



# Chippewa Ottawa Treaty Fishery Management Authority

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## Freshwater fish source of Omega 3-fatty acids

There has been a lot talk in the news lately about the health benefits of eating fish. The fact is, various fats from both seawater and freshwater fish are high in Omega-3 fatty acids, monounsaturated fats, and Omega-6 fatty acids, all of which we need in our diets.

Understanding the science behind all this may help both fish sellers and fish consumers.

Recent studies suggest that eating 0.5 to 1 gram of fish oil daily reduces the risk of heart disease death in middle-aged men by a whopping 40 percent.

The star of the show is Omega 3-fatty acids because of its significant role in reducing the risk of heart disease. Companies like Starkist are advertising tuna as a source of Omega-3 fatty acids right on the front of the can.

Contrary to popular belief, not only saltwater fish offer these benefits. Oil from both freshwater and saltwater fish is the best food source of Omega-3 fatty acids. In fact, in a study during the '90s, Lake Superior fish came out ahead of chinook salmon, one of the best saltwater sources of Omega 3-fatty acids.

### Freshwater fish high in Omega-3 fatty acids

Fish from a cold-water environment, like lake herring, lake trout, salmon and whitefish, are especially high in Omega-3 fatty acids. The Lake Superior study also found that Lake Superior chub, lean lake trout, fat lake trout (siscowet), smelt, whitefish, and burbot (loesch) are all good sources of the fatty acid.

### How the health benefits work

Omega-3 fatty acids are the sort of fat found in flax and canola oil. Omega-3 fatty acids reduce heart disease risk by reducing platelet activity (blood clotting). This works in two ways. Overactive platelet activity may help to accelerate the build up of plaque on the arteries. Further, blood clots formed by blood platelets may become stuck in a plaque-narrowed artery and trigger a heart attack.

In a recent study of Lake Superior fish, some species were also found to be an excellent source of monounsaturated fats, like the fat found in olive oil. This sort of fat reduces blood cholesterol.

— More —

Below are figures from a recent study on Lake Superior fish. In general, fish from a cold water environment, such as lake herring or whitefish, are especially high in Omega-3 fatty acids.

FATTY ACID CLASS	chub	herring	smelt	whitefish	burbot	lean lake trout	siscowet lake trout
saturated	16.8	28.2	23.0	17.3	31.0	17.8	21.1
monounsaturated	41.5	20.1	33.7	33.8	32.1	36.9	45.0
polyunsaturated (N-3)*	26.4	33.7	37.6	32.5	26.0	29.7	24.1
polyunsaturated (N-6)*	10.9	14.3	17.1	12.6	15.5	12.8	10.7
total polyunsaturated	37.3	48.0	54.7	45.1	41.5	42.5	34.8
N-3 to N-6 ratio	2.4	2.4	2.2	2.6	1.7	2.3	2.3

Note: Calculated as relative percentage of total fat content (100%)

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Lastly, everyone still needs Omega 6-fatty acids, a polyunsaturated fat not as beneficial as Omega 3-fatty acids. This is the sort of fat found in safflower or soybean oil. Although Omega-6 fatty acids reduce blood cholesterol, they can increase platelet activity. Since reduction of clotting is the key step to preventing heart disease, food scientists recommend that individuals eat *less* Omega-6 fatty acids and *more* Omega-3 fatty acids.

Keep in mind we do need some Omega-6 fatty acids: it does help lower blood cholesterol, and also reduces lipoproteins to help prevent atherosclerosis and heart disease.

**Including freshwater fish as part of a healthy diet**

It is best to eat a variety of oils in moderate quantities, with a diet heavier on Omega-3 fatty acids than other fats. The best way to get these oils is to eat two meals per week of fish rich in Omega-3 fatty acids, prepared without additional oil.

Fish that is baked, broiled, or grilled is best. The health benefits of fish are greatly reduced by battering and frying the fish.

So, many commercial species of Great Lakes fish offer the health benefits of Omega 3-fatty acids, monounsaturated oils, and Omega 6-fatty acids, all of which are needed for a healthy diet.

Table 2 will help fishers and consumers sort out their options.

*The information in this article about fish oil and human health is from two publications written by Paul B. Addis, Ph.D, a food scientist with Minnesota extension Service, Department of Food Science and Nutrition, University of Minnesota.*

**Eat some fish!**



Americans eat 17 times as much Omega-6 fatty acids as they eat Omega-3 fatty acids, which is very unhealthy. Usually the Omega-6 fatty acid is eaten in the form of vegetable oils. Ideally people should eat five times as much Omega-3 fatty acids as Omega 6-fatty acids. One of the best ways to get Omega 3-fatty acids into the diet is to eat fish twice a week without using additional oil. Many freshwater fish, such as lake herring, lake trout, lean lake trout, fat lake trout (siscowet), and whitefish, are especially high in Omega-3 fatty acids.

**Table 2. Some important N-3 and N-6 Fatty Acids in Foods**

FATTY ACID	TYPE	MAJOR FOOD SOURCES
$\alpha$ -linolenic	N-3*	flax oil
eicosapentaenoic	N-3	oily fish
docosahexaenoic	N-3	oily fish
linoleic	N-6*	soybean, safflower, corn oils
arachidonic	N-6	traces in meat, fish, poultry

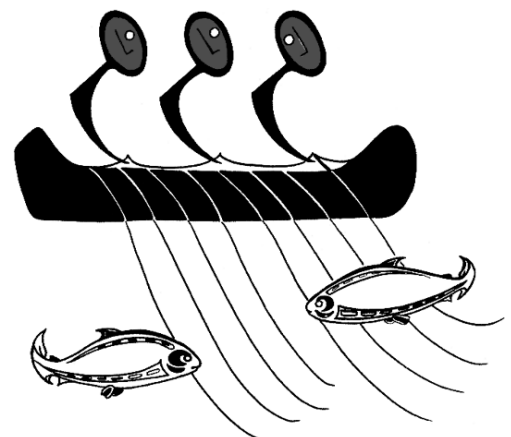
\* There are more than 20 types of fatty acids found in food.

N-3 is the scientific abbreviation of Omega-3 fatty acids. N-3 acids are found mostly in fish.

N-6 is the scientific abbreviation of Omega-6 fatty acids found in vegetable oils, eggs, and fish.

N-3 oils are more polyunsaturated than N-6 oils. The recommendation is 5 to 1 for N-3 to N-6 fatty acids in the diet.

Table 1. is from "Omega-3 fatty acid content of Lake Superior Fish," Paul B. Addis, PhD. Table 2. is from "Fish Oil and Your Health," Paul B. Addis, PhD. Both are Minnesota Extension Service publications.



*Chippewa Ottawa Treaty Fishery Management Authority regulates commercial fishing for its member tribes, Sault Ste. Marie Tribe of Chippewa Indians, Bay Mills Indian Community, Little River Band of Ottawa Indians, and Grand Traverse Band of Ottawa and Chippewa Indians, in the 1836 treaty ceded territory.*