

Diminishing Returns

An Investigation into the
Five Multinational Corporations
that Control British Columbia's
Salmon Farming Industry

Sarah K. Cox

December 2004



PRODUCED FOR THE
COASTAL ALLIANCE FOR
AQUACULTURE REFORM

Acknowledgements

Preparation of this report was made possible by the hard work and insight of many people. Sarah Cox was the primary author and researcher, giving advice and direction throughout the year-long project and spending countless hours sifting through reams of information. The work of Cameron Young, the principal editor, was central to the quality of the final product. Allan McDonnell, Q.C. provided legal counsel throughout the making of the report lending advice before the project even began and reviewing numerous versions along the way. Frances Hunter of Beacon Hill Communications Group designed the publication and should be thanked for her wisdom and patience throughout the project.

Theresa Rothenbush, Aquaculture Specialist for Raincoast, coordinated the project, and Jenny Kingsley, Aquaculture Analyst for Raincoast, was the principal research assistant – both provided additional services of editing and review. Chris Genovali, Executive Director of Raincoast, gave advice, insight, and direction on all aspects of the report's production. Michelle Larstone, Development Director for Raincoast, assisted in the communications planning and fundraising. Andrew Westoll, Communications Specialist for Raincoast, copy edited the final versions of the document. Robin Husband, Office Administrator for Raincoast, managed finances and assisted in other essential project tasks.

Special thanks to our team of experts set up to review and give advice on the report. These include Natalie Southworth, Helicia Lake and the team from IMPACS communications, Mike Heffring of Environics West, Lynn Hunter of the Coastal Alliance for Aquaculture Reform, Jennifer Lash of Living Oceans, Dr. Michael Skladany of the Institute for Agriculture and Trade Policy, and Dr. John Volpe of the University of Alberta. In addition to reviewing the report, Lynn Hunter was always on hand with pertinent information and advice; Don Staniford provided a great deal of help and information. Thanks also to Jeff Ardron of Living Oceans for his skilled map-making.

Member groups of the Coastal Alliance for Aquaculture Reform provided ideas and direction throughout the production and distribution of the report. Staff at Woodward and Company helped with our research on First Nations litigation. Many others gave valuable review and comment including: Helen Slinger, Maureen Palmer, Vilaiwan Fernandes, Katrina Assonitis, and Bart Naylor.

Many people have contributed to the information contained within these pages. We would like to thank those from industry and government who granted interviews or assisted in the gathering of information.

This report was largely made possible by funding from the Lazar Foundation.

(All figures are in Canadian dollars unless otherwise specified)

Photo credits: Alexandra Morton (page 11), Ian McAllister (page 29), courtesy of Fisheries and Oceans Canada (page 61).

RAINCOAST CONSERVATION SOCIETY

Raincoast Conservation Society is a non-profit research and public education organization. In partnership with scientists, First Nations and non-governmental organizations, they carry out research and generate public awareness to build support for decisions that protect bear, wolf, salmon and ancient forest habitat in British Columbia's Great Bear Rainforest.

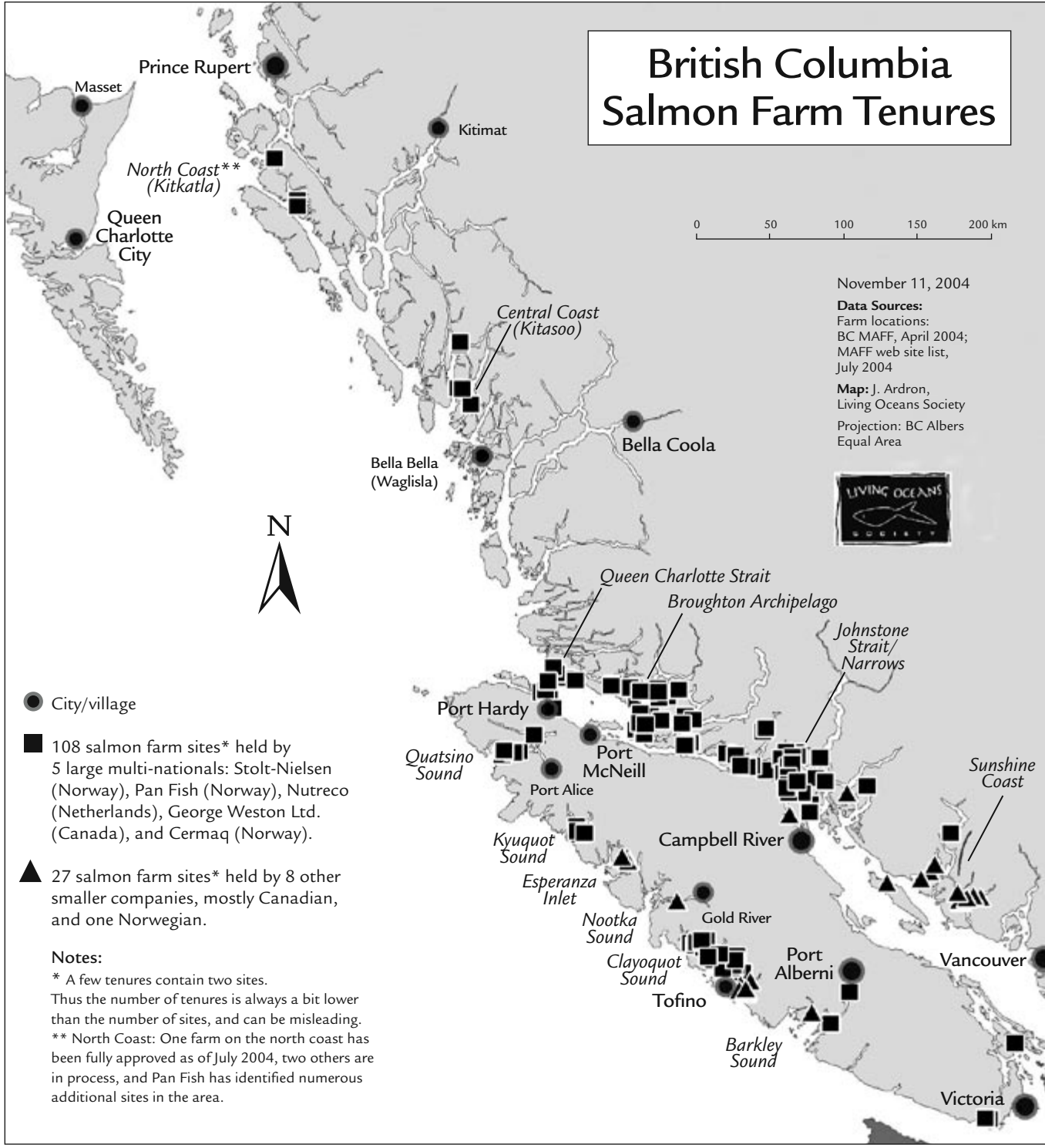
Raincoast Conservation Society, PO Box 8663, Victoria, BC, Canada V8W 3S2

www.raincoast.org

Contents

Methodology	v
Executive Summary	vi
Introduction	ix
1 COMPANY PROFILES OF THE BIG FIVE	1
Stolt Sea Farm	2
Pan Fish	4
Nutreco (Marine Harvest)	5
Heritage Salmon	6
Cermaq (Mainstream)	7
Vertical integration	8
2 IN THE RED: FACING THE TWIN THREATS OF LOW PRICES AND FISH DISEASE	11
Declining profits for the Big Five	12
Battling disease in B.C.	14
Disease outside B.C.	18
Reeling from low prices and competition from Chile	19
3 TRACK RECORDS OF THE BIG FIVE IN B.C. AND AROUND THE WORLD	21
Track record: drugs	22
Track record: jobs	30
Track record: regulatory compliance	35
Track record: lawsuits	41
Track record: First Nations	49
Track record: worker strikes and public protest	51
Track record: escapes	54
4 GOVERNMENT SUPPORT FOR THE BIG FIVE	61
Political support for industry expansion	62
Taxpayer-funded support for aquaculture	65
5 THE PUBLIC RELATIONS CONNECTION	81
B.C. Salmon Farmers Association hires Hill & Knowlton	82
Salmon of the Americas (SOTA)	84
Positive Aquaculture Awareness (PAA)	87
Salmon Health Consortium (SHC)	90
Recommendations	93
<i>Appendix A: Extended company profiles</i>	94
<i>Appendix B: Overview of diseases in salmon aquaculture</i>	101
<i>Appendix C: Corporate terminology</i>	103
<i>Appendix D: Acronyms and abbreviations</i>	105

British Columbia Salmon Farm Tenures



November 11, 2004

Data Sources:
Farm locations:
BC MAFF, April 2004;
MAFF web site list,
July 2004

Map: J. Ardron,
Living Oceans Society
Projection: BC Albers
Equal Area



- City/village
- 108 salmon farm sites* held by 5 large multi-nationals: Stolt-Nielsen (Norway), Pan Fish (Norway), Nutreco (Netherlands), George Weston Ltd. (Canada), and Cermaq (Norway).
- ▲ 27 salmon farm sites* held by 8 other smaller companies, mostly Canadian, and one Norwegian.

Notes:

* A few tenures contain two sites. Thus the number of tenures is always a bit lower than the number of sites, and can be misleading.
 ** North Coast: One farm on the north coast has been fully approved as of July 2004, two others are in process, and Pan Fish has identified numerous additional sites in the area.

METHODOLOGY

Each company profiled in this report was contacted to request information about their B.C. salmon farming operations. With one exception, messages left by Raincoast were not returned.¹ The B.C. Salmon Farmers Association also declined to return phone calls.

¹ Jim Gracie, president of Stolt Sea Farm Americas, was the only person to return Raincoast's calls. While he provided helpful answers to questions about Stolt's overall North American operations, Jim Gracie referred most questions about the company's B.C. operations to its B.C. spokesperson, who did not return calls.

For the most part, the data presented here comes from aquaculture industry publications, personal interviews, company documents, government sources, mainstream media such as the *The Wall Street Journal*, court transcripts, and a slew of access to information (federal) and freedom of information (provincial) requests to the B.C. and federal governments. The publication of *Diminishing Returns* was delayed for many months while waiting for responses to access to information and freedom of information requests. In many cases, federal and provincial ministries and departments requested 60-day extensions of a 30-day standard period for responses. In one notable instance, after waiting four months for an access to information request made to Health Canada for copies of emergency drug releases in the aquaculture industry, Raincoast filed a complaint with the Office of the Information Commissioner of Canada. Even with intervention from the information commissioner's office, it took more than three additional months for Health Canada to send the information – nine months after the original request was made. In a second instance, the Canadian Food and Inspection Agency took six months to respond to an access to information request for data about farmed salmon that had been rejected after testing.

EXECUTIVE SUMMARY

Salmon farming in British Columbia and around the world has often made headlines. Disease outbreaks, elevated PCB levels, escaped fish, financial woes, First Nations protests, sea lice outbreaks, and the use of antibiotics are just a few of the issues that stalk this controversial industry. Some tout the salmon farming industry as an economic savior: others as an environmental time bomb. The fish farming industry continues to expand and consolidate, yet the corporations at the helm of this change remain relatively unknown.

Diminishing Returns is an in-depth investigation of the five largest multinational companies that dominate the salmon farming industry in British Columbia (B.C.). To truly understand the issue of salmon farming and its role in our communities, we must take a look at the structures, histories and track records of the companies that have come to farm B.C.'s public waters.

Corporate profiles of the Big Five

Fifteen years ago there were 50 fish farm companies in British Columbia. Today, that number has dropped to 12, but just five multinationals operate 80% of B.C.'s marine salmon farm sites as well as scores of salmon farms around the world.

These five multinationals (the Big Five) are highly vertically-integrated. They control production of everything from salmon eggs and fish feed to processing and packaging. One corporation even owns the grocery stores where its farmed salmon are sold. Outside of their salmon farm holdings, these companies own a wide variety of assets, ranging from the trademark on Wonderbread to fleets of chemical transport tankers.

The twin threats of low salmon prices and fish disease

In 2002 and 2003, four of the Big Five lost money on salmon farming operations – a combined half a billion dollars. These four, Stolt Sea Farm Inc., Heritage Salmon Ltd., Pan Fish ASA, and Cermaq ASA, all cited disease outbreaks as a significant factor in their losses. The fifth, Nutreco Holdings N.V., reported a 33% decrease in profits between 2002 and 2003, partly due to declining feed sales in B.C. – a result of a drop in farmed salmon production due to coast-wide outbreaks of the IHN virus and other deadly diseases.

Track records in B.C. and around the world

Drugs

The use of antibiotics on B.C. salmon farms is increasing. In 2003, more than 25,000 kilograms of antibiotics were used on B.C. salmon farms. The total amount

of antibiotics used in the B.C. industry in that year was twice what it was in 1995. When measured per tonne, antibiotic use in 2003 was the highest it has been since 1998. In 2003, the B.C. salmon farming industry spent \$5 million on therapeutants, an increase from \$4.5 million the previous year.

Government documents reveal that 170 million farmed salmon in Canada were treated with the emergency sea lice drug Slice between 1999 and 2003. Widespread use of Slice in Canada indicates the extent of the problem with sea lice – a parasite implicated in the crash of wild pink salmon runs (three million fish) in 2002. Despite the extensive use of Slice and other medications on B.C. salmon farms, only an extremely small percentage of fish are tested for drug residues. Each year, approximately 500 salmon are tested for Slice residues across Canada.

Jobs

Despite promises by government and industry representatives, there are currently fewer jobs in B.C. aquaculture than there were in 2002. This is consistent with a global trend. Aquaculture companies are also paying less in salaries per tonne of production than they have done in the past.

