

THINK TWICE

about eating farmed salmon

Behind farmed salmon's attractive price are some devastating costs.



SALMON ATLANTIC
STEAK
FARM RAISED
COLOR ADDED

0.04 lb		78	Sell By Dec 01, 04	TOTAL PRICE \$3.29
Net Wt/Gt	0.55 lb		Unit Price \$5.99/lb	

TRUE COST
DEVASTATING



What is salmon aquaculture?



fish farm

An environmental hazard

Growing scientific evidence indicates open net-cages allow diseases and parasites to transfer from farmed to wild fish. High fish density leads to cramped conditions inside salmon farms, encouraging disease outbreaks and parasite infestations. Typically, salmon farms are located along wild salmon migration routes, where juvenile salmon are most vulnerable. Open net salmon farms also allow waste feed and untreated fish feces (that can contain antibiotics or parasiticides) and chemicals used for cleaning or treating nets to enter the ocean.

Escaped farmed salmon are a serious ecological risk. By 2000, non-native Atlantic salmon had been found in over 80 wild salmon spawning streams in BC. A 2005 report in *Bioscience* showed that escaped farmed salmon threaten wild salmon by transferring disease and out-competing wild salmon for food and habitat.

Salmon aquaculture (farming) is the industrial production of salmon. Currently practiced in open net-cages in the ocean, these floating feedlots can hold up to a million fish in an area the size of four football fields.


Fewer fish in the oceans

Salmon farmers often claim their industry is helping to “feed the world.” In truth, the salmon farming industry accelerates the depletion of wild fish stocks and strains the food supply for people in poorer nations. On average, it takes two to five kilograms of wild fish (used in the feed) to produce one kilogram of farmed salmon. Most of the wild feed for BC farmed salmon is taken from the southern hemisphere, diverting local protein to raise a luxury product for northern consumers.



wild coho salmon

PHOTO: Ian McAllister

A photograph of a wild sockeye salmon lying on a rocky riverbank. The fish is silvery with a bright red belly and a dark back. The water is brown and turbulent. The background is a blurred riverbank with green foliage.

wild sockeye salmon

PHOTO: Ian McAllister



Risks to wild salmon: sea lice infestations

Because of salmon farming, parasitic outbreaks of sea lice have become a deadly problem for wild salmon. Salmon farms, with their high fish density, are breeding grounds for sea lice. Routinely placed along migration routes, the open net-cages allow sea lice to transfer from farmed fish to young wild salmon.

A 2006 study in the American journal *Proceedings of the National Academy of Sciences* found that up to 95% of wild juvenile salmon are killed by sea lice from salmon farms.

Another peer-reviewed study calculated that a single salmon farm generated 73 times more sea lice than natural levels, with impacts extending 30 km beyond the farm.

The prestigious *Alaska Fishery Research Bulletin* published research in 2005 indicating that infestations of only one to three sea lice per fish could be fatal to juvenile pink and chum salmon.

Sea lice outbreaks on salmon farms in the area where these studies took place have been associated with the severe population crash of wild salmon in the Broughton Archipelago region of BC. Similar impacts in other unstudied areas are likely.



First Nations

Many coastal First Nations in BC call themselves “salmon people”. For millennia, their cultures and societies have been sustained by wild salmon and the riches of the sea. Salmon farms have been placed in many traditional territories despite strong and vocal opposition by First Nations. Clam beds have been contaminated, rockfish near farms have elevated mercury levels and wild salmon are in decline. Yet the government continues to approve new salmon farms in First Nations’ territories.

Sustaining coastal economies

The salmon farming industry was at first welcomed in British Columbia thanks to the promise of jobs for coastal communities.

However, by the 1990s the BC salmon farming industry had tripled production while adding few new jobs. Meanwhile, the ecological impacts of salmon farming continue to threaten the wild commercial, sport, and First Nations fisheries, which support more than 16,000 jobs and contribute at least \$1 billion to BC’s economy each year. Marine tourism, the fastest growing sector within BC’s multi-billion dollar tourist industry, is also negatively affected. In the Skeena Watershed, the economic value of wild salmon was estimated at \$110 million in direct annual revenue. Coastal residents are understandably concerned that proposed salmon farms would jeopardize the economic future of this region.

PHOTO: John Brouwer

www.FarmedAndDangerous.org



Health risks

Consumers may choose salmon because of the health benefits of Omega-3 fatty acids. However, a 2005 study in the *Journal of Nutrition*, found cancer risks from toxic contaminants (dioxins and PCBs) in farmed salmon outweighed potential benefits, especially for young consumers and women of child-bearing age. The study indicates that “farmed salmon contain levels of 13 fat-soluble persistent organic pollutants that are on average ten times higher than those found in wild salmon.”

The most recent research published in the *Journal of the American Medical Association* (October 2006) encourages the overall consumption of seafood for its health benefits. However, the study still provides evidence showing the rate of cancer risk is three times higher for farmed salmon consumption than wild salmon.

Making farmed salmon pink

Wild salmon range in colour from pink to red because of the food they eat. Since farmed salmon do not benefit from a wild diet, colourants (canthaxanthin and astaxanthin) are added to their feed to alter their flesh from an unappealing grey to a marketable “salmon” colour. The Salmofan™ is used to choose the desired shade of pink for fish and the corresponding level of canthaxanthin and astaxanthin is added to their feed.

Antibiotics and pesticide use

Because salmon farming is industrialized, producers rely on antibiotics and pesticides to control frequent outbursts of diseases and parasites. Recent research published in *Environmental Microbiology* links the wide use of antibiotics in salmon farming to the emergence of antibiotic-resistant bacteria and increased antibiotic residues in farmed salmon products.

