Confessions of a Fish Killer

I fell in love with the ocean at age 5 (in 1952) after watching a film in my kindergarten class about undersea life: fish, corals, giant clams, and hermit crabs. When I was 12, I became a SCUBA diver, but my underwater explorations were limited to the murky waters of Michigan lakes. During my early teens, our family vacations were to the Outer Banks of North Carolina, where we always included some deep sea fishing—catching and eating flounders, blues, and Dorado. My first ocean SCUBA diving experience at age 18 was at John Pennekamp National Underwater Park in the Florida Keys—here thousands of colorful fish swam through a forest of corals. I enjoyed this experience so much that Mary and I returned to the Keys and more diving for our honeymoon in 1972. That same year we moved to Hawaii. Here we collected small tropical fish for our saltwater aquariums from the shallow waters surrounding Oahu. Unfortunately, within a few days of being removed from their natural environment, most of them we found floating belly-up.

For the first time I realized I was living with a grim conflict: I was a fish lover and a fish killer. Once or twice a year for the next two decades, I captured large edible fish like mahi-mahi, tuna, and salmon with lines and spears in Hawaii and California. I considered it my right to eat them. The constant drone about their health benefits from doctors and dietitians helped me justify my slaughter of these amazing animals.

The oceans have changed over my sixty-year lifetime. Ninety percent of the large fish—the ones that make baby fish—are gone. Thirty-eight percent of all animal sea life, including bluefin tuna, Atlantic cod, Alaskan king crab, and Pacific salmon have had their populations cut by more than 90%, and seven percent of the fish species have become extinct.[1] Because of the rarity of blue fin tuna, the Japanese are now making some of their sushi with beef. The price of fresh wild salmon has increased to $11 a pound, when it's available, which is only a few times a year. Fishing industries have collapsed worldwide and many of coral reefs are now bleached and barren. Reliable predictions warn that by the middle of this century (2048) all fish and seafood species will have collapsed—they will be extinct or on the verge of extinction.[1]

The human demand for fish as food has been the major reason for the devastation of the oceans and part of that demand comes from the belief that fish-eating is essential for good health. This is not correct—in fact, in our polluted world, eating fish has become a well-established health hazard.

I Hated Fish Fridays

I grew up in the suburbs of Detroit, Michigan, in a neighborhood that was predominately Catho-

lic. That meant every Friday fish was served for dinner. No matter how much it was breaded, salted, seasoned, and/or fried to disguise the taste; come dinner time, I dreaded Fridays.

When consumers have a choice—like they do at every fast food restaurant—between beef and chicken or fish—what do they choose? Considering fish's relative unpopularity, I would say most people don't like the taste of fish. The word "fishy" connotes a message of a quite unpleasant-smelling sulphurous aroma that resembles fresh fish. Anchovies are synonymous with bad taste—unless you like salt.

The taste of the flesh of a fish depends to a large extent upon that fish's diet. Many of the most popular fish; tuna, swordfish, salmon, and rockfish, are carnivores, feeding off small unpleasant-tasting sea animals, like anchovies, herring, and squid. But people have the ability to adapt their taste buds and learn to like almost anything, even the repugnant odor of sulfur.

Sulfur compounds are another reason for fish's lack of gustatory appeal. Rotten eggs and spoiled fish are malodors because of the hydrogen sulfide gas that is released by bacterial actions. Sulfur also taints many well waters. Foul body odors (halitosis, and smelly flatus and perspiration) are primarily the result of sulfur compounds—the origin of this sulfur is our diet in the form of sulfur-containing amino acids, like methionine. The sulfur content of fish is particularly high, for example salmon has 12 times more methionine than do sweet potatoes.

Sulfur and Fish

Food	**Methionine: mg/100 calories**
Egg	251
Beef	147
Chicken	303
Pork	184
Bass	529
Cod	676
Crab	565
Mackerel	574
Salmon	500
Orange	48
Sweet Potato	42
Pinto Beans	90
Rice	66

Seasonings make fish- and seafood-eating more tolerable. Most people swallow these sea animals only after they are blackened on a barbecue, smothered with cocktail sauce, or blended with bisque.