Regulations

The price of violating laws and regulations that protect wild fish and the environment remains extremely low in B.C. – from \$150 - \$1000 for most infractions. In 2003, three of the Big Five were issued tickets for provincial regulatory violations. In addition to these relatively inexpensive tickets, the companies have been involved in more significant disputes. Cermaq, which was fined more than any other company in B.C. in 2002, was also fined \$90,000 over six years for fish oil spills, in one case resulting in harm to wild salmon spawning habitat.

Lawsuits

Salmon farm corporations have been the target of lawsuits around the world. Each one of the Big Five, with the exception of Cermaq, has been taken to court by various B.C. First Nations seeking damages for destruction of wild resources or for failure to consult. Internationally, Stolt and Heritage recently faced a lawsuit brought by the U.S. Public Interest Research Group for discharging pollutants into the ocean in Maine, and Stolt-Nielsen faces a criminal investigation in the U.S. for alleged price fixing and collusion in the liquid chemical transportation business.

First Nations, worker strikes and public protests

First Nations' positions on salmon farming range from zero tolerance to multi-year partnerships with the industry. First Nations and other protests against the operations of the Big Five have occurred in B.C., and the controversies don't stop in our backyard. Alleged labour and safety violations in Chile, accusations of union busting, and public protests in other countries also colour this industry's short history.

Escaped fish

Escaped salmon continue to be a problem in B.C. and internationally. New science points to the serious impacts of escaped fish breeding with local wild populations, particularly when local runs are already affected by other factors. Worldwide, escapes number in the hundreds of thousands every year; in fact, the largest reported escape on record occurred in Chile in 2004 when one million fish swam free of their pens.

Government support for the Big Five

In 2002, the B.C. Liberal government lifted a moratorium on new salmon farms, permitting expansion in areas that are currently fish farm-free and important to wild salmon. The Liberal government also enacted Bill 48, which makes it more difficult for communities to oppose applications for new salmon farming tenures, and they gave back \$2.3 million in rents and fines to the salmon farming industry. The Liberal Party and some of its key ministers accepted thousands of dollars in campaign contributions from the Big Five.

Provincial and federal governments have given more than \$110 million to the salmon farming industry in subsidies and research dollars since 1997. This includes money given directly to the B.C. Salmon Farmers Association and the Canadian Aquaculture Industry Alliance, two main groups representing the salmon farming industry in Canada.

The public relations connection

When sales of farmed salmon dropped in 2003, some industry observers blamed widespread negative publicity about farmed salmon. In response, salmon farming companies began dishing out money for new public relations initiatives. The B.C. Salmon Farmers Association hired Hill & Knowlton, a large firm that also handled public relations for the Three Mile Island nuclear plant accident and the Tobacco Institute. Promotional groups like Salmon of the Americas and Positive Aquaculture Awareness have also cropped up; in large part, these organizations are spearheaded and directed by representatives of the Big Five.

Recommendations

Based on the information in this report, as well as other research, Raincoast recommends significant changes to the way salmon farming is conducted in British Columbia. We are calling for an immediate moratorium on all open net cage salmon farm expansion in B.C. We urge government and industry to support and promote closed-tank solutions, so as to stop the harmful spread of disease and protect valuable wild species and the environment. There must also be stiffer fines for regulatory offenses, full disclosure of the use of medication on salmon farms, and an immediate investigation into the extensive use of the sea lice emergency drug Slice – a medication suspected of having significant impacts on wild species.

Fifteen years ago there were 50 fish farm companies in British Columbia. Today, that number has dropped to 12, but just five multinationals operate 80 percent of B.C.'s marine salmon farm sites.

INTRODUCTION

Salmon farmer. The name conjures up an image of a hard-working farmer in water-proof gaiters tending a pen of fish, much the way other farmers harvest grain crops or milk cows. But just as land-based family farms worldwide are gradually being taken over by factory farms, so has fish cultivation increasingly become the domain of multinational corporations. Like the poultry, beef and pork industries, salmon farming is a high-stakes global game of vertical integration and economies of scale.

Fifteen years ago there were 50 fish farm companies in British Columbia. Today, that number has dropped to 12², but just five multinationals operate 80 percent of B.C.'s marine salmon farm sites (104 of 129 sites.) B.C.'s remaining 25 marine salmon farming tenures are dispersed among 10 other companies, including large corporations such as Norway's Grieg Seafoods (six tenures) and small companies like Totem Oysters, one of B.C.'s few remaining family-owned fish farms (one tenure).³

The same five multinationals that dominate B.C.'s salmon farming industry, collectively termed the Big Five, operate scores of salmon farms in New Brunswick, Chile, Norway, Scotland and the United States. They also own hatcheries, fish feed factories, salmon packing plants, boats and trucks. They have sales offices and distribution networks all over the world. Some companies also farm species such as cod, halibut, bluefin tuna, barramundi and turbot. And that's just a small chunk of

² B.C. Ministry of Agriculture, Food and Fisheries website.
³ B.C. Ministry of Agriculture, Food and Fisheries, "B.C. Salmon Aquaculture Industry, Marine Salmon Farm Sites - July 2004." Land and Water B.C. Public Tenure List, March 2003. Some tenures currently hold more than one farm. The B.C. Ministry of Agriculture, Food and Fisheries is in the process of changing the salmon-farm tracking system to ensure there is only one farm on each tenure.

The Big Five corporations dominating B.C.'s salmon farming industry



Stolt Sea Farm



Pan Fish ASA



Nutreco
Holdings N.V.



Heritage
Salmon Ltd.



Cermaq
ASA

a much bigger corporate fish. Collectively, the Big Five own industrial pork and poultry operations, upscale clothing stores, supermarket chains, cake and cookie companies, milling companies, grain-trading companies, an ocean tanker fleet, and even have a stake in offshore oil and gas extraction. We eat their strawberry yogurt, buy salad dressing made with edible oils they transport, shop at their stores, and roast Thanksgiving turkeys they raise. Yet we really know very little about them.

Stolt Sea Farm, a subsidiary of the Norwegian conglomerate Stolt-Nielsen, holds 27 B.C. salmon farming tenures – more than any other company. Most are in the scenic Broughton Archipelago, where sea lice infestations associated with salmon farms have been linked to a precipitous drop in wild pink salmon. Stolt-Nielsen operates one of the world’s biggest ship tanker industries. It is also a major international player in the offshore oil and gas industry. Less known is that the company, according to The Wall Street Journal, faces a criminal investigation in the United States for alleged price fixing and collusion in the liquid chemical transportation business.

Pan Fish ASA, a Norwegian multinational, has 25 marine salmon tenures in B.C. Until recently the company operated in Canada under the name Omega Salmon Group. Now it calls itself Pan Fish Canada Inc. Pan Fish is at the forefront of a controversial drive to extend salmon farms into the north coast, home of the Great Bear Rainforest and its prodigious wild salmon runs. Yet Pan Fish almost went bankrupt in 2002, and its long-term financial future remains uncertain.

Nutreco Holding N.V., based in the Netherlands, is the world’s largest salmon farming company. Nutreco operates its 21 salmon tenures in British Columbia under the name Marine Harvest. Like Pan Fish, Nutreco seeks to expand northward. With significant international investments in the pork and poultry business, fish farming is only a small part of Nutreco’s global food business. But avian flu outbreaks in Europe and low salmon prices have caused Nutreco to lose money.

In September 2004, further consolidating B.C.’s salmon farming industry in the hands of a few corporations, Nutreco and Stolt announced plans to cut costs by merging salmon farming operations into a global giant. The new company, to be called Marine Harvest, will control 20 percent of the world’s farmed salmon production when the corporate marriage is finalized sometime in 2005. In British Columbia, the reincarnated Marine Harvest will lock-up almost one-half of annual B.C. farmed salmon production, or about 40,000 metric tonnes.⁴ The new business will operate more than one-third of all of B.C.’s salmon farming tenures (47 out of 129).⁵

Heritage Salmon Ltd. is the only Canadian multinational among the five that dominate British Columbia’s aquaculture industry. With 16 B.C. salmon farming tenures, Heritage is part of George Weston Ltd., the international conglomerate that owns Loblaws and other supermarkets, including the Real Canadian Superstore. Heritage made headlines in the U.S. state of Maine in 2003 when it settled a \$375,000

⁴ The B.C. Ministry of Agriculture, Food and Fisheries says B.C. produced about 85,000 tonnes of farmed salmon in 2002; Intrafish reports that together Nutreco and Stolt account for more than 40,000 metric tonnes of annual production in B.C.: “Dekker, Stolt-Nielsen cavalier about obstacles facing new firm,” Intrafish, 14 September 2004.

⁵ Nutreco will hold 75 percent of the world’s largest aquaculture company, while Stolt will hold 25 percent.

lawsuit for polluting the ocean and was ordered to stop using salmon feed containing antibiotics.

⁶ See B.C. Ministry of Agriculture, Food and Fisheries and B.C. Ministry of Water, Land and Air Protection, "3rd Annual Inspection Report on Marine Finfish Aquaculture Sites," August 2003.

Cermaq ASA, another Norwegian corporation, has 15 salmon farming tenures in British Columbia. Its Canadian arm used to be known as EWOS Canada Ltd., or Pacific National Aquaculture. It is now called Mainstream Canada. Most of Mainstream's tenures are in Clayoquot Sound, a UNESCO Biosphere Reserve on the west coast of Vancouver Island. In 2003, more B.C. court fines were imposed on Cermaq than on any other other salmon farming company.⁶ Cermaq was also fined \$80,000 in 2000 for two fish oil spills in B.C., including one that harmed wild salmon habitat. In Chile, Cermaq has been fined for labour and safety violations at its salmon farm operations.

In September 2002, the B.C. Liberal government lifted a seven-year moratorium on new salmon farms in the province. The B.C. Salmon Farmers Association, representing the Big Five as well as smaller companies, announced that a proposed 10 new salmon farms a year would double the industry's footprint within a decade. The B.C. government, for its part, declared that expansion of the aquaculture industry would create as many as 12,000 new jobs during that decade, many in salmon farming. The government claimed that ending the moratorium would assist beleaguered rural communities, augment provincial coffers and have a negligible impact on the environment. "For the most part, fish farm waste is no different than the waste from a school of fish," stated B.C.'s fisheries minister John van Dongen.

Two years later, it is time to take stock. Since the impact of fish farms on the natural environment and the safety of consuming farmed salmon have been well covered in recent studies, this Raincoast report focuses on a series of other critical concerns. Is salmon farming in B.C. a profitable business? Have companies created the number of jobs they promised? Are farmed salmon stocks healthy? Is the use of medication on B.C. salmon farms truly on the wane? Do all of the multinationals that dominate B.C.'s salmon farming industry have impeccable track records when it comes to following laws and regulations? Would B.C.'s salmon farming industry be viable without the infusion of millions of dollars from the provincial and federal governments? Is the recent public relations push to promote and defend salmon farming independent of the global multinationals dominating the industry?

The answer to these questions, we discovered, is largely no. Most notably, widespread disease on B.C. salmon farms has forced the Big Five to scale back production, cut jobs and increase the amount of money they spend on medication over the past several years. Significantly, the sea lice medication Slice, approved in Canada for emergency use only, was used to treat 37 million Canadian farmed salmon in 2003, and 47 million in 2002. Compounding corporate financial problems caused by sea lice and other diseases, an oversupply of farmed salmon on the world market,

⁷ “Salmon farm opponents considered investment concern,” Intrafish, 5 January 2004. LaKarnafeaux’s firm, J.M. Dutton & Associates, continues to rate Vita Food Products, a provider of smoked salmon, a “strong buy”, with LaKarnafeaux saying that negative publicity about the farmed salmon industry may have peaked.

⁸ Notably, Cermaq announced in September 2004 that it has postponed its initial stock offering, or IPO (Initial Public Offering), until 2005, citing uncertainty created by on-going talks between Norway and the European Union over the terms of Norwegian salmon exports.

augmented by the emergence of Chile as a cheap producer, has ratcheted down prices for farmed salmon in the past few years. To parlay losses into profits the multinationals are reaching out for financial assistance from federal and provincial governments, and they are counting on a shrewd and costly public relations strategy to elicit more public support for both themselves and their farmed salmon. From 1998 through 2003, Canada’s federal and provincial governments gave more than \$100 million to the salmon farming industry and its proponents.

Internationally, farmed salmon companies face lawsuits and fines and are mired in various other unflattering controversies. Growing global opposition to salmon farming has prompted at least one U.S. investment analyst, Gerald LaKarnafeaux, to caution that farmed salmon companies may be a questionable investment.⁷ Low salmon prices and on-going trade disputes have made the international investment community hesitant about buying fish farming stocks.⁸

As the salmon farming industry steps up its high-powered public relations campaign, this report reveals a wealth of new information about the industry. It scrutinizes the industry’s assets and debits, victories and setbacks. Focusing on British Columbia, we investigate five of the multinational corporations that control an increasing chunk of the fast-growing global fish farming industry. This report examines the corporations’ worldwide track records and probes their structure and finances. It details the generous assistance global salmon farming companies have received from various levels of government in Canada and sheds new critical light on some of their most common and alluring claims. We hope this document will become an almanac for conservationists, consumers, First Nations groups, journalists, researchers, politicians and fish farm employees the world over.

1

COMPANY PROFILES OF THE BIG FIVE



NIELS G. STOLT-NIELSEN
CEO, Stolt-Nielsen SA
and Stolt Sea Farm Inc.



ATLE EIDE
CEO, Pan Fish ASA



WOUT DEKKER
CEO, Nutreco
(Marine Harvest)



W. GALEN WESTON
Chair and President,
George Weston Ltd.



GEIR ISAKSEN
CEO, Cermaq

A Norwegian conglomerate involved in everything from the transportation industry to offshore oil and gas exploration, Stolt-Nielsen makes most of its profits from the ocean.

