

FARMED SALMON – A DREAM TURNED NIGHTMARE

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The Dream

By the early 1990’s, smoked salmon, previously the prerogative of the affluent, could finally be enjoyed by the man-on-the-Clapham-omnibus. Because Norwegian scientists had eventually overcome the problems of breeding and disease control, salmon farming had become a commercial reality. These fish were crossbred to rapidly achieve maximal weight and unlike their wild counterparts, tolerated heavy stocking densities and the close proximity of man. Brandishing impeccable environmental credentials, this novel industry promised to save the wild Atlantic salmon (*Salmo salar*) and create new jobs.

Taking advantage of the wild salmon’s unique image and taste, entrepreneurs initially built cages holding 100,000 salmon costing £1 each. After two years, each fish could be worth in excess of £10. Demand rocketed. Salmon was four times the value of pork; smoked salmon was fetching £17/lb. And that was in 1991! Located in inaccessible and economically depressed areas, farmers were eligible for generous EU grants and subsidies, so multiple-cage farms popped up like mushrooms. Anticipating the immense profits, multinational companies quickly bought-out local crofters. Overseen by lax laws and few personnel, salmon farming is often described as “self-regulatory”. Once exclusive and over priced, Atlantic salmon is today a cheap global commodity, available in both top restaurants and the local fish’n’chippie.

The Nightmare

The public remain unaware of the true price our environment pays for this widespread availability of farmed salmon. The ubiquitous logo of salmon leaping over waterfalls is a sham. A migratory species, each farmed fish swims its miserable life away in the equivalent of a bathful of seawater and is marketed solely on the majestic image of its distant cousin, the wild fish. The consumer therefore focuses on the salmon’s gastronomic allure, remaining unaware of the issues that have transformed the industry’s earlier dream into today’s Environmental and Consumer/Health nightmare.

CONSUMER/HEALTH ISSUES

Colourants

Would you buy salmon whose flesh was unappetisingly grey? Only by adding the expensive colourant Canthaxanthin (E 161 g) to its food do farmed salmon retain their distinctive orange-pink hue. Any butcher adding dye to spruce up unappetising meat would quickly find

himself in court, yet salmon-farmers choose their required tint from a graded shade-guide! Surely this is duping the consumer to buy a phoney imitation product, rather than genuinely-pink salmon flesh?

For health reasons, the EU bans the direct addition of Canthaxanthin to our food, yet the public are nowhere informed they are consuming the dye indirectly via farmed salmon. In February of this year, the EU ordered salmon farmers to reduce the amount of dye they feed to the salmon – by a massive two thirds! All packaged food must list each constituent, colourant and additive – why must farmed salmon remain the exception?

Dangerous/Unhealthy Constituents

Farmed-salmon contain considerably higher concentrations of tumour-promoting PCB's (Poly-Chlorinated Biphenyls) and Dioxins than wild salmon. Even minimal intake of these compounds may irreparably damage brain development in children. The Food Standards Agency (FSA) has warned that eating more than one portion of farmed salmon weekly could exceed the World Health Organisation's recommended maximal intake for these toxins.

Unlike the Government Health Warning accompanying cigarettes, similar FSA's advice is nowhere displayed. Residues of the now-banned insecticide, di-chlorvos, have also been discovered in supermarket salmon. The Pesticide Residues Committee recently found the pesticides DDT, chlordane and hexachlorobenzene in 97% of the seventy-nine farmed salmon they tested.

To ensure his stock of farmed salmon concentrates on growth rather than on reproduction, the farmer prefers to rear all-female stock or sterile fish. These are produced by manipulating the maturation times of young fish. Hormones (steroids), chemicals, pressure shock or x-ray bombardment are the methods used.

Antibiotics

Antibiotics cure an expanding list of fish diseases, some new to science. Because the antibiotics used in salmon farming are identical to those dispensed in doctor's surgeries, ingestion of penicillins, tetracyclines, sulphonamides etc. contained in farmed salmon could contribute to both allergic reactions and antibiotic resistance in the population as a whole. Certain salmon diseases e.g. furunculosis, can be resistant to three different antibiotics. The Veterinary Inspectorate regularly finds residues of antibiotics in farmed salmon.

