent counters, "Escapes are still a problem that we have to deal with.

We understand the importance of not introducing a species where it doesn't belong. So few fish escape, down from hundreds to tens in the last couple of years."

Sourcing product comes down to chef preference. The parameters for making that choice are determined by individual concern and knowledge of the market you serve. Is farm-raised salmon safe? According to the FDA, yes. Does wild-caught salmon taste better? According to Chefs Collaborative, yes. What product best serves your customer? That decision is solely up to you. □

Katie Ayoub is based in Keswick, Ontario, Canada.

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