Stolt Sea Farm

The 27 salmon farm tenures Stolt Sea Farm operates in B.C. are only small fry for parent corporation Stolt-Nielsen SA. A Norwegian conglomerate involved in everything from the transportation industry to offshore oil and gas exploration, Stolt-Nielsen makes most of its profits from the ocean. As one business observer noted of Stolt's penchant for seawater, the company "does everything but walk on it." The Stolt-Nielsen Transportation Group, which employs more than 4,000 people worldwide, is a leading ocean carrier of bulk liquids. The 132 parcel tankers it owns or operates transport petrochemicals, fats, acids and edible oils used to make everything from computer plastic shells to shaving cream and salad dressing. Stolt Offshore, in which Stolt-Nielsen until recently owned a majority interest,⁹ is a leading contractor for the offshore oil and gas industry, operating in places as far-flung as the Gulf of Mexico, the North Sea and West Africa. Stolt Offshore specializes in offshore and subsea engineering, flowline and pipeline lay, and construction, inspection and maintenance services.

⁹ As of May 31, 2004, Stolt-Nielsen no longer had a controlling interest in Stolt Offshore, but had reduced its economic and voting interest to 41.7 percent.

Stolt's fish farms are found in Canada, the United States, Chile, Norway, the United Kingdom, Spain and Australia. The farms raise a variety of fish species including sturgeon for meat and caviar. Atlantic salmon, salmon trout and coho represent the whale's share of Stolt's fish-farming income, but species such as tuna and turbot are increasingly profitable. Stolt Sea Farm has a southern bluefin tuna ranching operation and production site in Australia. It owns the world's largest turbot farm in Spain

The Big Five in Review

Company	BC Subsidiary	Tenures Held in BC	Rank in Global Production	Home Country
Stolt Sea Farm	Stolt Sea Farm	27	4	Norway
Pan Fish	Pan Fish Canada (formerly Omega Salmon Group)	25	2	Norway
Nutreco	Marine Harvest	21	1	Netherlands
Heritage	Heritage	16	11	Canada
Cermaq	Mainstream/EWOS	15	5	Norway

Jacob Stolt-Nielsen, the seawater magnate who founded the company, is one of Norway's richest people.

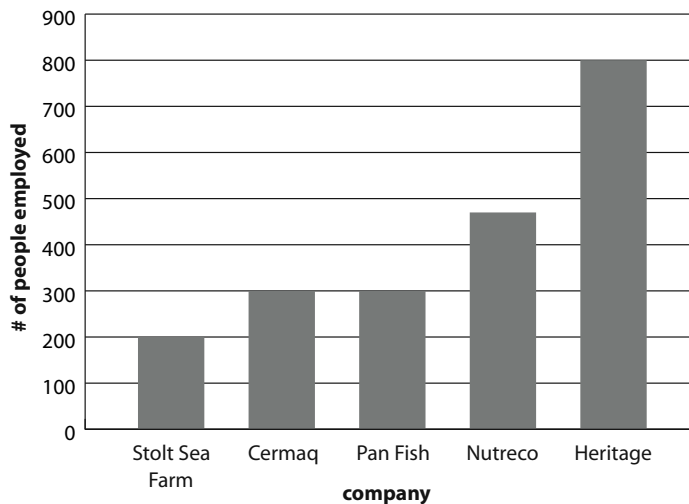
and also farms turbot in France, Portugal and Norway. The company raises halibut in Norway and tilapia in Canada. Stolt Sea Farm has seven sales offices in North America, three in Europe and five in the Asia-Pacific. Overall, Stolt's fish farm operations are the globe's fourth largest, with 23 offices and 2,500 employees worldwide.

Stolt-Nielsen is registered in Luxembourg and trades on the Nasdaq and Oslo stock markets. All told, Stolt-Nielsen had US\$2.8 billion in sales in 2002. The company is controlled by the Stolt-Nielsen family, which has almost 60 percent of voting securities.¹⁰ Jacob Stolt-Nielsen, the seawater magnate who founded the company, is one of Norway's richest people. His personal wealth is thought to be NOK 2.74 billion. "No one cheats when Mama is at the cash register," Jacob Stolt-Nielsen once wrote, claiming that being a family-run company differentiated Stolt from other corporations run by managers with sparse "moral fibre". He recently stepped down as the company's captain, passing the helm to son Niels Gregers Stolt-Nielsen, a company director and current chairman of Stolt Sea Farm. Brother Jacob Jr., another Stolt-Nielsen director, is CEO of SeaSupplier Ltd., a subsidiary of Stolt-Nielsen. SeaSupplier provides procurement software and professional services for the marine industry.

As of April 2004, Stolt Sea Farm employed approximately 200 people in Canada.

¹⁰ United States Securities and Exchange Commission, Form 20-F/A, filed by Stolt-Nielsen SA for the fiscal year ending 30 November 2002.

Recent employment numbers in Canada by company



On April 1, 2004, Pan Fish shares on the Oslo stock exchange dropped to an all-time low – less than one cent.

Pan Fish
(Pan Fish Canada,
formerly the
Omega Salmon
Group)

Pan Fish encourages its customers to think of it “as the provider of the pure and natural taste of products from the blue pasture.” But in recent years that blue pasture has metamorphosed into a sea of red ink.

At the dawn of the millennium this Norwegian corporation was the second largest salmon farming enterprise in the world. Former Pan Fish CEO Arne Nore called 2000 “a golden year” for salmon farming. A 2001 Pan Fish press release trumpeted “Best half-year ever!” However, a self-described major financial crisis in 2002 and 2003 saw the company’s share price plunge from nearly \$15 in 2000 to about a nickel at the close of 2003, and Pan Fish faced a near-billion-kroner bankruptcy. The company was unable to meet its loans, CEO Arne Nore resigned, major shareholders sold their stock, Pan Fish’s administration building in Norway was sold, and many employees were laid off – especially in British Columbia. “Never has a company in the Norwegian fishing industry lost so much money in one year,” noted the industry publication Intrafish.

Troubles with Pan Fish’s B.C. operations began in 2002. “Low product quality and outbreaks of disease leading to extensive fish mortality in Pan Fish’s Canadian fish farming operations resulted in substantial negative earnings,” the company announced that year. Analysts suggested Pan Fish’s Canadian predicament was caused by rash growth: the consequences, they said, were “severe disease attacks, emergency slaughtering of much of the biomass, barren areas, and nasty write-downs.”¹¹

Rescuing Pan Fish from financial ruin were two Norwegian banks, Nordea Bank Norge and Den Norske Bank. As the company’s principal creditors, together they now control 65 percent of the share capital. Yet despite a massive restructuring in 2003 that saw Pan Fish shed major acquisitions, the company struggled to stay afloat into 2004. “It’s true that the situation is critical,” admitted new Pan Fish CEO Atle Eide in August 2003. In the fourth quarter of 2003 Pan Fish remained in the red, posting an operating loss of \$9.2 million. On April 1, 2004, company shares on the Oslo stock exchange dropped to an all-time low – less than one cent. Pan Fish does not expect to turn a consistent profit again until 2005 – and that is based on the questionable assumption that worldwide salmon prices will rebound over the long-term.¹²

In addition to Pan Fish’s financial distress, the company has also recently faced fines, investigations, a lawsuit and global protests organized by First Nations and environmental groups.

Pan Fish employs about 300 people in British Columbia.

¹¹ Pan Fish Annual Report 2002.

¹² Pan Fish announced on June 29, 2004, that the “final touches” had been made to its refinancing. The revamped company wants to become the global salmon producer with the “lowest production costs.” In August 2004, Pan Fish released its second quarter results. For the first time in three years, the company showed an operating profit and a profit before tax.

Nutreco is the world's largest producer and processor of farmed salmon.

Nutreco
(Marine Harvest)

Nutreco is the world's largest producer and processor of farmed salmon. This Dutch multinational sells everything from whole fish to "ready to heat, ready to eat" dishes. Nutreco also pioneers the farming of fish species such as cod and barramundi. But fish farming is only the company's third most important enterprise – and salmon products account for only 15 percent of the company's overall sales. Nutreco is primarily a giant in the global pork and poultry industry and a leading supplier of feed for farmed fish, farm animals and family pets. Ostriches, rabbits, ducks, horses, dogs and salmon all chow down on feed produced by Nutreco-owned companies. Nutreco has swallowed 40 percent of the world market for fish feed alone. In 2002, with almost US\$ 4 billion in sales and a net income of US \$88 million, Nutreco grew by more than 17 percent.

The company operates in 22 countries on five continents and has 13,442 employees. Its fish feed business – Skretting – is Canada's largest fish feed manufacturer, with facilities in Vancouver, B.C., and St. Andrews, New Brunswick. Nutreco also has two salmon breeding facilities, three pig and poultry breeding facilities and a research and development centre in Canada.

In the United States, Nutreco sells more farmed salmon than any of its competitors. It is the United Kingdom's leading farmed salmon producer, with 41 sea farms and nine freshwater farms in Scotland and 11 fish farms in Ireland. Nutreco is also the largest exporter of farmed salmon in Chile, where it owns 30 sea farms and seven freshwater farms. In Norway, Nutreco owns 80 sea farms and 15 freshwater farms.

In the decade since its formation in 1994, Nutreco has been busy gobbling up companies around the world. In May 2003, for instance, the Canadian swine genetics company Genex merged operations with Nutreco's swine genetics company Hypor. Nutreco's expansion continued in 2004 with the purchase of an established halibut hatchery in Norway. The purchase means that Nutreco is now involved in all stages of halibut farming in Norway – from breeding to marketing.

In recent years, Nutreco has prided itself on a shift towards "socially responsible" and "environmentally responsible" production. Nutreco asserts that it "should be judged on more than its financial performance." In the past three years, Nutreco has published various reports providing detailed analyses of the company's social and environmental goals and its accomplishments and failings. The 2002 report discloses information about everything from antibiotic use on Nutreco fish farms to the lawsuits it faces – this at a time when most of the company's salmon farming competitors remain tight-lipped about their track records in these areas.

About four percent of Nutreco's employees – some 470 people – work in Canada. Approximately 200 of these, according to 2001 data, work for Marine Harvest on Vancouver Island.

Galen Weston's personal fortune is estimated by Canadian Business Magazine to be \$9.3 billion...Canada's second richest person after media mogul Ken Thomson.

Heritage Salmon

George Weston Ltd., an international conglomerate best known for its flagship supermarket chain Loblaws,¹³ operates 16 salmon farms in B.C. under the name of Heritage Salmon. Heritage has another three-dozen fish farm operations in New Brunswick, Maine and Chile. But fish farms are really just a splash in the retailing ocean for this family-run corporation that owns upscale designer clothes store Holt Renfrew and the posh British department store Selfridges, which it bought in 2002 for \$1.36 billion.

Since founder George Weston started the company in 1882 after purchasing a \$200 bread route from his boss, Weston's food processing and distribution operations have grown to encompass a slew of companies in Canada, Britain, the United States and Australia. In 2001, for example, Weston bought Bestfoods Baking from Unilever for \$2.4 billion. In 2002, the company reported \$17 billion in sales and a \$550 million profit. It has 143,000 employees worldwide.

Weston's Interbake Foods is North America's third largest cookie and cracker manufacturer, stocking grocery shelves with the likes of Chocolate Devil's Food and Caramel dipped shortcake. The Weston Fruitcake Company bakes pecan-topped cakes stuffed with rum and fruit. Yet another Weston company, Neilson Dairy, supplies Loblaws and other retailers with products that include Udderly Cool™ cappuccino mocha-flavoured milk, as well as more standard dairy fare such as milk, cheese, yogurt, sour cream, whipping cream and ice cream.

Galen Weston, grandson of the company's founder and its current chairman and president has a personal fortune estimated by Canadian Business Magazine to be \$9.3 billion. This makes Weston Canada's second richest person after media mogul Ken Thomson. Galen Weston and his family are also 82nd on the World's Richest People list. Through a private family holding company, Wittington Investments, Galen Weston owns a stake in a number of other companies. This includes a 54-percent interest in Associated British Foods, which in turn owns upscale British grocer Fortnum & Mason and British Sugar. Associated British Foods is the biggest family-controlled company on the London Stock Exchange, with annual sales of \$7 billion.¹⁴

With its corporate fingers in so many promising pies, George Weston has tried to sell its struggling fisheries segment. When George Weston bought Bestfoods Baking in 2001, the company said it planned to concentrate on baked goods. It put its farmed salmon operations up for sale for a reported US \$100 million. Almost a year later, with no acceptable buyer, Weston pulled Heritage off the market.

Heritage Salmon employs 800 people across Canada.¹⁵

¹³ The company also operates Zehrs, No Frills, Provigo, Real Canadian Superstore and Atlantic Superstore.

¹⁴ Six of Weston's cousins, on his father's side, work for ABF. Cousin George Weston is deputy chairman of ABF. Cousin Garth is chief of the company's Ryvita Crispbread subsidiary. Two sisters, Jana and Cate, work at Fortnum & Mason while a third sister, Sophia, works with the family's charitable foundation.

¹⁵ Betty Cormier, Heritage Salmon Human Resources Department, pers. comm., 12 May 2004.

Cermaq, an anomaly in the prevailing global economic climate of private enterprise, is 80-per-cent owned by the Norwegian government.

Cermaq (Mainstream)

Cermaq's 15 B.C. fish farms are found mainly in what it bills as the "pristine" waters of Clayoquot Sound near Tofino on Vancouver Island. Established in 1995, Norway's Cermaq Group didn't buy most of its fish farms until 2000. With major holdings in Chile, it has rapidly grown into the world's fifth largest producer of farmed fish. Surprisingly, Cermaq does not own any salmon farms in its home state of Norway, although it is said to be looking to purchase fish farms in its natal land.

Cermaq, an anomaly in the prevailing global economic climate of private enterprise, is 80-per-cent owned by the Norwegian government.¹⁶ Private investors hold the remaining one-fifth of Cermaq shares. State ownership, however, has not helped Cermaq escape the regulatory controversies that have also dogged its private competitors.