Fat Content

Farmed salmon are fed unnatural diets, very high in oil content, hence are four times fatter than wild salmon. One farmed sample examined had seventeen times more fat than its wild Pacific counterpart! 20% bodyweight can be fat... Hardly healthy fare for the weight-watcher or the diet-conscious?

Organic Farmed Salmon?

One should take such claims cum grano. Colourants to pink its flesh; x-rays for sterilisation; hormones to eradicate sex-drive; sprayed with medicament, insecticide and pesticide; dosed with antibiotics; imprisoned in densely packed cages; vaccinated; genetically manipulated... hardly an "organic" regimen. Neither are many of the constituents of the farmed salmon diet:

NUTRIENTS MINERALS/CHEMICALS

White fish Flesh dye (Canthaxanthin)
Blood meal Magnesium sulphate
Hydrolised feathers Iron oxide
Meat bone meal Zinc sulphate
Cane molasses Potassium iodide
Fish oils Sodium carbonate
Soya Zinc oxide
Antioxidants Di-calcium phosphate
Yeast Copper carbonate
Herring offal Cobalt sulphate
Saithe offal Cobalt carbonate
Binders (cellulose, alginate) Optional; antibiotics

Ivermectin

Note the presence of animal meal, feathers and molasses in a diet for fish! After enzyme-treatment. Feathers provide cheap, easily available protein while animal and poultry blood also provides inexpensive protein and calories. This practice might hold implications for both Jewish and Muslim communities.

Some Norwegian operations go one better; they “recycle” whole salmon that die on the farm by grinding the bodies into pellets. “Organic” farmed salmon and the faeces of the hobbyhorse (*Equus caballus*) share a common attribute – both are very hard to find!

Eating Diseased Fish

Infective Salmon Anaemia (ISA) occurred recently in Ireland, for the first time – found in Scotland in May 1998. Instead of destroying the infected fish, as per protocol, they were promptly killed and sold off. Such diseased fish, if awaiting definitive veterinary diagnosis (which may take some time), may be marketed quite legally. No label warns the consumer that disease dictated the premature slaughter of the fish. While current evidence suggests ISA viruses do not damage humans, who in their right mind would knowingly tuck into fish riddled with pathological organisms?

The germs causing Foot and Mouth Disease rarely affect humans yet the Government spends billions to keep the food chain free of them. *Listeria* in farmed salmon has resulted in batches of Irish, Scottish and Norwegian salmon being rejected by the Food and Drug Administration in the United States.

ENVIRONMENTAL ISSUES

Diseases/Chemicals

To combat numerous diseases, fish are hosed with powerful pesticides or, similar compounds may be added to their food. Salmon farms are all-year-round foci for billions of flea-like lice that only attack salmon and trout, wild or farmed. Yet again, to kill these parasites, pesticides are used, in spite of some being officially banned or contraindicated by the manufacturers for use on salmon-farms. Highly injurious to the environment, these compounds include:

(1) Di-chlorvos: Capable of killing lobster and shellfish in one thousandth the concentration used in salmon farming. Listed as one of the EU's most dangerous compounds for aquatic environments, it previously enjoyed illegal usage. It was eventually licensed by the Authorities because farmers insisted no alternative existed. In 2002 di-chlorvos was outlawed as cancer causing. A salmon-farm worker is currently claiming in the Dublin High Court that di-chlorvos caused his testicular cancer.

(2) Malachite Green, was outlawed in 1990 by US Federal Authorities as cancer causing. Although banned here since June 2002, the compound is still being detected in Scottish farmed salmon. The EU threatens legal action if salmon farmers continue to use it.

(3) Ivermectin's long-lasting capacity to destroy many non-target marine species led its manufacturers to specifically recommend it NOT be used in aquatic environments. This advice has been routinely ignored resulting in the Veterinary Inspectorate regularly finding it in farmed salmon.

(4) Cypermethrin, is both popular and cheap. With a record of being able to destroy all insect life in 12 kilometers of river, it can eradicate similarly structured marine species inhabiting salmon farming waters.