"Fishy," apart from meaning "like a fish," also means: Not as expected, inspiring doubt or suspicion, dubious, questionable, suspect, suspicious, shady, funny, odd, implausible, unlikely, not honest, and not legitimate.

The Health Claims Are Fishy

Consumers are taught fish are their only reliable sources of essential omega-3 fatty acids, called eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), and therefore they believe that by avoiding fish they would suffer serious malnutrition. Sellers of fish oil supplements go so far as to warn,

"Supplementation with fish oils that are rich in EPA and DHA is necessary to ensure you are receiving adequate amounts of these nutritionally important fatty acids."

Most health organizations worldwide, including the American Heart Association, the American Medical Association, the American Diabetic Association, the British Dietetic Association, and Australia's leading health research body, the National Health and Medical Research Council (NHMRC) (to name a few) also recommend that people eat fish, primarily for the omega-3 fats. These same groups also warn of the hazards of methylmercury and other environmental contaminants in the fish—appearing balanced.

Recommendations to eat fish are based on laboratory research, but originate primarily from observations of various populations of people worldwide. For example, the rate of heart disease among fish-eating populations, such as the Japanese, is very low, and this has been attributed to the so-called "good fats" they receive from eating fish. Researchers overlook the marked differences between overall Western and Japanese diets. The primary ingredient in the Japanese diet is rice and this is the reason they enjoy better health, are trimmer, and more active. The small amount of fish eaten daily is incidental.

But the "fish is health food" theory flourishes because, for many people this is the easy road—simply add a serving or two of fatty fish to their weekly diet—rather than giving up the real causes of heart disease. Don't think I overlooked the positive consequences of adding fish a couple of times a week—it does replace some of roast beef, pork, cheese, and chicken that would have otherwise been eaten.

Good Fats Are from Plants

The possibility of brain damage, especially to the unborn or young children, strokes the emotional cords of our hearts.[2] A number of writers claim that only a diet based on seafoods can provide the necessary quantity of essential fat (docosahexaenoic acid) to support the human brain and that a switch to such a diet early in human evolution was critical to human brain evolution.[2,3] However, a critical review of this claim by John Langdon of the departments of Biology and Anthropology of the University of Indianapolis came to this conclusion, "There is no evidence that human diets based on terrestrial food chains with traditional nursing practices fail to provide adequate levels of DHA or other n-3 fatty acids. Consequently, the hypothesis that DHA has been a limiting resource in human brain evolution must be considered to be unsupported."[3]

Only plants can make the omega-3 fats—fish don't; nor do cows or people. Alpha linolenic acid (ALA) is made by plants and converted into DHA by infants and adults in sufficient amounts to supply all of our needs including those for brain function and development. After all, the African elephant with a brain volume of 3000 to 4000 cm^3, compared to the human brain of 1400 cm^3, has no trouble making all the essential fats its brain, and the rest of its huge body, needs from plant foods.[3] You can safely assume a

comparatively puny human being can do the same.

Do Fish Have a Metallic Taste? Or Has My Fish-eating Caused Me Brain Damage?

When discussing healthy brain development and fish, let's not forget mercury. It may be all in my mind, but I swear the last tuna I ate had a metallic taste. Mercury is a natural element found in the earth, and is released as industrial pollution during various manufacturing processes. Much of this metallic substance accumulates in the rivers, streams and oceans, and is converted in the environment into a highly toxic form called methylmercury. In this organic form mercury becomes concentrated in the food chain by processes referred to as bioaccumulation. Fish, especially those predatory species high on the food chain, like, fresh water pike, walleye and bass, and salt-water tuna, swordfish, and mackerel, become heavily contaminated with mercury. The consumption of mercury-contaminated fish is the main exposure for people. Almost all of the mercury consumed is efficiently absorbed by the intestinal tract. Since our bodies have no way of excreting this toxin, mercury continues to accumulate throughout life, exerting its detrimental effects. Serious health risks include damage to the nervous system, heart, kidneys and immune system—particularly for young children and the developing fetus.