The name Cermaq is an acronym reflecting the company's two areas of investment – cereals and marine aquaculture. In addition to the parent company, the Cermaq Group has 11 operating subsidiaries and six associated companies. It also has holding companies and dormant companies. The company turned a loss of \$15.6 million in 2002 (before taxes and write-downs) into a \$41 million profit in 2003. Canada represents about 10 percent of the company's revenues, compared to Chile (25 percent) and Norway (58 percent).

Cermaq's non fish-farm holdings include a 100 percent interest in Vaksdal Industrier, which owns two power stations and shares in a number of companies. It has an 80 percent interest in Norsk Lossekontroll, a company that carries out control services during loading and unloading of grain and other feed products in Norway, and significant holdings in companies that own grain silos. Cermaq owns 50 percent of Unikorn (formerly Statkorn), one of Norway's two main grain suppliers, and 49 percent of Fiskå Mølle, a company that produces and sells grain feed for domestic animals and trades in fertilizer and other products used in agriculture. Notably, Cermaq owns 35 percent of Hordafôr, which refines by-products from salmon and trout harvesting to produce oil and protein concentrate. Cermaq's fully owned subsidiary EWOS is vying with Nutreco's Skretting company to become the world's largest fish feed provider.

Cermaq employs 2,600 people worldwide. About 300 are in Canada.

¹⁶ The government has said it will eventually reduce its share of Cermaq to 34 percent.

To achieve economies of scale and maximize profits, salmon farming multinationals must produce a large amount of fish and become involved in many aspects of fish farming.

Vertical integration

Vertical Integration

Supermarkets where the farmed salmon is sold

Sales and distribution offices

Trucks to transport the packaged salmon to stores

Smoking plants

Processing plants

Harvesting boats and equipment

Salmon farms and equipment

Boats to transport smolts to the farm

Feed Production

Trawlers to catch wild fish for salmon feed

Hatchery

Vertical integration in the salmon farming industry can be thought of much like a ladder. On the bottom rung are salmon eggs. At the very top is a farmed salmon fillet on ice in a supermarket glass case. In between are rungs that represent acquisitions in each step of the production process – a hatchery for salmon eggs, trawlers that catch herring and other small fish used for feed, manufacturing of fish feed, boats to transport smolts to fattening pens and to carry mature salmon to slaughter, the salmon farms themselves, processing plants, smoking plants, trucks to transport packaged salmon to stores, offices to coordinate sales and distribution, and even supermarkets in which smoked farmed salmon or fillets are sold.

The more farmed salmon a company churns out the cheaper it is to produce each fish. To achieve economies of scale and maximize profits, salmon farming multinationals must produce a large amount of fish and become involved in many aspects of fish farming. As such, the Big Five own hatcheries, boats, packaging plants, fish smoking plants and feed plants. They have marketing offices all over the globe. With so much corporate infrastructure in place, it is no wonder that these companies are delving into production of new, farmed species such as tuna and halibut. The potential for greater economies of scale – and even higher profits – is huge.

Cermaq describes itself as “one of the most vertically integrated salmon companies in the world.” From smolts in hatcheries to fish feed pellets, from filleting and packaging salmon to trucking and marine transportation, the company’s impressive holdings allows it to “control all steps of the production and post production of the salmon.” Cermaq also handles its own sales, marketing and salmon distribution. Cermaq’s wholly owned subsidiary EWOS has fish feed plants in four countries with a global market share of about 40 percent. EWOS and Nutreco’s division Skretting are the two largest fish feed companies in the world. Cermaq also owns a 31 percent interest in Senter for Fôrteknologi, a company engaged in research and development of technology for the feed concentrate industry.

In Canada, EWOS has a hatchery in Port Alberni, both a plant and head office in Surrey and a sales office in Campbell River on Vancouver Island’s east coast. Until disease curtailed production, Cermaq’s fish feed business was booming; in 2001 EWOS fish feed sales increased by 44 percent in Canada alone. The Surrey plant has an annual capacity of 85,000 tonnes.

EWOS Innovation, a Cermaq subsidiary with 64 employees, is a world leader in aquaculture research and development. It operates two research centres in Norway and one in Chile, all with seawater facilities for testing new products on fish. In Chile, EWOS Innovation has helped introduce treatments for salmon lice and trials of vari-

ous vaccinations for common salmon diseases. EWOS Innovation is also experimenting with alternative raw materials for fish feed that will be more environmentally sustainable and safer. Kjell Bjordal, managing director of EWOS Norway, explained why: “Much of the marine raw ingredient supply contains high levels of dioxins, PCB and other toxins.” Bjordal also points out that the practice of using four to six kilograms of high-value fish to produce one kilogram of salmon has got to stop: “Consumers do not consider this to be sustainable, nor is it.”¹⁷ Notably, the Royal Society for the Protection of Birds (Scotland) warns that industrial fisheries harvesting the North Sea for animal and fish feed threaten the survival of coastal species such as puffins, which depend on the small fish used in feed. Worldwide production of fish meal represented about 23 percent of the global fish catch between 1997 and 2000.

¹⁷ Perspective (EWOS publication). No. 3 2001.

Stolt owns 50 percent of the Chilean hatchery Landcatch Chile, and 37 percent of the Norwegian hatchery Midt-Finnmark Smolt. The company also owns four hatcheries on Vancouver Island and 50 percent of the Englewood Packing Company built in 1996 in Port McNeill. Currently it does not produce its own feed, buying it instead from Nutreco’s Skretting. However, Stolt has not ruled out starting its own feed production company, or investing in an existing feed company, said chairman Niels G. Stolt-Nielsen before the merger with Nutreco was announced.

Pan Fish, in addition to a new and controversial hatchery in Ocean Falls on B.C.’s central coast, owns the new \$185 million Alpha Processing Plant just north of Campbell River. The plant, which produces salmon fillets, steaks and portion packs, replaces Pan Fish’s Alpha Processing packing station in Port Hardy, destroyed by fire in 2003. Pan Fish also owns Orca Shipping Inc., a Campbell River-based company that transports salmon bound for slaughter. Until it almost ran aground financially, Pan Fish had a share in trawlers that caught herring and capelin used in salmon feed.

In 2003, Pan Fish opened the world’s largest salmon slaughter plant in western Norway, a huge facility designed to empty fish faster from sea cages and optimize production according to customer requirements. Pan Fish also owns two of the largest salmon smoking plants in Europe – one in France and the other in Denmark.

Marine Harvest (Nutreco) owns the Wolf Creek hatchery in Prince Rupert, the largest coldwater re-circulation hatchery in the world. The hatchery, which reuses 98 percent of its water, is capable of producing 3.4 million smolts a year. In 2002, Nutreco acquired the Netherlands-based company Selko, which specializes in organic acid additives to control microbial contamination in animal feed, pet foods and drinking water. That same year, Nutreco purchased a processing plant for salmon products in Chile.

Heritage Salmon is involved in all aspects of the farmed salmon industry. It grows Atlantic salmon smolts in hatcheries and, until recently, fattened them with its own feed formulations. The company harvests salmon, processes them and sells them in a variety of forms – everything from farmed fillets to lime cilantro salmon skewers and salmon pinwheels stuffed with lobster or crab. The finished products are displayed for sale in supermarkets owned by Heritage’s parent company, George Weston.

Future of vertical integration: chicken parts and oil rigs

In an intriguing twist to the concept of vertical integration, Nutreco's poultry operations could be used to offset fish feed costs. Chicken parts, including blood, carcasses and feathers, are common ingredients in farmed salmon feed. Chicken remains from slaughtering facilities are bought by companies like Vancouver's West Coast Reduction Ltd., which renders poultry and other animal remains into animal feed ingredients. Salmon feed companies, in turn, purchase combinations of rendered products, including whitefish meal and chicken remains, from West Coast and other rendering plants.¹⁸

¹⁸ Barry Glotman, president, West Coast Reduction Ltd., pers. comm., 16 April 2004.

Another future rung in the vertical integration ladder could be the practice of setting up fish farms on decommissioned oil rigs. The California-based Hubbs SeaWorld Research Institute recently announced plans to establish a fish and shell fish farm on a decommissioned oil platform 16 kilometers off the California coast. The aquaculture industry is lobbying for the U.S. Congress to pass a bill promoting open ocean aquaculture, the practice of fish farming five to 300 kilometers off the American coast.¹⁹ For Stolt-Nielsen, with its plethora of fish farms and subsidiary Stolt Offshore (which is involved in decommissioning offshore oilfields and pipelines), open ocean aquaculture could be a bonanza.

¹⁹ For details see "Open Ocean Aquaculture: The Future of U.S. Fish Farming?", U.S. Institute for Trade and Agricultural Policy, February 2004.

²⁰ "Marine Harvest: Larger farms way forward for Scottish salmon industry," Intrafish, 22 April 2004.

To achieve economies of scale and boost profits, salmon farming multinationals are looking at the prospect of increasing the size of individual farms worldwide. Nutreco's Marine Harvest operation in Scotland recently announced that it is working with Scottish regulators to augment the size of salmon farms. The premise is that the ailing Scottish salmon farming industry can become more competitive if farms are bigger. "There's no doubt, the bigger the farm, the more efficient it can be," said Graeme Deare, external affairs and communications director for Marine Harvest Scotland.²⁰

2

IN THE RED: FACING THE TWIN THREATS OF LOW PRICES AND FISH DISEASE



Wild pink salmon smolt heavily infected with sea lice.
Broughton Archipelago 2004.

All four companies suffering losses in 2002 cited disease outbreaks in British Columbia as a major contributing factor. The fifth, Nutreco, noted that disease on B.C. salmon farms had caused a decline of its fish feed sales on Canada's west coast.

Declining profits for the Big Five

The years 2001 and 2002, according to Cermaq, “can be considered the worst for global salmon farming since the start of the industry.”²¹ In 2002, four of the five multinationals that dominate B.C.'s salmon farming industry lost money on their global aquaculture operations. Only Nutreco made a profit, despite suffering a 21-percent decline in income from aquaculture operations.²²

All four companies suffering losses in 2002 cited disease outbreaks in British Columbia as a major contributing factor. The fifth, Nutreco, noted that disease on B.C. salmon farms had caused a decline of its fish feed sales on Canada's west coast. Stolt-Nielsen, reporting on its Stolt Sea Farm subsidiary, wrote: “In addition to weak pricing, the industry in North America has suffered severely in 2002 from extraordinary mortalities, caused by viral and parasitic infections.”

In 2003, while European prices remained low, the price for farmed salmon in North America began to rise, partly because producers scaled back production. Prices were still not high enough, though, to boost revenues for Heritage and the other salmon farming multinationals. “This market continues to suffer from a global oversupply situation, which has impacted salmon market prices,” wrote Heritage parent company George Weston in its 2003 annual report.²³ Heritage lost \$20 million in 2003, compared to \$26 million the year before. George Weston again cited disease issues, along with extremely cold weather on North America's east coast, as causes for these unsatisfactory results. The company's fisheries segment fared little better during the first two quarters of 2004, losing \$9 million in total, more than it lost during the same period in 2003. Weston blamed the loss on lower salmon prices, stating that “a return to profitability remains dependent upon price improvements.”

Stolt Sea Farm, which lost US\$20 million in 2002, reported a loss more than three times that amount in 2003 – US\$63 million. Fish farming was not the only blight on the company's books in 2003. Stolt Offshore was also a major money-loser, with a net loss of US\$418 million. Overall, Stolt-Nielsen SA reported a consolidated net loss of US\$316 million in 2003, compared to a consolidated net loss of almost US\$103 million for 2002. Heading into 2004 the company announced it had been able to reduce losses from fish farm operations significantly, but financial respite proved to be short-lived.²⁴ After a promising second quarter, Stolt Sea Farm posted a US\$11.6 million third quarter operating loss. The company blamed its disheartening results on low global salmon prices caused by overproduction, and disease problems in Canada and Norway.

²¹ Cermaq Annual Report 2002.

²² Nutreco's 2002 income from aquaculture operations decreased by 21.2 percent in 2002 to EUR 72.1 million (down from EUR 91.5 million in 2001).

²³ George Weston Annual Report 2003.

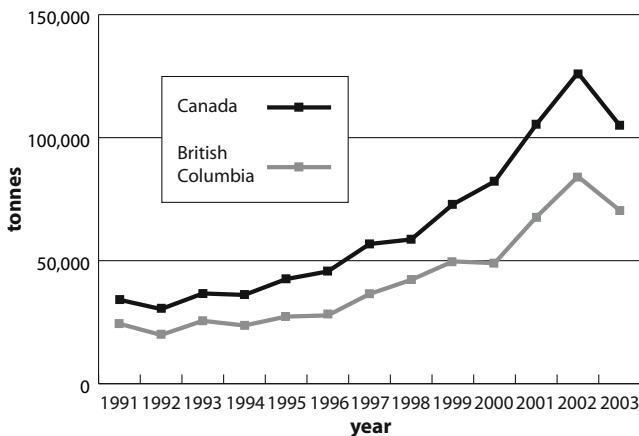
²⁴ In the second quarter of 2004 Stolt Sea Farm reported income from operations of US\$5.9 million, compared with a loss from operations of US\$8.1 million in the same quarter one year earlier. Overall, Stolt Sea Farm reported net income of US\$3.9 million for the second quarter of 2004 compared with a net loss of US\$50.4 million during the same quarter in 2003.

Cermaq’s fish farming companies lost \$33.8 million in 2002, but the loss declined to \$380,500 in 2003. Cermaq managing director Geir Isaksen announced that a ‘considerable portion’ of the problem originated in Canada’s troubled fish farms, although Isaksen also blamed its Scotland operations as well. The year 2004 began more auspiciously for Cermaq, with overall earnings showing improvement. Notably, however, the company said it made no sales at all in Canada during the first quarter of 2004 due to volume cutbacks and site following.