Sea lice outbreaks are treated with SLICE™, a pesticide added to feed to treat parasites in aquaculture. SLICE™ has not been approved for general use in Canada, but is continually authorized for “emergency use” on salmon farms. Over 170 million farmed salmon were treated with SLICE™ in Canada between 1999 and 2003. SLICE™ ends up in the marine environment through uneaten food and fish feces and there are indications that it can interfere with important hormonal processes in crustaceans.



select
a flesh colour

Predator control

Every year, seals, sea lions, whales, birds and other fish are affected by salmon farms. More than 5,000 marine mammals were reported as “discharged” (killed) by the BC salmon farming industry between 1990 and 2000. Although the number of unreported kills remains unknown, seals and sea lions are often shot when they approach salmon farms looking for an easy meal.



Are you
unknowingly
eating
farmed salmon?

There are no commercially viable Atlantic salmon fisheries left in North America. If you are eating Atlantic salmon, it is from a farm. Atlantic salmon is the most commonly farmed species, but some BC farms raise Pacific Chinook (Spring or King) and Coho salmon.

Retailers and restaurants often advertise “fresh” salmon. This usually means fresh from the farm, not from the fisherman. Be sure to ask restaurants and retailers if their salmon is farmed or wild. If it is farmed (Atlantic or Pacific), don't buy it.



Organic farmed salmon?

The process of raising farmed salmon marketed as “organic” or “seeking organic certification” is very similar to conventional industrial salmon farming. “Organic” salmon farms are inherently flawed because they continue to use open net-cage technology which does not eliminate waste, prevent escapes of farmed salmon or contain the spread of parasites and diseases. These impacts from “organic” farms can be just as devastating to wild salmon as those from conventional industrial farms. “Organic” salmon farms also continue to use feed made from other fish which can contribute to elevated levels of PCBs and other contaminants in farmed salmon.



Solutions

Salmon farming in BC can be made safer for wild salmon, marine ecosystems, coastal communities and human health. Groups promoting safe salmon farming practices created the Coastal Alliance for Aquaculture Reform (CAAR) in 2000. Working in partnership, we believe we can help to ensure there will be a healthy and sustainable coast for generations to come.

While continuing to raise sustainability concerns, CAAR is also investigating the possibilities of transitioning salmon farms to closed containment systems. Whether sited on water or land, closed-tank systems would eliminate escapes, reduce the risk of disease and parasite transfer to wild salmon and provide employment opportunities closer to communities. CAAR believes government and industry must shift the focus of their research and development dollars to develop successful alternatives to open net-cages. CAAR is helping lead the way. For more information on research and solutions visit www.FarmedAndDangerous.org.

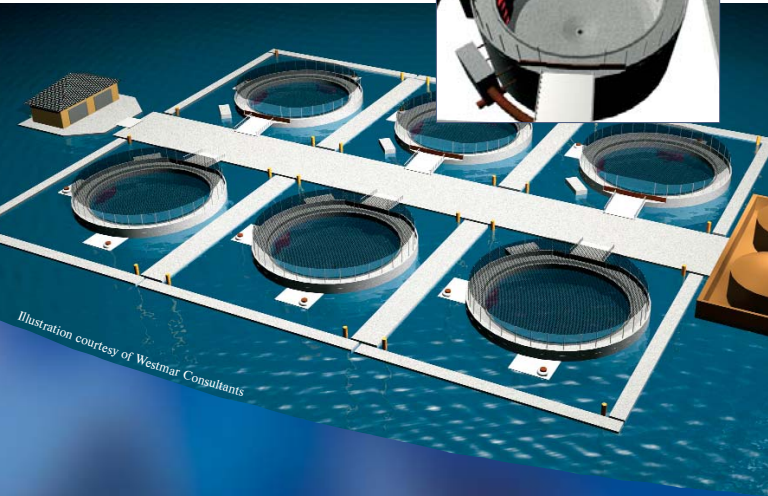
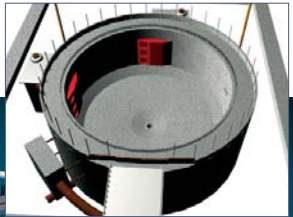


Illustration courtesy of Westmar Consultants

What can you do?

Farmed salmon will be safe when the fish farming industry:

- Uses technology that eliminates the risks of disease and parasite transfer as well as fish escapes;
- Guarantees untreated waste is not released into the ocean;
- Labels fish as “farmed” so consumers can make informed choices;
- Develops feed for farmed salmon that doesn't deplete fish stocks around the world;
- Ensures wildlife is not harmed as a result of fish farming;
- Prohibits the use of genetically modified fish;
- Eliminates the use of chemicals, antibiotics and pesticides in fish farming;
- Ensures contaminants in farmed fish don't exceed levels deemed safe by international standards; and
- Stops locating fish farms in areas opposed by First Nations or other local communities.

The complete listing of scientific references that support the information used in this brochure are available at www.FarmedAndDangerous.org

Choose fish that are responsibly caught or raised. There are many guides to help you make more sustainable seafood choices. Check with the Monterey Bay Aquarium for US listings and in Canada consult listings from SeaChoice, a program of Sustainable Seafood Canada.

DON'T

eat farmed salmon
until it is safe...

...safe for **US**

...safe for the
OCEAN

Who is CAAR

The member groups of
The Coastal Alliance for
Aquaculture Reform are:

- David Suzuki Foundation
- Friends of Clayoquot Sound
- Georgia Strait Alliance
- Living Oceans Society
- Musgamagw Tsawataineuk Tribal Council
- Raincoast Conservation Society
- Raincoast Research
- T. Buck Suzuki Environmental Foundation
- Watershed Watch Salmon Society



www.FarmedAndDangerous.org