The results of mercury poisoning for the brain are motor dysfunction, memory loss, and learning disabilities; as well as depression-like behaviour.[4] The Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA) are advising women who may become pregnant, pregnant women, nursing mothers, and young children to avoid some types of fish, and eat fish and shellfish that are lower in mercury.[5] Other toxic compounds, such as fat soluble dioxins, and polychlorinated biphenyls, are also found in fish and fish oils.[6]

Fish-Eating Does Not Decrease Heart Disease

Eating fish may be healthier for the heart for people in Western countries simply because it replaces some of the saturated fats that would otherwise be found in the livestock on their dinner plates. A study published in the May 2007 issue of the *American Journal of Cardiology* came to this very conclusion and reported, "The data supporting the inverse correlation of fish or omega-3 fatty acid (eicosapentaenoic acid plus docosahexaenoic acid) consumption and coronary heart disease are inconclusive and may be confounded by other dietary and lifestyle factors."[7]

The research published in our major medical journals, which says, "Fish are bad for the heart," somehow fails to influence doctors, dietitians, and health organizations who are telling us how to live healthfully. Therefore, the public rarely hears about the following dissenting research:

Two recent studies have shown that people with the higher amounts of mercury in their bodies, caused primarily by fish-eating, have more heart trouble. The first one, published in the *New England Journal of Medicine* in 2002, found that higher levels of mercury in toenail clippings predicted a greater chance of

Cholesterol and Fish	
Food	**Cholesterol: mg/100 calories**
Egg	271
Beef	24
Chicken	37
Pork	28
Bass	60
Cod	53
Crab	55
Mackerel	51
Salmon	40
Orange	0
Sweet Potato	0
Pinto Beans	0
Rice	0

future heart attacks.[8] The next study looked at the mercury content of the hair and found, "High content of mercury in hair may be a risk factor for acute coronary events and CVD (coronary vascular disease), CHD (coronary heart disease), and all-cause mortality in middle-aged eastern Finnish men. Mercury may also attenuate the protective effects of fish on cardiovascular health."[9] More plainly, the authors of this study concluded the high mercury content negated the so-called protective effects of the "good" fish fats (like EPA and DHA) on the blood vessels and heart. Those people with the higher amounts of mercury in their hair (indicating more consumption of fish) also had higher total cholesterol and LDL "bad" cholesterol levels, and higher rates of hypertension and diabetes. Higher blood cholesterol levels for fish-eaters should not be surprising since fish has twice the amount of cholesterol as beef, chicken, and pork.

A recent study of a total of 3114 men under 70 years of age with angina (chest pain due to clogged heart arteries) who had been advised to eat two portions of oily fish each week or to take three fish oil capsules daily were found to have a higher risk of cardiac death compared to men not given this advice.[10]

Patients with coronary heart disease documented by angiograms received either fish oil capsules or olive oil capsules for an average duration of 28 months.[11] Fish oil lowered triglyceride levels by 30%, but not these patients' cholesterol. The amount of closure (stenosis) increased by 2.4% and 2.6%, respectively. The authors concluded, "Fish oil treatment for 2 years does not promote major favorable changes in the diameter of atherosclerotic coronary arteries."[11]

A recent review of 48 randomized controlled trials involving 36,913 participants taking fish oils or eating oily fish, found no health benefits from these "healthy fats," and concluded, "Long chain and shorter chain omega 3 fats do not have a clear effect on total mortality, combined cardiovascular events, or cancer."[12]

The Underlying Reasons Fish Components May Cause Harm

The reason fish, high in omega-3 fats, are felt to protect people from heart disease is that this kind of fat "thins" the blood and thereby helps prevent a blood clot (thrombus) from forming in a heart artery and shutting off circulation to the heart muscle. However, "good fat" from eating fish, thus causing "good effects," is only a small part of the story.

Much attention has been focused on the artery-damaging effects of the environmental contaminant, mercury. Adverse effects of mercury on blood vessels are from oxidative stress (free radical formation), inflammation, thrombosis (blood clots), and muscle dysfunction of the blood vessel walls.[13] However, mercury contamination is not the whole story, and even if "clean" fish were available—and they are not—fish-eating would still not be heart healthy.