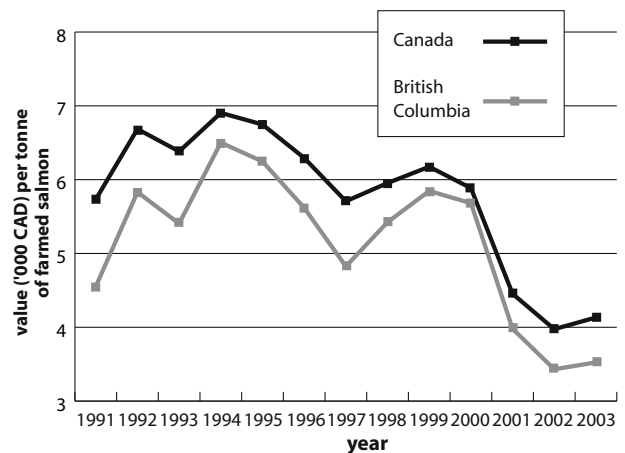
Pan Fish’s fish farming business reported an operating loss of \$175 million in 2002, followed by a loss of \$208.6 million in 2003. The company’s North American fish farming operations alone lost \$19.4 million in 2003. (All loss figures are before interest and taxes.) Pan Fish appeared to have turned the corner heading into 2004. For the first time in three years the company reported both an operating profit and a profit before taxes in the second quarter of 2004. Its operating profit before depreciation was \$16.9 million, compared with a negative operating profit before depreciation of \$49.8 million in the second quarter of 2003.

In 2003, Nutreco joined the ranks of salmon farming multinationals earning fewer profits, citing low European salmon prices as a contributing factor. Overall, Nutreco lost \$213.25 million and the \$64.6 million earned by its aquaculture sector represented a drop from the previous year. Like Stolt Sea Farm, the company rebounded during the first half of 2004, swinging to a net profit of \$25.2 million from a net loss of \$289.4 million the previous year. In October 2004, however, Nutreco issued a profit warning, forecasting that year-end figures would not equal its 2003 performance. Disappointing results from Canadian salmon operations and lower results from the company’s poultry and animal feed sectors were cited as major contributing factors.

Production of farmed salmon in B.C. and Canada from 1991 to 2003



Value of farmed salmon per tonne from 1991 to 2003 in Canada and B.C.



By the end of 2002, which turned out to be the worst year ever for IHNV, the virus had spread to salmon farms up and down B.C.'s coast. The virus claimed up to 70 percent of Pan Fish salmon in B.C.

Battling disease in B.C.

IHNV

The B.C. salmon farming industry's extended battle with a plethora of diseases began even before the provincial moratorium on new salmon farms was lifted. In March 2002, during a routine inspection of Cermaq salmon pens in Clayquot Sound, staff noticed that some fish appeared to be ill. The salmon were lethargic and seemed barely able to swim. Some floated belly-up. The veterinarian's diagnosis was worrisome: Infectious Hematopoietic Necrosis virus, or IHNV. This hemorrhaging disease can cause up to 100 percent mortality in salmon fry and leaves adult survivors with spinal deformities. The diagnosis was all the more troubling because the discovery of IHNV in nine Cermaq pens marked the first time the virus had ever been found in fish farms on the west side of Vancouver Island. IHNV had been a sporadic problem on the east side of Vancouver Island for some 10 years, where just two months earlier the virus had caused over one million fish to be destroyed at farms owned by Nutreco's Marine Harvest, Heritage Salmon and the Omega Salmon Group (Pan Fish).²⁵ Much later, the virus continued to wreak havoc in farmed salmon pens and on corporate finances. Pan Fish salmon farms near Port Hardy and Campbell River, for instance, were still only in "limited operation" during 2003 due to the IHNV virus.²⁶

Salmon farms, each with about one million fish, ensure the rapid spread of parasites and pathogens. Just as avian flu is deadly for industrial chicken farms, IHNV can quickly reach epidemic proportions in the seawater equivalent of factory farming. Currently there is no vaccine available for IHNV, although a field trial permit for an IHNV vaccine to be tested on Pan Fish farms in B.C. was approved by the Canadian Food Inspection Agency in the fall of 2003.

By the end of 2002, which turned out to be the worst year ever for IHNV, the virus had spread to salmon farms up and down B.C.'s coast. IHNV, declared Pan Fish, is "the major biological risk for the salmon farming industry in British Columbia." The virus claimed up to 70 percent of Pan Fish salmon in B.C.²⁷ At Marine Harvest's salmon farm in Klemtu on B.C.'s central coast, the virus affected 60,000 smolts.²⁸ For its part, Cermaq lost 700,000 fish in Clayquot Sound to IHNV. (This fish farm disaster only compounded Cermaq's problems, as a toxic algae bloom in August of 2001 killed about 70,000 market-ready fish, worth up to \$540,000. Another toxic algae bloom killed 814 metric tonnes of Chinook salmon at a Marine Harvest farm in Kyuquot Sound during the summer of 2004.) In a costly effort to stop IHNV's spread, Cermaq and other companies fallowed sites – removed fish and let pens sit idle – and young healthy salmon were dispatched to market prematurely.

Heritage Salmon ran into controversy in 2002 when environmental groups heard that fishing boats loaded with IHNV-exposed salmon from Heritage farms were headed for

²⁵ "Another IHN outbreak hits Vancouver Island farm," Intrafish, 28 March 2002.

²⁶ Pan Fish ASA Annual Report 2003.

²⁷ "New Pan Fish looking to the future," Intrafish, 23 August 2004.

²⁸ David Suzuki Foundation, "Disease outbreak confirmed at seven BC salmon farms," news release, 14 February 2002.

a processing plant adjacent to the Fraser River, site of Canada's largest wild salmon run. The plan to process potentially diseased salmon at the plant and deposit their offal into the Fraser River was stopped after the Sierra Legal Defence Fund obtained an injunction on behalf of the Musqueam Indian Band and the David Suzuki Foundation at a special late-night sitting of the B.C. Supreme Court. Instead, the fish were taken to a saltwater slaughter facility away from salmon migration routes.

Two years of “extraordinary mortalities”

Along with IHNV, 2002 presented west coast salmon farming companies with a number of other costly health problems: lepeophtheirus (sea lice), Kudoa, renibacterium salmoninarum, aeromonas salmonicida, and piscirickettsia salmonis, just to name a few. “The fish disease situation on the west coast of Canada has had a particularly serious effect on our company this year,” wrote Cermaq managing director Geir Isaksen in the company's 2002 annual report. Stolt-Nielsen reported that 2002 was a grim year of “extraordinary mortalities” for its North American operations. George Weston, the parent company of Heritage Salmon, noted that salmon diseases had dealt a blow to its unprofitable fisheries segment in 2002. Disease on B.C. salmon farms was also one of the main reasons given by Pan Fish for its dismal financial showing that year. Pan Fish remains tight-lipped about the extent of its losses in British Columbia, although some reports indicate they were extensive. According to the company's 2002 annual report, “Low product quality and outbreaks of disease leading to extensive fish mortality in Pan Fish's Canadian fish farming operations resulted in substantial negative earnings.”

And 2003 wasn't much better. Companies operating in Clayoquot Sound and the Broughton Archipelago lost 11 percent of their fish to IHNV from April through June. In August, September and October, IHNV was found in 13 fish groups in Clayoquot, the Broughton Archipelago, northern Vancouver Island and the north coast. Before the year was over, disease had forced Cermaq to slaughter 9,000 tonnes of B.C. salmon. Stolt, for its part, reported that disease “is a significant risk element facing companies in the aquaculture industry.”²⁹

Sea lice

Around the same time that IHNV resulted in the destruction of millions of farmed B.C. salmon in 2002, an infestation of sea lice struck Stolt and Heritage farms in the Broughton Archipelago. Sea lice are tiny parasites that attach themselves to marine fish and eat their flesh. As few as five lice can harm a young smolt,³⁰ and in large numbers sea lice can kill fish.

The Broughton infestations might have gone unnoticed outside the salmon farming community had the archipelago's annual pink salmon run taken place as usual that year. But very few pink salmon returned to spawn, prompting an investigation by Canada's Pacific Fisheries Resource Conservation Council. The council found that “sea lice were associated with the decline observed in the Broughton Archipelago,” noting that European research indicates that sea lice abundance can be associated with salmon farming. A study published in the Canadian Journal of Fisheries and

²⁹ United States Securities and Exchange Commission, Form 20-F/A filed by Stolt-Nielsen SA for the fiscal year ended 30 November 2003.

³⁰ Schering-Plough Animal Health, Slice Guidance Notes.

In 2003, sea lice infestations warranting the involvement of a veterinarian and treatment of diseased fish were reported, not just in the Broughton Archipelago but in each of the province's other six salmon farming subzones as well.

³¹ Alexandra Morton et al, "Sea lice (*Lepeophtheirus salmonis*) infection rates on juvenile pink (*Oncorhynchus gorboscha*) and chum (*Oncorhynchus keta*) salmon in the nearshore marine environment of British Columbia, Canada," *Canadian Journal of Fisheries and Aquatic Science*, 2004.

³² Reports for zones 3-1 and 3-2 (Sunshine Coast and Campbell River and Johnstone Strait) are combined, as are reports for zones 3-4 and 3-5 (North Vancouver Island and opposite Mainland and North Coast.)

³³ A fish group is defined as a "species or genetic grouping of a particular species of fish cultured in a private or public facility."

Aquatic Sciences found that 2002 juvenile wild salmon migrating near farms in the Broughton Archipelago had on average about 1,000 times more sea lice than wild salmon in coastal areas sampled without salmon farms.³¹

Following the pink salmon run's collapse, the provincial government ordered Stolt and Heritage, which operate virtually all of the Broughton's two dozen salmon farms, to fallow farms along the pink salmon migration route in 2003. In 2003, sea lice infestations warranting the involvement of a veterinarian and treatment of diseased fish were reported, not just in the Broughton Archipelago but in each of the province's other six salmon farming subzones as well.³² Three fish groups³³ in Clayoquot Sound/South Vancouver Island and five fish groups in Nootka, Kyuquot and Quatsino Sound were reported to have sea lice from July through September. Sea lice remained a concern in the Broughton Archipelago at the end of 2003, with four reports of infestations in different fish groups from October through December. At the year's close, the provincial government extended its Interim Sea Lice Monitoring project for 16 salmon farms in the Broughton to the entire salmon farming industry. The project aims to gather information on levels of sea lice on farms and work with the industry to minimize sea lice levels during wild salmon smolt migrations. The federal department of Fisheries and Oceans (DFO), the University of Victoria, the University of Alberta, Raincoast Research and Raincoast Conservation Society, among others, are in the process of conducting research into sea lice outbreaks on wild fish around salmon farms.

Kudoa

Salmon farming multinationals in B.C. also have to contend with Kudoa Thyrsites, or soft flesh disease, an ailment estimated to cost B.C.'s salmon farming industry \$30 to \$40 million a year. The disease is not detectable before fish are killed, but after any infected fish are slaughtered their muscular structure disintegrates. In extreme cases, salmon liquefy in three to six days. In 2002, Pan Fish alone lost \$17.6 million in sales revenue due to Kudoa.³⁴ Salmon farming companies, to ensure they don't send Kudoa-infected fish to their customers, routinely hold on to market-ready fish for several days.³⁵ In 2001, the industry publication Intrafish reported that up to 20 percent of farmed salmon in B.C. contained the Kudoa parasite, with infection rates on some farms reaching 50 percent. B.C. has the dubious honour of having the highest Kudoa infections rates in the world.

³⁴ "New Pan Fish looking to the future," *Intrafish*, 23 August 2004.

³⁵ "Kudoa: Saying it the way it is!" *Intrafish*, 4 November 2002.

FISH HEALTH DATABASE

To help track disease outbreaks, the B.C. Ministry of Agriculture, Food and Fisheries established a fish health database to monitor disease on salmon farms. (The database refers to disease as a “fish health event.”³⁶). The database includes voluntary information from eight of the 13 salmon farming companies in B.C., including the Big Five. Diseases reported by salmon farming companies in 2003 included not just IHNV and sea lice but also yersinia ruckeri infection, vibrio (listonella) angullarum infection, myxobacterial infection, aeromonas salmonicida infection, renibacterium salmoninarum infection, and viral haemorrhagic septicemia virus infection. Interestingly, the database does not track Kudoa or salmon deaths due to algal blooms.

The fish health database shows that sea lice and other diseases continued to plague salmon farming corporations during the first three months of 2004 – sea lice outbreaks were reported 12 times on salmon farms in the Broughton Archipelago, Clayoquot Sound and Kyuquot. There were no reports of IHNV in the first three months of 2004, although the virus had continued to hound farms throughout the previous summer. While neither the industry nor the government release Kudoa statistics, Pan Fish, in announcing its 2003 results, claimed that the company’s Kudoa problems in B.C. are “considered to be under control.”

³⁶ A fish health event is defined as: “an active infectious disease or suspected infectious disease event that triggers (1) veterinary involvement and (2) an action such as treatment, husbandry change, further investigation and/or (voluntary) reporting to a regulatory authority, where such action is intended to reduce or mitigate risk associated with that event. Key components of a Fish Health Event are the veterinary diagnosis, etiological agent (where applicable) and action after a veterinary opinion has been requested.” The database does not separate new “fish health events” from on-going “fish health events.” Six reported cases of IHNV, for instance, could mean six brand new cases or four on-going cases and two new cases.

Even though ISA was never detected on Canada's east coast before the advent of salmon farms, the federal government agreed to compensate Stolt, Heritage and other companies for their losses.

Disease outside B.C.

