

# Choosing Fish for Nutrition, Safety, and Sustainability

Fish (a collective term that includes fresh and saltwater finfish, shellfish like clams, crustaceans like lobster, and other aquatic animal life) are highly nutritious foods, rich in vitamins, minerals, high-quality protein, and low in saturated fat. But for both your personal health and environmental consciousness, choose carefully. Fish can accumulate toxins that in some cases may reduce their safety as a food for people. Furthermore, some fish species are being caught faster than they can reproduce, so choosing those in more plentiful supply can help to replenish depleted stocks of the more threatened ones.

## Nutrition

Since the year 2000, the American Heart Association has advised healthy adults to consume at least two servings of fish per week—particularly cold water, oily ones rich in EPA and DHA.<sup>6</sup> Virtually all fish provide these two O3FAs, though the amount depends on many factors, including the species, the diet of the fish, and whether they were farm raised or caught in the wild.

The chart provides the EPA, DHA, and total-fat content of various fish. Unless otherwise noted, the numbers are for a 3-ounce serving cooked (equivalent to about 4 ounces raw). That's approximately the size and thickness of a deck of cards. Fish portions at restaurants are typically twice this amount or more (perhaps at your home, too), so adjust the numbers accordingly.

According to this chart, very good sources of EPA and DHA include herring, mackerel, salmon, sardines, trout, and both bluefin and albacore ("white") tuna. In contrast, catfish, cod, haddock, lobster, scallops, and canned "light" tuna provide only small amounts. Fried fish served in restaurants and fast-food establishments or purchased in the frozen-foods section of the supermarket (like "fish sticks") usually have only tiny amounts of O3FAs and are high in trans fatty acids.<sup>6</sup> Interestingly, many fish, though not all, provide more DHA than EPA, while fish-oil supplements provide primarily EPA. Fish like sardines or tuna canned in oil don't contain more EPA and DHA compared to those canned in water or tomato juice because the vegetable oil used is not a source of these O3FAs.

The chart also shows that while farmed fish are typically higher in total fat than their relatives raised in the wild, one can't generalize about their content of O3FAs except to say that it's roughly similar. Farmed Atlantic salmon, for example, provides a bit more total EPA and DHA than the wild type, but wild Eastern oysters are slightly better sources than their farm-raised cousins. The natural diet of wild fish includes algae, plankton, and even other fish, all of which supply EPA and DHA. Farmed fish obtain these fatty acids from the algae, fishmeal, and/or fish oils that they're fed.

## Safety

Unfortunately, fish can harbor various environmental pollutants and contaminants that they pick up in their watery environment and concentrate in their tissues—poisons like mercury and polychlorinated biphenyls (PCBs). Exposure to fat-soluble PCBs can be minimized by removing the skin and any surface fat from fish before cooking them.<sup>6</sup> Limiting mercury intake from fish is a more difficult problem.

Fish is a major dietary source of mercury, a metal especially toxic to the brain and nervous system of unborn and young children, and present throughout the animal's flesh. It may also cause vague symptoms like fatigue, memory loss, headaches and, although the scientific evidence is conflicting and incomplete, may actually raise the risk of heart disease. Mercury as an air pollutant from the burning of coal and medical waste is carried by the wind into bodies of water where it's transformed into methylmercury by sediment-dwelling bacteria. Methylmercury bioconcentrates in the food chain by plankton that consume the bacteria, which in turn are consumed by small fish that are then eaten by larger predator ones. The methylmercury contaminating our fish dinner is then deposited into our own tissues.<sup>42</sup> The U.S. Food and Drug Administration (FDA), which regulates all commercially-caught fish, advises that women who may become pregnant, pregnant and nursing women, and young children not eat fish that may contain high levels of mercury, particularly shark, swordfish, king mackerel, and tilefish (also called golden bass or golden snapper), as well as limit their total consumption of all other fish to no more than an average of 12 ounces (cooked) per week; that includes canned tuna fish. Some 8% of women who become pregnant have elevated blood levels of mercury, according to a new study, apparently due largely to their frequent fish consumption.<sup>43</sup> Men, older children, and women who are not pregnant or lactating should probably eat no more than one meal per week of high-mercury fish but can eat the others as desired.<sup>42</sup>