Other Adverse Consequences from Consuming Fish:

1) Fish cause a rise in blood cholesterol levels similar to the rise caused by beef and pork.[13]

2) Their highly-acidic animal proteins accelerate calcium loss,[19] contributing to osteoporosis and kidney stones. The addition of 5 ounces of skipjack tuna (34 grams of animal protein) a day increases the loss of calcium from the bones, into the urine, by 23%.[20]

3) No dietary fiber or digestible carbohydrates are present in fish—thus having a negative impact on bowel function and physical endurance, like winning a foot race.

4) Although omega-3 fats "thin" the blood, preventing thrombus formation (heart attacks); this same anticoagulant activity can increase the risk of bleeding complications from other sources, like a hemorrhagic stroke or an auto accident.[21]

5) These good fats have antiinflammatory properties, which can be beneficial—
reducing arthritis pain, for example, as well as deleterious—causing immune suppression, increasing the risk of cancer and infection.[22,23] Omega-3 fish fats have been demonstrated to induce 10-fold more metastases in number and 1000-fold in volume in an animal model of colon cancer metastasis than does a low-fat diet.[24]

6) Fatty fish, commonly recommended salmon for example, is half fat and loaded with calories, adding to one's risk for developing obesity and type-2 diabetes.

7) Omega-3 fats inhibit the action of insulin, thereby increasing blood sugar levels and aggravating diabetes.[25]

8) Fish-eating prolongs gestation, increasing birth weight, and the possibility of birth injury and increased mortality.[26,27]

There are many qualities of fish which encourage heart disease. Fish are high in cholesterol which elevates blood cholesterol.[14] Even small doses of fish oils have been shown to raise the "bad" LDL-cholesterol.[15,16] Fish is also loaded with sulfur-containing amino acids (like methionine) which raise homocysteine levels in the body. Homocysteine is a well-accepted risk factor for heart disease and feeding people methionine will cause dysfunction of their arteries, which may promote blood vessel disease.[17] (Remember, salmon has 12 times more methionine than sweet potatoes.) Even fish oil alone can

increase homocysteine levels.[18]

Fish Farming Is Not Guilt-free

The cost of fresh wild fish and concern for the oceans has caused many consumers to buy farmed fish—this may not be a wise decision. Farmed fish are loaded with toxins because they are fed a diet of fish oils and fish meal obtained from small pelagic fish which themselves contain high levels of environmental chemicals. Farmed salmon, for example, have higher contaminant loads than do wild caught salmon.[28]

Because of the higher cost of meals made with so-called good fats, farmed fish are fed rations containing palm, linseed, rapeseed and other cheaper oils. The ultimate fat composition of fish depends upon what they are fed. Therefore, many farmed fish have a balance of fats that would not be considered "heart healthy."[29]

Other important issues that weigh heavily on the fish farming businesses are the environment and animal rights. Wastes from fish cages, including fecal matter and uneaten food, along with chemicals used in farming, such as pesticides, herbicides, and antibiotics, are dumped into the oceans. When fish and other organisms are kept in close proximity, they breed diseases. In most cases farmed fish are carnivores, and their feed comes from the ocean; for example, herring is used as salmon feed. Catching herring depletes the food supply for the native fish, including salmon, trout, tuna, grouper, and cod. And if you were wondering, fish do have feelings too[30]—and life in a fish farm must be like living in prison, on death row.

I Am No Longer Conflicted or Confused

I have lived long enough to have witnessed the first-hand destruction of our environment—it is real and now. I worry that in the very near future when I want to take my grandchildren to see the wonders of the ocean that I discovered in my youth, the sea life will be gone. By correcting misinformation, the downward spiral devastating our oceans can be reversed. The situation is not hopeless, not yet.

I know the truth about human nutritional needs. Therefore, I eat a diet of starches, vegetables, and fruits and enjoy excellent health. Fish are not health food. Every day I try to make choices that slow or reverse the loss of our oceans; for example, I eat tofu tacos (see the April 2006 McDougall newsletter)—they are far tastier and healthier than fish tacos.

By being informed, and making conscious choices, you can make a difference too.

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