ISA

The Big Five have also been hard hit by disease in other jurisdictions. On North America's east coast, where Heritage and Stolt have farms in both New Brunswick and Maine, infectious salmon anaemia (ISA) has led to the destruction of millions of farmed salmon. ISA is a flu-like disease that, like IHNV, can cause hemorrhaging and lethargy. The disease was first recorded in cultured Atlantic salmon in Norway in 1984. The virus has been detected "only in cultured salmon in salt water. It has never been detected in wild adult fish in salt water or in hatchery or wild salmon in fresh water."³⁷

ISA first hit Canada in New Brunswick in 1997 where it was found on 21 salmon farms. Even though ISA was never detected on Canada's east coast before the advent of salmon farms, the federal government agreed to compensate Stolt, Heritage and other companies for their losses.

In 2000, the Pan Fish Norwegian subsidiary Seafood Farmers was ordered to slaughter 700,000 salmon after ISA was detected in one fish pen in an area with an abnormally strong current. Intrafish reported, "According to the district veterinarian, if infected fish were to escape, the consequences would be disastrous with the ensuing dispersal over a wide area."

In Maine in 2001, ISA was found at a Heritage site in Cobscook Bay, where many of the state's salmon farms are located. To prevent ISA from spreading, the government of Maine ordered companies to kill the bay's 2.5 million farmed salmon. "The bay was essentially disinfected, with every boat, net and piece of equipment cleaned, while the pens remained empty for several months."³⁸ That year Stolt wrote off \$2.26 million of live fish inventory. The company eventually received \$US 1.8 million in compensation from Maine authorities.³⁹

In May of 2002, the salmon pens of Cobscook Bay were restocked with two million fish, and Heritage pens remained ISA-free for more than a year. But in June 2003, Heritage once again discovered the virus. Although state officials ordered the company to destroy 28,000 fish,⁴⁰ within weeks the virus had spread to cages owned by Stolt, which had to slaughter 24,000 salmon.⁴¹ Intrafish reported that a total of 125,000 fish were eventually destroyed at the Heritage and Stolt sites.⁴²

In 2003, Pan Fish's Faroe Island (Denmark) fish farms experienced extensive outbreaks of the ISA salmon virus, and the company warned that it might have to write down a further \$19 million for its Faroe Island operations. ISA, wrote Pan Fish, "delayed the task of finding a long-term strategic solution to ensure that operations can continue and develop."

³⁷ "Issue: Status of New Brunswick's claim for federal assistance for the Salmon Anemia outbreak," briefing binder obtained from the Department of Fisheries and Oceans under the federal Access to Information Act.

³⁸ Misty Edgecomb, "Fish Farm Ordered to Kill Salmon," Bangor Daily News, 14 June 2003.

³⁹ Stolt-Nielsen Annual Report 2003.

⁴⁰ "Maine suffers new ISA outbreak," Intrafish, 16 June 2003.

⁴¹ "NB salmon producers breathe easy as ISA stays clear," Intrafish, 10 October 2003.

⁴² "ISA tough on Maine, NB salmon producers in 2003," Intrafish, 19 January 2004.

Other diseases

Two diseases that have taken a serious toll on farmed salmon in Scotland are bacterial kidney disease (BKD) and infectious pancreatic necrosis (IPN). Less deadly than IHNV, IPN is fatal mainly to smaller fish. In 2000, the Scottish Executive issued 27 “Designated Order Areas” for BKD and 109 for IPN. The Designated Order Areas mean that fish cannot be moved to or from a site without the permission of the government fish health and welfare team. Orders are only lifted after the site is harvested, fallowed and checked by fish health inspectors. In 2002, 22 Designated Order Areas were made for BKD and a notable 180 for IPN.⁴³ IPN continued to kill salmon on Scottish farms in 2004, with an estimated 82 percent of marine farms affected compared to 45 percent in 2000.

Cermaq, one of the companies that has lost fish to IPN in Scotland, has also had to cope with IPN outbreaks in its Chile operations. Summing up the health challenges at its salmon farms generally, Cermaq wrote: “In addition to IHN and IPN, fish farming activities are also faced with challenges from the diseases furunculosis (*aeromonas salmonicida*) and piscirickettsia salmonis (SRS) as well as sea lice and algal blooms.” Similarly, Heritage fish farms in Maine have been plagued by BKD, furunculosis, hitra, vibrios and sea lice. All of these diseases can kill fish.

Augmenting the serious impact of disease on the Big Five’s fish farming operations, salmon prices hit rock bottom in 2002 because of a huge surplus of farmed salmon on the world market. Much of the surplus salmon came from Chile, which is expected to surpass Norway in 2004 as the world’s largest producer of farmed salmon. In January 2004 alone, the volume of farmed salmon exports from Chile increased by 21 percent over the previous year.⁴⁴

Salmon farming multinationals are flocking to do business in Chile. Compared to other regions farming salmon, Chile has a fast-track approach to salmon farming permits and very low wages. A Chilean salmon farm worker makes an average of only \$3,200 a year, compared to the \$25,000 to \$35,000 annual wage for the average B.C. salmon farm employee (see chapter 3, Track Records: Jobs.) Chilean salmon farm employees also tend to work longer hours than their counterparts in other countries. For example, Nutreco’s Chilean employees have a 48-hour work week.⁴⁵

Four of the five biggest salmon farming multinationals in B.C. have significant Chilean operations. The only exception is Pan Fish. Nutreco is Chile’s largest salmon exporter, operating 30 Chilean sea farms and seven freshwater fish farms. Its fish feed division, Skretting, opened a US\$25 million plant in Chile in April 2004 at a ceremony attended by Chilean president Ricardo Lagos and Nutreco CEO Wout Dekker. In August 2004, Marine Harvest followed suit with an announcement that it would invest US \$10 million to expand a Chilean salmon processing plant.

Cermaq, Chile’s fourth-largest salmon exporter, employs 1,260 Chilean workers, four times as many as in Canada, and more than twice as many as in either Scotland or

⁴³ Email from Carol Herbertson, Fish Health and Welfare Team, Scottish Executive, 8 December 2003.

⁴⁴ “Salmon and trout exports from Chile rise in January,” Intrafish, 12 March 2004.

⁴⁵ Nutreco, “Social and Environment Report 2003.”

Reeling from low prices and competition from Chile

Norway. Stolt and Heritage have smaller operations in Chile than their competitors. Stolt, however, employs far more people in one single processing plant in Chile (750) than it does in all of Canada (200). Nutreco employs almost 3,000 people in Chilean aquaculture – close to one-quarter of the company’s worldwide employees – compared to 417 in Canada, including in non-aquaculture operations.

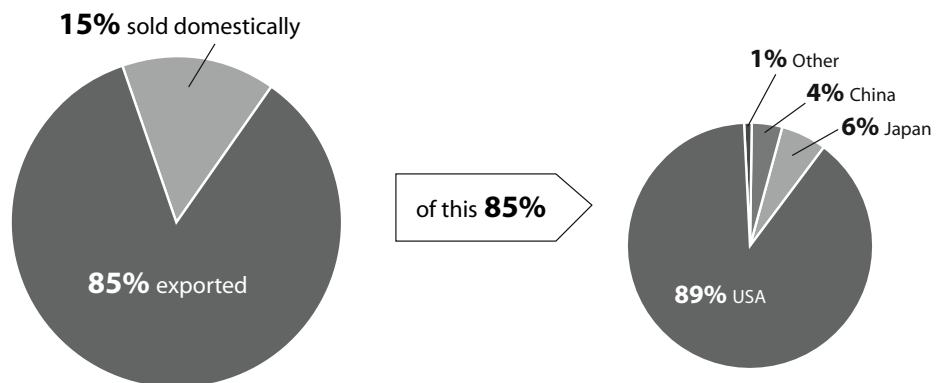
What all this means to Canada is a decline in the volume of farmed fish sold to its number one customer, the United States, which consumes 80 percent of Canada’s farmed salmon exports.⁴⁶ Chile is the main supplier of farmed fish to the U.S. and business is on a steady increase. At the same time, Canada’s farmed salmon exports to the U.S. are dropping.⁴⁷ From January through September, 2003, the U.S. imported 44,400 metric tons of Canadian farmed salmon, compared with 74,216 metric tons of Chilean farmed salmon. In 2003, Chilean fillets accounted for 83 percent of American farmed salmon fillet consumption. However, farmed salmon fillets from Canada (which declined in volume by 20 percent in 2003) commanded higher prices – an average of US \$3.22 per pound compared with US \$2.14 for Chilean fillets.⁴⁸

⁴⁶ Eighty-five percent of all Canadian farmed salmon is exported. Of these exports, the U.S. consumes 89 percent. The remaining 15 percent of farmed salmon produced in Canada is sold domestically.

⁴⁷ “Price recover boosts YTD US salmon imports by \$90m,” Intrafish, 4 December 2003.

⁴⁸ “US: Farmed salmon imports up only marginally in 2003,” Intrafish, 24 March 2004.

Export and domestic consumption of farmed salmon produced in B.C.



3

TRACK RECORDS OF THE BIG FIVE IN B.C. AND AROUND THE WORLD



Members of the Heiltsuk Nation protest Pan Fish's Ocean Falls hatchery, October 25, 2002.

In 2003, antibiotic usage in B.C. aquaculture was the highest it has been since 1998.

Track record: drugs

Farmed salmon are commonly grown to maturity without any use of antibiotics during their lives. However, as with all farm animals, a veterinarian may decide to treat salmon with an antibiotic if they become ill. However, the use of antibiotics in salmon farming is very limited.

(B.C. SALMON FARMERS ASSOCIATION FACT SHEET ON FISH HEALTH)

Despite these assurances from the B.C. Salmon Farmers Association, the use of antibiotics and other medication to treat farmed salmon is a significant issue.

In 2003, the total amount of antibiotics administered to B.C. farmed salmon was twice what it was in 1995. When measured per tonne, antibiotic use in 2003 was the highest it has been since 1998.⁴⁹ The use of Slice, a controversial emergency sea lice medication, has also increased significantly since 2000.

Four antibiotics are approved for use in Canadian salmon farming – oxytetracycline, Tribissen, Romet 30 and Florfenicol. In B.C., these antibiotics must be prescribed by a veterinarian, and they are administered in fish feed. Fish treated with antibiotics (or other medicated feed) cannot be harvested for food for a certain period of time – called a withdrawal time. The withdrawal time will vary, depending on the type of drug used and water conditions.

Antibiotics are not the only drugs used in salmon farming; there are a total of nine drugs, called therapeutants, which are approved for use in Canada in hatcheries and on salmon farms. These include Parasite-S, used to control external parasites, and Perox-Aid, which controls fungi on salmonid eggs in hatcheries. Parasite-S has formaldehyde as its active ingredient, while hydrogen peroxide is the main ingredient in Perox-Aid.

Health Canada has also approved the fish sedative Aqua Life-TMS, and several sea lice treatments. The sea lice bath treatment Salmosan is considered a pesticide and requires approval from Canada's Pest Control Management Agency. Salmosan's active ingredient is azamethiphos. Although it is licensed for use until 2005, salmon farming companies appear to be turning to less controversial medicated feed to combat sea lice. Calicide, which has teflubenzuron as the active ingredient, has been approved by Health Canada as an in-feed sea lice treatment since 2002. Slice, with emamectin benzoate as the active ingredient, is approved only as an emergency drug whose application requires approval from Health Canada.

Slice

Health Canada originally approved the use of Slice as an emergency drug treatment on the condition that no emamectin benzoate residues were found in farmed salmon during routine inspections by the Canadian Food Inspection Agency (CFIA). However,

⁴⁹ B.C. Ministry of Agriculture, Food and Fisheries, "Antibiotic Usage in British Columbia Aquaculture."

“...we are consistently finding drug residues,” wrote Glenn McGregor of the CFIA in December 2000 to Gerard Lambert of Health Canada’s Human Safety Division, adding that, “We are prepared to sample and detain each shipment if necessary, but this will disrupt the orderly marketing of the product.”

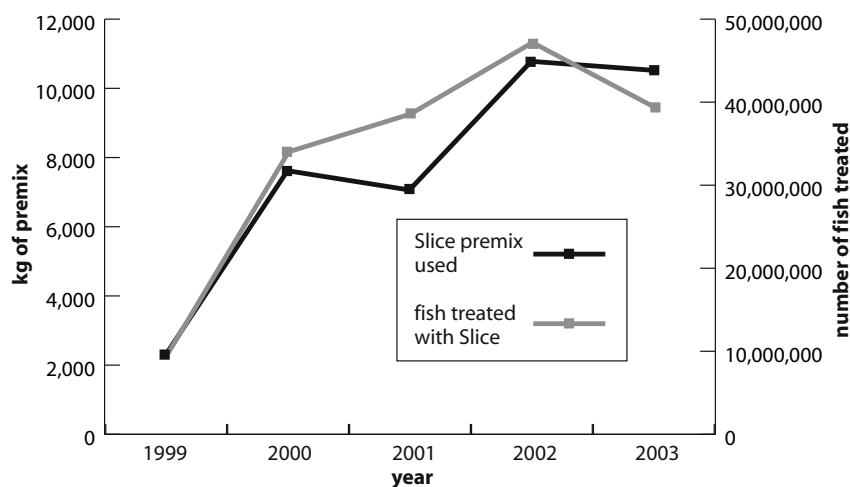
CFIA documents obtained under the federal Access to Information Act show that emamectin residues were commonly found on New Brunswick farmed salmon during 2000, even though companies and their veterinarians had adhered to prescribed withdrawal times and dosages: “...we are consistently finding drug residues,” wrote Glenn McGregor of the CFIA in December 2000 to Gerard Lambert of Health Canada’s Human Safety Division, adding that, “We are prepared to sample and detain each shipment if necessary, but this will disrupt the orderly marketing of the product.” In other correspondence, CFIA staff asked Health Canada if they should issue a recall or notify the public following the discovery of emamectin benzoate residues in farmed salmon.

As 2000 drew to a close, Health Canada made a decision about the residue problem. Instead of a zero tolerance policy, Health Canada decided to accept emamectin residues in farmed salmon up to a maximum of 50 parts per billion, as long as the prescribed seven-day dosage and 25 day withdrawal time were followed.