(5) Teflubenzuron destroys the hard skin of virtually all known insects, hence threatens most aquatic molluscs. The Scottish Environmental Protection Agency warned; "Being very long-lived, Teflubenzuron endangers non-target species and may re-enter the food-chain via shellfish." As it will NOT biodegrade in seawater, toxic wastes under farms may release Teflubenzuron into the sea for years to come.

Pollution

Pollution from Scotland's salmon farms is estimated to be twice that of the human population. Agricultural wastes must be treated or spread on land, human sewage must be detoxified, yet all fish-farm wastes are flushed untreated into loch, river and sea. Shellfish disappear, dead-zones proliferate and once-rare algal blooms have become commonplace. The very bacteria on which the marine food chain depends are now adversely affected by these pollutants.

20% of salmon-food lies uneaten and putrefying beneath the cages. Over 80% of fish-food is re-released into the surrounding water as polluting suspended solids, organic filth, fish-diarrhoea, ammonia and bacteria-rich debris. Small wonder that neighbouring shell-fishermen regard salmon farms with dread.

Escapee Fish

10 – 20% of farmed stock escape due to storms, accident etc., so today, escapee salmon outnumber wild fish by a factor of four in certain waters. These escapee fish are big, hungry and aggressive and, in North America, tend to overrun the native species. Infected escapees eradicate neighbouring wild stocks by disease transfer. The alarming interbreeding between escapee and wild salmon signals irreparable contamination of the latter's genetic codes, threatening its very existence. This is why all salmon farming is outlawed in Alaska.

Genetically Modified/Transgenic Salmon

With the insertion of an extra gene for growth hormone plus a promoter sequence, genetically modified (GM) salmon produced by Aqua Bounty Farms in the USA grow six times faster than farmed salmon. With their 20% improvement at converting food to flesh, these fish offer even greater profits to salmon farmers. 60-kilo GM salmon are also in production.

Eating the excess growth hormones in these fish will not be a problem because, as the manufacturers confidently assure us, all hormones will be, “destroyed by cooking and digestion”. Well, that’s alright then! As soon as the appropriate licence is issued, these Frankenstein-esque creatures are destined for your local supermarket, regardless of the plethora of potential side-effects for humanity and the environment.

Diminishing Fish Stocks

It takes three and a half kilos of wild fish to produce one kilo of farmed salmon so trawler-fleets must delve deeper and wider for fish oil – the new ‘blue gold’. Feed companies already harvest sand-eels, sprats, capelin, anchovies, herring, mackerel, blue whiting and are even plundering Arctic krill to feed spiraling demands. Vast quantities of South Pacific industrial fishmeal and fish oil are also imported; 80% of global fish-oil is now used in fish farming.

Vanishing Wild Salmon

As farmed salmon production increases, wild salmon numbers decrease. The Atlantic salmon is now endangered in mainland Europe, Scotland and parts of the USA. Numbers in Ireland are at their lowest ever. By merely swimming past disease-ridden farms, adult wild salmon can sign their own death warrants because, unlike their medicated/vaccinated cousins, they are unprotected against exotic infections.

On entering the sea for the first time, young salmon are particularly vulnerable to lice-attack as are neighbouring sea-trout (*Salmo trutta*). Similar lice attacks from the farms have also eliminated neighbouring sea-trout. Far from being its saviour, salmon farming is responsible for driving another nail into the wild salmon’s coffin.

Continuing Nightmare

One Scottish newspaper claims farmed salmon is “the most contaminated food in the supermarket” while the Daily Mail (24/12/02) calls it “pink poison”. Salmon farming may generate huge profits for the few but its associated ecological destruction could eventually undermine the social and economic fabric of coastal communities that depend on small-scale fisheries and tourism.

We are all aware of the horrors of CJD and the role unnatural nutrition played in the spread of Mad Cow Disease. Surely the health risks attached to eating intensively reared or genetically modified creatures demands continued investigation, not out-of-hand rejection? Yesterday my friend’s cat turned up her nose when proffered fresh farmed salmon. Maybe cats know something we don’t?