



# Sound pollution disrupts ocean life

Marine mammals face an array of ocean threats. Far more oil ends up in our oceans from common, everyday activities than from major oil spills.

But it isn't just oil that ends up in the oceans. In fact, ocean creatures are threatened by all sorts of human pollutants, from oil to PCBs, and even, strangely enough, noise.

Polychlorinated biphenyls, or PCBs, for example, are long-lived synthetic compounds that were once commonly used in pesticides, lubricants and plastics.

Because they have been linked to cancer, and damaged immune and reproductive systems, they are now largely banned, but more than a million tonnes of them remain inside various equipment.



Big whale

PCBs disperse easily through groundwater, ocean currents or by evaporating into the air and then coming down in rain far away.

To make matters worse, they "bioaccumulate" in the food chain, so when one animal eats another, the PCBs are transferred to the next food level where they become concentrated.

Because PCBs bioaccumulate, they are found in large quantities in animals high up the food chain, especially those with lots of body fat. Last summer, researchers found high amounts of PCBs in the blubber of killer whales off the coast of British Columbia.

"Resident" killer whales, which eat fish, had 150 parts per million (ppm), while "transients," which dine largely on other marine mammals (animals higher up the food chain than fish) had an astounding 250 ppm of PCBs.

This worries researchers because far lower amounts of PCBs have been associated with serious health problems in other mammals.

And indeed, BC's southern resident population is not faring well.

Numbers have dropped from 98 members in 1995 to 82 today. Females are rarely producing new calves. Alaskan orca numbers have also dropped, but researchers cannot say for certain if PCBs are the culprit in either case.

That's because marine mammals face so many stresses, including noise pollution. More and more, researchers are finding out just how important sound is to cetaceans like dolphins, porpoises and whales. Scientists have known for years that dolphins, for example, emit sound waves to help find their prey.

But recent studies have found that some dolphins may actually also be able to stun their prey with sound, making food easier to catch.

Meanwhile, different studies have found that humpback whale songs may form part of a complex culture. Interestingly, the whale songs are rhythmic and lilting, using similar scale patterns found in human music. In other words, whales sing in tune.

Human activities, however, are not always so melodious and they may be inadvertently harming many marine mammals.

In a recent edition of Discover magazine, for example, Christine Erbe of the Institute for Ocean Sciences points out that boat traffic produces sounds that are right in the middle of killer whales' acoustical range and may be disrupting their ability to communicate, thereby causing stress and possibly damaging their hearing.

Extreme hearing damage could be what happened to 16 rare Cuvier's beaked whales in the Bahamas last March. Researchers found the whales beached and confused, swimming in circles, many bleeding from their ears.

It turns out that the US Navy had been conducting sonar tests in the area, which may have caused "barotrauma" in the whales - damaging their sensitive ear and brain tissue.

In British Columbia, salmon farmers blast noise into the water to deter predators from stealing fish in net pens. And oil exploration ships all over the world are adding to the din by using pressurized air guns to conduct seismic surveys.

In a recent edition of the journal Science, marine geophysicist Chris Fox notes that: "A single seismic survey vessel can sonify the entire North Atlantic."

In spite of all the threats marine mammals face, there is hope. In fact, it's been a banner year for the endangered Northern Atlantic right whale. Although only about 300 of the animals remain, researchers are thrilled to have spotted eight new calves this season.

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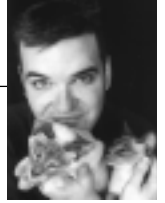
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## FOOD FOR THOUGHT

by Ralph Hamelman



# Beating cancer with diet & chemo

It took five near-death experiences, but Michael Thomas, now 53, finally got his life back. It also took 36 rounds of chemotherapy, 1200 rads of cobalt in 60 sessions of radiation therapy, 29 surgical operations, and a huge change in diet.

The Torontonian's journey started simply enough, as a garden-variety case of fatigue while working as a carpenter in 1979. His doctor, who could not find anything wrong, nonetheless put him on a series of corticosteroid injections which Michael later learned depresses the immune system.

This suspended his seasonal allergies and Michael took the additional step of quitting a 10-year smoking habit, yet his fatigue worsened. He found a new doctor who admitted him to hospital the next day. Diagnosis: non-Hodgkin's lymphoma. Prognosis: "even with luck", about a month to live. Chemotherapy began immediately.

"You're weak; you sometimes can barely crawl," Michael recalls, "your hair falls out. However, I did not feel that I was going to die." He didn't.

While Michael had been introduced to macrobiotics in Rochdale College, he was still essentially on a "meat and potatoes" diet. But he began to wonder: could diet play any part in this illness?

By 1981 he began to explore alternative ways of thinking and towards spiritual regeneration and diet, and a year later attended a workshop given by Ann Wigmore of the Hippocrates Health Institute in Boston. She introduced Michael to the Living Foods Diet.

The diet consisted of juiced wheat grass, Rejuvelac (a malty sprouted wheat grass drink) and sprouted grains. Essentially, the Wigmore theory is that cooking kills essential enzymes, of which there are hundreds present, especially present in raw foods.

One evening during a stroll he found a brochure on Macrobiotics and Cancer that was lodged in a rainy gutter. He went to a weekend Macrobiotic workshop at the Kushi Institute which is also in Boston, about a mile down the

road from Hippocrates.

He discovered then that "these two camps were not talking to each other". At the Kushi Institute he had cooked food-brown rice and vegetables-for the first time in two years.

He concludes that a Living Food diet is fine if you're coming off a heavy 'meat and potatoes' diet, a really good thing for about 3 months; but it's not a sustaining diet. Though they now do a more sustaining regimen with sprouted Essene breads and so forth.

Back in Toronto, Michael's health stabilized and he began attending various workshops and working with health foods from 1984 to 1986, even getting a good day job in a downtown corporation. Although the cancer was present and "slow growing" it did not yet require further therapy.

But in 1992, the lymphoma had transformed from a low-grade to an aggressive, high-grade lymphoma, despite the Macrobiotic diet. The situation, in medical terms, was bleak.

Tumours blocked both of Michael's ureters [kidney tubes] and two rounds of emergency kidney surgery were needed to stave off death. A bone marrow transplant was now required, to be preceded by the maximum possible chemotherapy. Side effects included the complete elimination of Michael's immune system.

But two weeks after the chemotherapy and bone marrow transplant, his white blood count was back up to normal and the immune system had regenerated to the point where he was ready to go home, a remarkably fast recovery from major surgery.



Yummy strawberries

Michael's diet had paid off. "The good thing about miso [a form of fermented soy beans] is that you get this infusion, every day, of fresh enzymes and intestinal-friendly flora that helped me to re-inoculate myself with after my immune system was knocked out [by the chemotherapy]".

Michael is now eight years and counting completely cancer-free. This year his blood count returned to normal.

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