Since Slice is approved only for emergency use in Canada, the wide extent of its application is surprising. In 2003, more than 37 million Canadian farmed salmon were treated with Slice, according to documents obtained under the federal Access to Information Act (this figure may include individual salmon treated more than once). In 2002, more than 47 million farmed salmon were given feed medicated with Slice; in 2001, that number exceeded 38.5 million.⁵⁰

⁵⁰ Health Canada, Emergency Drug Release forms, obtained under the federal Access to Information Act. The names of the companies requesting Slice and other drugs were deleted from the forms.

Slice use in Canada from 1999-2003



From 1999-2003, more than 170 million Canadian farmed salmon were treated with the emergency drug Slice.

Emamectin benzoate is a second-generation avermectin, described in one academic study as a “highly effective pesticide used worldwide in the agriculture and aquaculture industries.”⁵¹ Since Slice is administered in feed, it is not considered to be a pesticide, unlike some other sea lice treatments. Aquaculture veterinarians generally portray Slice as a safer and more effective drug than other sea lice medications. Schering-Plough, the global pharmaceutical company that manufactures Slice, describes how the medication works:

*When fed to fish, emamectin benzoate is absorbed from the gut and distributed to the tissue of the fish. When sea lice feed on tissues of treated fish, emamectin is taken up into the tissues of the louse. Emamectin then binds to ion channels of nerve cells and disrupts transmission of nerve impulses, which results in paralysis and death of the parasite.*⁵²

Each year from 2000 though 2003 Health Canada approved between 123 and 168 requests from aquaculture veterinarians to use Slice on an emergency basis.⁵³ Even if sea lice is found in just one pen of salmon, all salmon on the farm must be treated. Schering-Plough Corp, the global pharmaceutical company that manufactures Slice, also recommends that neighbouring farms coordinate Slice treatments in order to ensure maximum efficacy.

When Canada’s Veterinary Drugs Directorate approves an emergency request for Slice, the medication – known as Slice Aquaculture Pre-mix – is shipped to a feed company for mixing with regular farmed salmon feed. In 2003, more than 10,500 kilograms of premix containing Slice were approved for use on Canadian salmon farms by Health Canada. In 2002, Health Canada approved almost 10,800 kilograms of Slice premix. In each of 2001 and 2000, approximately 7,000 kilograms were approved.⁵⁴

Concerns about environmental impact from Slice

The salmon farming industry and its backers claim Slice is a “safe, effective drug treatment [that] is used to combat sea lice in a way that minimizes environmental impact.”⁵⁵ However, little is known about the long-term impact of Slice on other aquatic life. Mounting evidence indicates that Slice may negatively affect crustaceans. One academic study showed emamectin benzoate to be lethal to lobsters at high doses;⁵⁶ Schering-Plough notes that at seven times the recommended dosage Slice is, in fact, lethal to salmon.⁵⁷ A recent study published in the Canadian Journal of Fish and Aquatic Sciences concluded there is “conclusive proof that emamectin benzoate is disrupting the endocrine system that controls molting in the American lobster.” In a cautionary message, the study’s authors wrote that, “Crustaceans are more sensitive to emamectin benzoate than are other marine invertebrates...and fishermen are

⁵¹ S.L. Waddy et al, “Emamectin benzoate induces molting in American lobster, *Homarus americanus*, Canadian Journal of Fish and Aquatic Sciences, July 2004.

⁵² Schering-Plough Aquaculture website.

⁵³ Health Canada, Emergency Drug Release forms, obtained under the federal access to information act.

⁵⁴ Health Canada, Emergency Drug Release forms, obtained under the access to information act.

⁵⁵ B.C. Salmon Farmers Association, “Sea Lice & Slice,” fact sheet [no date].

⁵⁶ Burridge, L.E., et al, “The effects of pesticides used in aquaculture on American lobsters (abstract), p. 65. In C.V. Eickhoff, C.V., G.C. van Aggelen and A.J. Niimi [eds]. Proceedings of the 29th Annual Aquatic Toxicity Workshop: Oct 21-23, 2002, Whistler, B.C.

⁵⁷ Schering-Plough Animal Health, “Slice Guidance Notes”

Scallops tested by Heritage had traces of emamectin benzoate, the active ingredient in the sea lice medication Slice.

concerned about the impact of this chemical on lobster and crabs foraging beneath salmon cages. *Almost nothing is known about the sublethal responses of crustaceans to emamectin benzoate or other avermectins* [emphasis added].⁵⁸

⁵⁸ S.L. Waddy et al. Note: sea lice are also a crustacean.

⁵⁹ The Scottish Association for Marine Science and Napier University and the Scottish Executive Central Research Unit, "Review and Synthesis of the Environmental Impacts of Aquaculture," 2002.

⁶⁰ "Maine regulators asked to re-evaluate salmon farming rules after escape, residue findings," Intrafish, 16 February 2004.

A report published by the Scottish Executive concludes that the environmental risk of emamectin benzoate to the marine environment "is considered to be low to moderate." The report notes, however, that "there is relatively little information available on the toxicity of this chemical to marine benthic invertebrates in particular, and little is known about the potential long-term impacts of this chemical on the marine environment."⁵⁹ Moreover, wild scallop beds near a Heritage salmon farm in Maine were found to contain Slice residues significantly above tolerance levels set by the U.S. Environmental Protection Agency. Scallops tested by Heritage had traces of emamectin benzoate, the active ingredient in the sea lice medication Slice. According to the National Environmental Law Center, the residues had a concentration of 6.7 parts per billion, over three times the EPA limit for meat (e.g., beef).⁶⁰

Resistance to Slice

Another concern about the wide use of Slice is the very real possibility that sea lice will eventually develop resistance to the drug. Schering-Plough, manufacturers of Slice, points out that reliance on a single treatment method "encourages the development of resistance." The company recommends that Slice be alternated with other sea lice treatments to "help to ensure that Slice remains effective for longer." The manufacturers also state that sea lice resistance to Slice may be promoted if the medication is administered when fish are not feeding well, or if fish farms do not strictly adhere to the recommended dose and seven-day treatment period.⁶¹

⁶¹ Schering-Plough Animal Health, Slice Guidance Notes.

Antibiotic use in B.C.

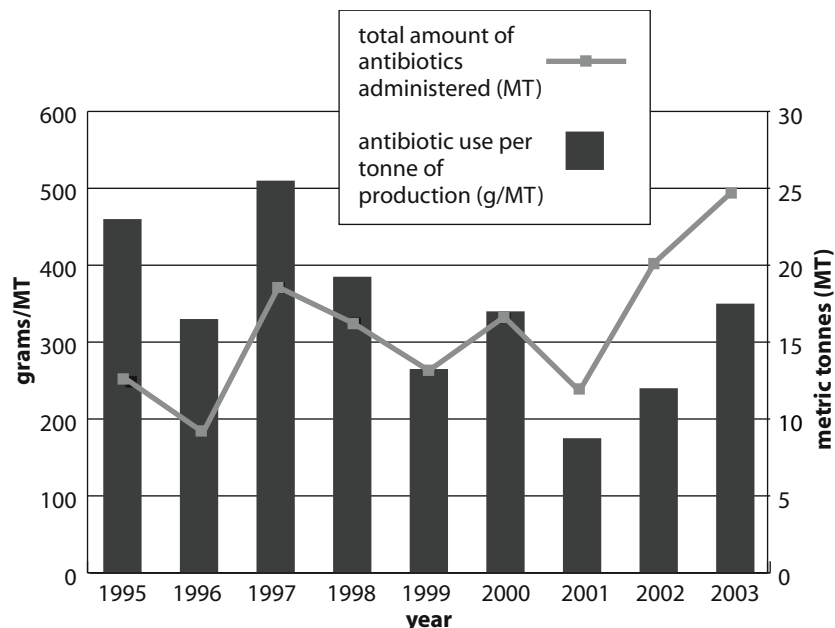
Given the controversy surrounding the issue of antibiotics (and drugs in general) in fish farming, it is surprising to learn that data on the percentage of medicated salmon feed used in British Columbia since 1999 is not available. In that year, 2.5 percent of all salmon feed used in British Columbia was medicated, down from 2.7 percent in 1998. The B.C. government, instead of publishing the percentage of medicated feed each year since 1999, now states simply that, on average, 2.5 percent of feed is medicated each year.⁶²

⁶² B.C. Ministry of Agriculture, Food and Fisheries, website.

However, data is available on the total weight of antibiotics used for every metric tonne of aquaculture. In 2001, according to B.C. government reports, the figure was 165 grams – down from 342 grams the previous year. That 165 grams translates into about 11.2 metric tonnes of antibiotics. In 2002, the amount of antibiotics climbed to

Antibiotic use in British Columbia from 1995-2003

SOURCE: Data from the B.C. Ministry of Agriculture, Food and Fisheries and Statistics Canada "Aquaculture Statistics 2003."



about 250 grams per metric tonne. In 2003, it rose even more, to about 350 grams per tonne – the highest amount per tonne used by the B.C. aquaculture industry since 1998. Another way of looking at the 350 grams per tonne figure is to say that 27.7 metric tonnes of antibiotics were used by the B.C. aquaculture industry in 2003.

A different, though less direct, way of assessing the scope of drug use on B.C. salmon farms is to monitor the total amount of money aquaculture companies spend on disease treatments, a sum that has steadily climbed since 1998. In 2003, companies spent \$5 million on therapeutants, compared to \$4.5 million in 2002, \$4.3 million in each of 2000 and 2001, and \$4 million in 1999.⁶³ Nutreco, for example, used more antibiotics on its Canadian salmon farms in 2002 than it did in 2001. The company also increased the use of oral sea lice treatments in 2002.⁶⁴ In New Brunswick, where farmed salmon production in 2002 was less than one-half that of B.C., aquaculture companies spent \$3.1 million on drugs that year.⁶⁵

Antibiotic use in farmed salmon and livestock industries

The use of antibiotics in B.C. has varied over the last decade. In 2003, antibiotic use in B.C. per tonne of production was the highest it has been since 1998. In total metric tonnes, the amount was double that of 1995.⁶⁶ According to the salmon farming

⁶³ Statistics Canada, "Aquaculture Statistics 2003."

⁶⁴ Nutreco, Social & Environmental Report 2002.

⁶⁵ Statistics Canada, "Aquaculture Statistics 2002".

⁶⁶ B.C. Ministry of Agriculture, Food and Fisheries website.

⁶⁷ Email from the Salmon Health Consortium to the Bureau of Veterinary Drugs, 5 February 2001, obtained under the federal Access to Information Act.

⁶⁸ The North American livestock industry uses prophylactic antibiotics to maintain animal health and increase growth.

⁶⁹ For comparison among industries see Sergio Paone, “Comments on the ‘Antibiotics’ and ‘Biomagnification of Persistent Organic Pollutants’ sections of ‘Applying Organic Principles to Aquaculture Systems (Pelletier, 2003),” paper submitted to the Certified Organic Associations of British Columbia and the B.C. Ministry of Agriculture, Food and Fisheries, November 2004.

⁷⁰ Health Canada, in response to an access to information request for records of any B.C. farmed salmon rejected for any reason from 2000 onwards, replied, after a six-month delay, that no farmed salmon had been rejected.

⁷¹ Maria Rodriguez, Canadian Food Inspection Agency, pers. comm., 5 October 2004.

⁷² Documents obtained from the Canadian Food Inspection Agency under the federal Access to Information Act.

⁷³ Sergio Paone, Ph.D and Dr. Warren Bell, Canadian Association of Physicians for the Environment, “Human Health Risks Associated with Salmon Farming,” presented to the federal standing committee on Fisheries and Oceans on behalf of the Friends of Clayoquot Sound, 7 May 2002.

industry, “...pound for pound, fewer veterinary medicines are used in salmon production than any other primary meat production commodity group.”⁶⁷ However, farmed salmon companies only use antibiotics therapeutically, or to treat disease, while about 90 percent of antibiotic use in U.S. livestock industries is prophylactic or preventative.⁶⁸ Prophylactic antibiotic use in European countries will be banned as of 2006.⁶⁹

Drug residues and human consumption

Consumers of farmed salmon, like consumers of pork, beef and poultry, may also ingest antibiotic residues and, in the case of farmed salmon, Slice residues. Although all residues found during routine testing of B.C. farmed salmon since 2000 appear to have been within Canadian legal limits,⁷⁰ consumers who prefer not to ingest any drug residues at all have no way of knowing if the salmon they buy have been medicated. The Canadian Food Inspection Agency tests approximately 100 farmed salmon samples annually for emamectin benzoate residues. Each sample consists of five fish, meaning that 500 farmed salmon are tested each year for Slice residues.⁷¹ This amounts to residue testing on just a tiny fraction of the salmon dosed with Slice each year.

During routine testing by the Canadian Food Inspection Agency in 2000, salmon farmed on Canada’s Atlantic coast were found to have emamectin benzoate residues of up to 8 parts per billion (ppb).⁷² Allowable residue levels in Canada are set at 50 ppb. In the United Kingdom, the MRL for emamectin benzoate is considerably higher, at 100 ppb. However, maximum residue limits (MRLs) for emamectin benzoate residues in meat (such as beef) are set much lower by the U.S. Environmental Protection Agency (2 ppb). The EPA’s MRLs are health-based and address risks of concurrent exposure.

In the past, farmed salmon with drug residues above the legal limit has gone to market. Of the farmed salmon tested in B.C. in 1997-98, some 397 tonnes of the ready-for-market fish contained drug residues above limits set by Health Canada. The following year the figure was 90 tonnes. Of all salmon tested, the percentage of contaminated fish was small – from 0.4 to 1.1 percent. But as scientist Sergio Paone, of Anima Mundi Environmental Consulting, and physician Warren Bell, of the Canadian Association of Physicians for the Environment, noted, “The amounts are significant when one looks at the weight of farmed salmon that they represent.”⁷³ Moreover, test results can take up to several weeks, and the salmon in question could have been consumed by the time the Canadian Food Inspection Agency received the results. In only two cases did the CFIA initiate a product recall.