Fish	EPA (mg)	DHA (mg)	Total EPA +DHA (g)	Total Fat (g)
<b>Bass (Striped)</b>	184	637	0.8	2.5
<b>Catfish</b>				
Wild	85	116	0.2	2.4
Farmed	42	109	0.2	6.8
<b>Clams (about 9 small)</b>	117	124	0.2	1.1
<b>Cod</b>				
Pacific	88	147	0.2	0.1
Atlantic	3	131	0.1	0.8
<b>Crab</b>				
Alaska king (about 2/3 leg)	251	100	0.4	1.3
Dungeness (about 3/4 crab)	239	96	0.3	1.1
<b>"Fish sticks" (about 3)</b>	72	108	0.2	10.2
<b>Flounder &amp; sole</b>	207	219	0.4	1.3
<b>Haddock</b>	65	138	0.2	0.8
<b>Halibut</b>	77	318	0.4	2.5
<b>Herring</b>				
Kippered	825	1003	1.8	10.5
Pickled	711	464	1.2	15.3
<b>Lobster (Northern)</b>	45	26	0.1	0.5
<b>Mackerel</b>				
Pacific and Jack	555	1016	1.6	8.6
Atlantic	428	594	1	15.1
King	148	193	0.3	2.2
<b>Mahimahi (dolphinfish)</b>	22	96	0.1	0.8
<b>Oysters</b>				
Pacific, raw (about 1.5)	312	212	0.6	2
Eastern, wild, raw (about 6)	228	248	0.5	2.1
Eastern, wild (about 12)	221	247	0.5	1.6
Eastern, farmed (about 9)	195	119	0.4	1.8
Eastern, farmed, raw (about 6)	160	113	0.3	1.3
<b>Perch (Atlantic)</b>	88	230	0.3	1.8
<b>Pollock</b>				
Atlantic	11	383	0.5	1.1
Walleye	157	241	0.4	1
<b>Rockfish</b>	154	223	0.4	1.1
<b>Salmon</b>				
Atlantic, farmed	587	1238	1.8	10.5
Atlantic, wild	349	1,215	1.6	6.9
Coho, farmed	347	140	1.1	1
Sockeye, canned, drained	418	564	1	6.2
Coho, wild	341	559	0.9	3.1
<b>Sardines</b>				
(Pacific, canned in tomato sauce, drained)	520	845	1.4	1.2
(Atlantic, canned in oil,	402	432	0.8	9.1
<b>Scallops</b>				
Raw (about 6 large)	16	92	0.2	0.7
Breaded & fried (about 6 large)	13	88	0.2	9.3
<b>Shrimp (about 16 large)</b>	145	122	0.3	0.9
<b>Swordfish</b>	111	579	0.1	4.4
<b>Tilefish</b>	146	623	0.8	4
<b>Trout</b>				
Rainbow, farmed	284	697	1	6.1
Rainbow, wild	398	442	0.8	4.9
Mixed species	220	575	0.8	7.2
<b>Tuna</b>				
Bluefin	309	910	1.3	5.3
White, canned in water, drained	198	535	0.1	2.5
Skipjack	11	201	0.3	1.1
Yellowfin	40	191	0.2	1
Light, canned in water, drained	40	190	0.2	0.1
Light, canned in oil, drained	23	86	0.1	1
<b>Whiting</b>	241	200	0.4	1.4

Source: U.S. Department of Agriculture's National Nutrient Database for Standard Reference, Release 15 (available free at <[www.nal.usda.gov/fnic/foodcomp/Data/SR15/sr15.html](http://www.nal.usda.gov/fnic/foodcomp/Data/SR15/sr15.html)>). EPA content is listed in this database as 20:5 n-3 and DHA as 22:6 n-3. EPA and DHA values not available for all foods.

For more information on pollutants in fish, check FDA's Seafood Information and Resources website at <[www.cfsan.fda.gov/seafood1.html](http://www.cfsan.fda.gov/seafood1.html)> or contact its Food Information Line at (888) SAFEFOOD. For state and local advisories on eating locally caught fish, go to the U.S. Environmental Protection Agency's (EPA) website at <[www.epa.gov/waterscience/fish](http://www.epa.gov/waterscience/fish)>. EPA regulates such "sport-caught" fish; it advises that pregnant and lactating women limit their intake of them to a six-ounce (cooked) portion per week and that young children should eat less than two ounces per week.

Fish with the least amount of mercury in their tissues include salmon, mid-Atlantic blue crab, farmed catfish and trout, non-white croaker, flounder, haddock, shrimp, and fish sticks.<sup>42</sup> Fish is a highly nutritious food and by following the advice from these governmental sources, one can minimize any risks to health from eating it. The American Heart Association advises that "the benefits of fish consumption [while following FDA and EPA guidelines] far outweigh the risks" for "middle-aged and older men and postmenopausal women"-the groups at greatest risk for heart disease. It adds: "Children and pregnant and lactating women may be at increased risk for mercury intoxication from fish consumption but also are at low risk for [heart disease]. Thus, avoidance of potentially contaminated fish is a higher priority for this group."<sup>46</sup>

### **Sustainability**

In addition to safety, another reason to choose fish carefully is that fish stocks around the world are being depleted, a consequence of overfishing, super-efficient capturing technologies, water pollution, and habitat destruction. Even aquaculture-where fish are raised in watery pens or cages and which accounts for about one-third of the world's fish supply-contributes to the depletion of wild stocks because numerous species are fed large amounts of groundup fish. These so-called "farmed fish" can also cause local pollution problems from their wastes and the medications given to maintain their health in confined spaces. Choosing to eat fish that are caught or raised in environmentally friendly ways helps to maintain fish populations and reduce pollution.

Several knowledgeable organizations provide resources on the benefits of choosing sustainably produced fish and guidelines for doing so (including wallet-sized cards to use in restaurants). They include Environmental Defense (<[www.EnvironmentalDefense.org](http://www.EnvironmentalDefense.org)>; Sustainable Fishing section), the Monterey Bay Aquarium (<[www.mbayaq.org](http://www.mbayaq.org)>; SeafoodWATCH program), the National Audubon Society (<[www.audubon.org/campaign/10/seafood/cards.html](http://www.audubon.org/campaign/10/seafood/cards.html)>; Living Oceans' Seafood Lovers Initiative), and the Natural Resources Defense Council (<[www.nrdc.org/wildlife/default.asp](http://www.nrdc.org/wildlife/default.asp)>; Wildlife and Fish section). In general, the best environmentally conscious choices include Alaskan salmon, catfish, mahimahi, Pacific Dungeness crab, Pacific halibut, striped bass, and tilapia.<sup>44</sup> Among the worst are Atlantic swordfish, Chilean sea bass, cod, orange roughy, Pacific rockfish, red snapper, and shark.

Source: *The Dietary Supplement, Issue No. 15, March-April 2003.*



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