

Timeline of Salmon Aquaculture

Late 1800s

The U.S., Canada, and Japan begin to cultivate salmon to enhance wild populations.

Late 1960s

First commercial salmon farm operations begin in Scotland and Norway.

Early 1970s

Commercial salmon farming starts up in Maine, Washington State, and British Columbia.

1972

Norway's five salmon farms produce a total of 46 metric tons (mt).

1975

Gyrodactylus, a monogenean parasite, spreads from hatcheries to wild salmon in Norway, leading to the devastation of some wild salmon populations.

Late 1970s

Commercial salmon farms are established in New Zealand, New Brunswick, and Chile.

1980

World farmed salmon production stands at 7,149 mt, accounting for just one percent of the world salmon market. Norway's 173 salmon farms produce a total of 4,300 mt.

1984

Atlantic salmon replace Chinook and Coho salmon in British Columbia fish farms. Infectious salmon anemia (ISA), a viral disease is discovered in Norway in an Atlantic salmon hatchery. Approximately 80 percent of the fish in the outbreak die. Norway's 354 salmon farms produce 29,500 mt of salmon worth about \$108 million.

1985

Atlantic salmon aquaculture introduced to Australia.

1987

Escaped Atlantic salmon first reported in commercial Pacific salmon catches. World production of farmed salmon increases 13-fold from 1980.

1988

A storm hits the Faroes Islands and destroys many salmon cages, releasing millions of Atlantic salmon into the ocean.

1989

Furunculosis, a bacterial disease, infects 189 Norwegian salmon farms and wild salmon populations in 18 rivers.

Early 1990s

The wild Irish sea trout fishery collapses because of massive sea lice infestations believed to be caused by Atlantic salmon farms.

1990

One third of the salmon populations spawning in Norwegian rivers are escaped farmed salmon. Alaska bans commercial net pen fish farms to protect its wild fisheries.

1991

World farmed salmon production is now 325,563 mt, a 4,600 percent increase from 1980. Farmed salmon makes up 26% of the world salmon market.

Between 1989 and 1992, 550 salmon farms in Norway are infected with *furunculosis*. Seventy-four natural waterways are infected with *furunculosis* as well.

1993

An antibiotic-resistant form of *furunculosis* is discovered in farmed salmon in British Columbia.

1995

Escaped farmed salmon make up 90 percent of all salmon in New Brunswick's Magaguadavic River. (Escapees accounted for only 5.5 percent of the salmon in 1983.)

Escaped Atlantic salmon are reported in 18 rivers in British Columbia. The British Columbia provincial government places a moratorium on new Atlantic salmon farm tenures (91 total in operation) in order to conduct an environmental review of the industry.

Worldwide, farmed salmon production is estimated at 537,043 mt, comprising about one-third of the salmon market.

US: 14,106 mt

Japan: 13,524 mt

Canada: 42,511 mt

UK: 70,322 mt

Chile: 98,658 mt

Norway: 261,522 mt

1996

Canadian researchers patent transgenic salmon.

ISA is discovered in New Brunswick's netpens, the first reported occurrence of the virus in North America.

1997

Escaped Atlantic salmon classified as a "living pollutant" in Washington State.

1998

The first documented freshwater catch of an escaped farmed Atlantic salmon in an Alaska river.

Atlantic salmon found to have spawned in a British Columbia river.

ISA reported at more than 11 farms in Scotland.

1999

ISA infects farmed salmon in the Faroes Islands and Chile.

40,000 salmon escape from a New Brunswick fish farm.

Total global farmed salmon production surpasses global wild salmon catch for the first time in history.

2000

Over 500,000 farmed salmon escaped from net pens in Scotland over the past two years.

Since 1989, over 2 million Atlantic salmon have been reported escaped from net pens in Washington and British Columbia.

100,000 salmon escape from one farm in Maine.

81 Atlantic salmon reported caught in Alaskan marine waters.

Atlantic salmon listed as federal endangered species in Maine.

Worldwide, farmed salmon production tops one million mt for the first time in history.

US: 18,000 mt

Japan: 12,000 mt

Canada: 75,000 mt

UK: 178,000 mt

Chile: 245,000 mt

Norway: 420,000 mt

2001

Atlantic salmon found in 77 British Columbia streams and rivers.

Wild salmon migrating past salmon farms in British Columbia are infested with massive amounts of sea lice, believed to have been passed to the wild salmon from farmed salmon.

ISA spreads to salmon farms in Maine, forcing salmon farmers to slaughter over one million fish to control the outbreak.

Antibiotic resistant bacteria found at salmon farms in Chile.

2002

British Columbia officials announce plans to lift the moratorium on salmon farms. Officials from the Alaska government ask the U.S. State Department to intervene to prevent the expansion of salmon farming in British Columbia. Almost 600 Atlantic salmon have been documented in Alaskan waters since 1990.

Salmon farmers in Maine are given over \$16 million by the U.S. Department of Agriculture in compensation for their losses and to develop a plan to avoid future outbreaks of disease.

Just six companies now control half of the world's salmon farming industry.

European strains of farmed salmon found in a river in New Brunswick, Canada.

"Eco-Salmon," farmed in land-based tanks by Agrimarine, are sold in British Columbia.

2003

Concerns for human health risks prompt officials from the European Union to cut the allowable amount of color additive in farmed salmon feed. Three major US grocery chains post signs to inform shoppers that color additives are fed to farm-raised salmon to make the flesh pink.

In 17 days of sampling, researchers in British Columbia record 10,826 escaped Atlantic salmon captured in the commercial Pacific salmon fishery.

ISA reported in a Cobscook Bay, Maine salmon farm.

European Union officials discover residues of malachite green, an illegal, highly toxic fungicide, in a shipment of farmed salmon from Chile.

Salmon farmers in Maine are found in violation of the Clean Water Act and ordered to fallow their sites for two to three years and cease the use of European strains of fish at their farms.

In a 10-year study, researchers from Ireland found that wild salmon were vulnerable to extinction because of genetic and competitive pressures from escaped farmed fish.

Estimates from the Norwegian Directorate of Fisheries reveal that in 2003, over 415,000 salmon and trout escaped from Norwegian fish farms.

2004

A study published in the journal *Science* finds that farm-raised salmon contain significantly higher concentrations of PCBs and other contaminants than wild salmon. The feed used to farm the salmon is believed to be the cause of the high contaminant levels. Wild scallops near a salmon farm in Maine test positive for traces of emamectin benzoate, an ingredient found in the sea lice pesticide treatment Slice.