Drugs and chemicals around the world

⁷⁴ “Chile Uses 100 times more antibiotics than Norway,” Intrafish, 24 September 2003.

Chilean salmon farms use one hundred times more antibiotics in salmon production than do salmon farms in Norway. In 2001, 40,000 kilos of antibiotics was given to farmed Chilean salmon in feed, compared to 645 kilos in Norway.⁷⁴

In Scotland, approximately 1,400 licenses have been issued since 1998 for the use of a range of highly questionable drugs on salmon, cod and halibut farms. These include about 20 licenses still outstanding for dichlorvos, banned in 2002 in the U.K. for being carcinogenic. Dichlorvos, a known hormone-disrupting compound, is classified under the European Community’s Dangerous Substances Directive as a “Red List” chemical. Another drug in use in Scotland, azamethiphos, is an organophosphate described by the Scottish Environmental Protection Agency as “ten times more toxic than Dichlorvos.” A third drug, cypermethrin, used as a sea lice treatment, is a suspected carcinogen and hormone-disrupting compound.

It is not possible to state exactly which multinationals use which medications in their various Scottish operations, but of the 1016 licenses issued since 1998 specifically for azamethiphos, cypermethrin, emamectin benzoate and teflubenzuron, Marine Harvest (Nutreco) has received 152, Stolt Sea Farm 82, Lighthouse of Scotland (Pan Fish) 81, and Mainstream Scotland 69.⁷⁵

⁷⁵ License information comes from the Scottish Environmental Protection Agency, through an access to information request by the Salmon Farm Protest Group, April 2004.

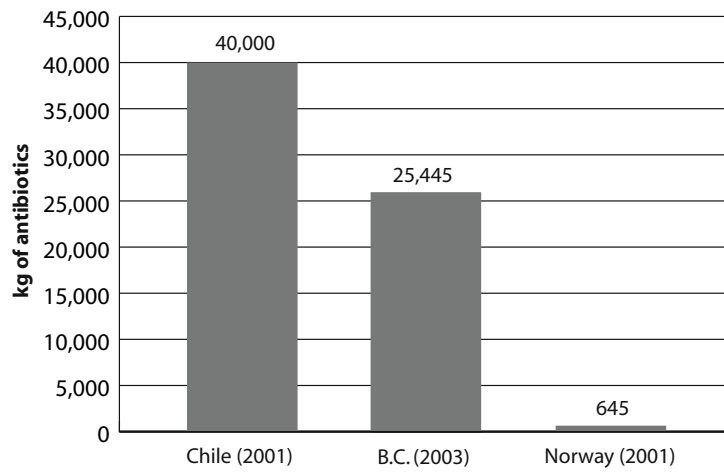
⁷⁶ “Cancer-link chemical in store salmon,” Daily Mail, 10 August 2004.

⁷⁷ “Chile tests 19,000 farmed salmon samples for Malachite green,” Intrafish, 8 October 2004.

Illegal levels of malachite green, a chemical suspected of causing cancer, were found in farmed salmon sold in Britain in August 2004. Testing was conducted by Britain’s Veterinary Medicines Directorate, which discovered traces of malachite green at double the legal limit in farmed salmon sold in Morrisons, a leading supermarket. Morrisons supplier Marine Harvest said it had not used malachite green since June 2002, when the suspected carcinogen was banned in Britain.⁷⁶

In September 2004, a container of Chilean farmed salmon was detained in Holland after fish were found to contain amounts of malachite green that exceeded Dutch regulations. Holland has a lower tolerance for malachite green residues than do other European Union countries, and residue levels detected in the shipment were below limits set by the other countries. Nevertheless, the discovery of malachite green contamination came as an embarrassment to Chilean salmon producers, who had tested 19,000 samples of salmon for malachite green since the fall of 2003 and found 57 positive samples.⁷⁷ The salmon cargo was returned to Chile, where its contents were eventually destroyed. Notably, the European Union issued 11 “Rapid Food Alerts” for malachite green in 2003, most for Chilean farmed salmon.

Antibiotics used in salmon farming



HERITAGE SALMON: PURE AND SIMPLE?

Heritage markets its farmed salmon as “pure and simple.” Here are some “pure and simple” facts, revealed by court documents, about the use of drugs in Heritage operations in Maine in 2002.

- Heritage feeds its salmon a meal containing waste products from the chicken processing industry, which includes chicken feathers, chicken blood, and chicken carcasses.
- Heritage salmon feed also contains soybean meal, wheat, a “vitamin/mineral pack” and other ingredients.
- Heritage adds to the feed a pharmaceutically manufactured pigment called canthaxanthin, which colours the fish’s flesh pink.
- Nets on Heritage salmon pens are treated with an antifoulant called Flexguard 11, which contains copper.
- Bacterial infections in Heritage salmon are treated by adding the antibiotics TM 100 and/or Romet to salmon feed.
- A chemical called cypermethrin, contained in a product called Excis, is used by Heritage to treat sea lice. To apply the cypermethrin, Heritage confines salmon in a small area with a tarp and pours in the chemical. Following the hour-long treatment, the tarp is removed and the cypermethrin is released from the net pens into the marine environment.⁷⁸

⁷⁸ United States District Court, District of Maine, United States Public Interest Research Group vs. Heritage Salmon Inc, 19 February 2002, pg. 6.

The long-term promise of up to 12,000 aquaculture jobs in B.C. seems far out of reach, especially in light of global trends indicating there are fewer jobs in salmon farming on the horizon.

Track record: Job promises in B.C. jobs

Numerous serious disease outbreaks in B.C. have exacted a heavy toll on the salmon farming industry. The number of jobs in salmon farming, far from increasing, appears to have declined since the moratorium on new salmon farms was lifted in 2002.

The B.C. Ministry of Agriculture Food and Fisheries has said that the expansion of the aquaculture industry from 2002 to 2012 could generate 9,000 to 12,000 new jobs.⁷⁹ The bulk of these jobs would be expected to come from salmon farming, which far exceeds any other type of aquaculture production. In 2003, B.C. produced more than 70 thousand tonnes of farmed salmon worth almost \$249 million. That compares to 7,000 tonnes of oysters and 1,500 tonnes of clams, the next two most important aquaculture species, each with a total value of \$7.6 million in 2003.⁸⁰

If salmon farming will generate thousands of new jobs in B.C., one would expect there to be more jobs in the industry at the close of 2004 than there were in 2002. However, the opposite seems to be true, as disease and low salmon prices have caused much of the industry to curtail B.C. production. In 2003, almost 14,000 fewer tonnes of B.C. farmed salmon were produced compared to 2002, and the value of that salmon dropped by \$40 million, to \$249 million in 2003.

The number of jobs in B.C. aquaculture, as measured by total salaries and wages in the industry, fell during those same years. In 2000, salaries and wages in B.C. aquaculture totaled \$40 million. By 2002, that number had climbed to an all-time high of \$48 million. But total salaries and wages in B.C. aquaculture dropped to just \$41 million in 2003, \$2 million less than salaries and wages in 2001, the year before the moratorium was lifted.⁸¹ Pan Fish, for instance, employs about 300 people in B.C. This is down from a high of 500, and far fewer than the 950 workers Pan Fish announced back in 2001 that it planned to hire.⁸² The company also scaled down its smolt production from five million in 2002 to 1.5 million in 2003. “The Canadian operations are struggling,” explained a Washington state Pan Fish manager. “Production is way down...they don’t need all of those people...”

Similarly, after a prolonged disease outbreak at Cermaq’s Clayoquot Sound salmon farms led to a five-month closure of the company’s Tofino processing plant in 2003,⁸³ Cermaq laid off about 80 employees. The company explained it had reduced production “until we see that we’ve gained control over the disease situation.”⁸⁴

⁷⁹ B.C. Ministry of Agriculture, Food and Fisheries, “New Standards Allow Sustainable Growth in Aquaculture,” news release, 12 September 2002.

⁸⁰ Statistics Canada, “Aquaculture Statistics 2003”.

⁸¹ Statistics Canada, “Aquaculture Statistics 2003”.

⁸² “Major Investments on the West Coast of Canada,” Pan Fish Magazine, 11 October 2001.

⁸³ “Millions lost, harvested early in PNA disease outbreak,” Intrafish, 5 March 2003.

⁸⁴ Cermaq Annual Report 2002.

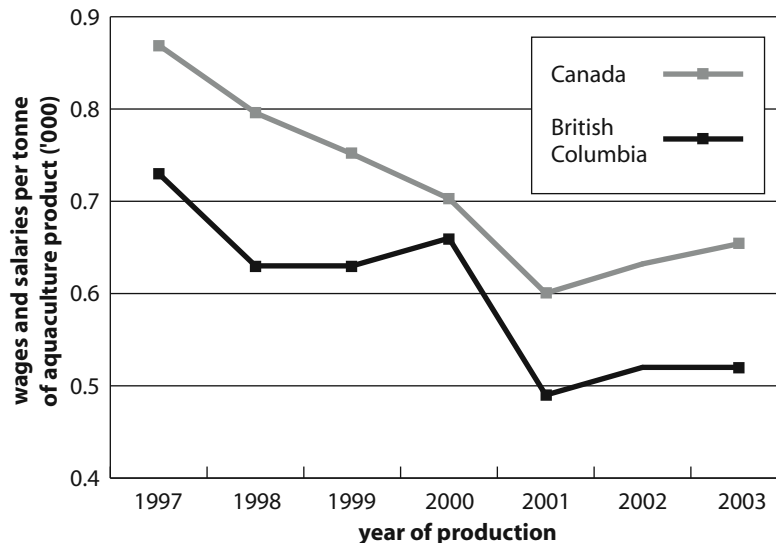
The government-funded B.C. Salmon Farmers Association, which represents large and small companies in the industry, says the province’s salmon farming industry currently provides 4,700 direct and indirect jobs. However, this number does not seem to reflect recent lay-offs in the industry. Nor is it consistent with the BCSFA’s own employment formula, which claims that one B.C. salmon farm generates 53 full-time equivalent jobs in coastal communities. The BCSFA breakdown is:

- 13 full-time jobs on the farm site and in company offices
- 18 full-time local contractors and suppliers
- 19 full-time processing plant jobs
- 3 full-time feed plant jobs.⁸⁵

⁸⁵ Catch! newsletter of the B.C. Salmon Farmers Association, Winter 2003.

In the spring of 2004 there were 132 salmon farm tenures in B.C., of which approximately 80 were active. If each of these tenures generates 53 direct and indirect jobs, one could expect there to be about 4,280 jobs in the industry today according to the B.C. Salmon Farmers Association own employment formula – hundreds of jobs less than the association’s claim of 4,700. The long-term promise of up to 12,000 aquaculture jobs in B.C. seems far out of reach, especially in light of global trends indicating there are fewer jobs in salmon farming on the horizon, and lower paying jobs at that.

Amount paid in wages and salaries per tonne of aquaculture product from 1997-2003



“Pan Fish did not say how quickly the cuts would be made, but said that the reductions in staff over the next few years would give significant cost savings.”

International job downturn

Pan Fish, in addition to its recent cutbacks in British Columbia, has recently dismissed employees in the Faroe Islands, Scotland, and Norway as well. In the Faroes, all 120 employees at a Pan Fish joint-venture salmon plant on the island of Suðuroy were dismissed just before Christmas, 2002. In Scotland, the company scaled back production in 2003 by cutting 30 jobs, some of them seasonal, at two farms. Pan Fish said it would not stock the farms until salmon prices improved. In Norway, a Pan Fish reorganization resulted in the loss of 180 jobs. The company also said 160 additional employees might lose their jobs in the future due to closures or sales of operations. “Pan Fish did not say how quickly the cuts would be made, but said that the reductions in staff over the next few years would give significant cost savings.”⁸⁶ Pan Fish’s Washington State operations, which the company said were performing well, have not been affected by layoffs.⁸⁷

In 2002, Nutreco’s fish feed company, Skretting, temporarily laid off 50 employees at its three Norwegian factories. “Because of the current market situation there is a need to focus on costs,” explained Hans Abrahamsen, Skretting’s managing director. “In order to maintain our position as the leading feed supplier in Norway, Skretting will always have to have the lowest production costs.”⁸⁸ Then, in 2003, Nutreco laid off about 210 salmon farm employees in Norway, closing two processing plants due to low salmon prices.³⁰ (The lay-offs represented a 26 percent reduction in Nutreco’s salmon-processing workforce.) Around the same time, Marine Harvest closed a factory in Scotland’s Western Isles, eliminating another 82 jobs, or 15 percent of its workforce. Alasdair Morrison, the member of Scottish parliament for the Western Isles, said Marine Harvest workers felt a “real sense of betrayal” by the company. This is understandable, in light of the company’s credo: “Nutreco believes that the presence of any Nutreco business or operating company should benefit the community in which it is located. Benefit is provided by its contribution to the local economy, through employment and purchasing, and by using its knowledge to the advantage of that community.”

Marine Harvest also recently closed its Vancouver sales office, reassigning the office’s tasks to a Campbell River office and company headquarters in Ft. Lauderdale, Florida. It was not known how many jobs were lost, but earlier staff cuts at the Vancouver office had already trimmed Marine Harvest employees from six to three.⁸⁹ One of the laid-off employees was Vivian Krause, Marine Harvest’s Vancouver-based North American corporate development manager. Marine Harvest claimed the closure of its Vancouver office had nothing to do with the merger of its fish farming operations with Stolt Sea Farm.

⁸⁶ “Pan Fish plans to cut up to 180 jobs and sell more assets,” Intrafish, 3 July 2003. Omega Salmon Group spokesperson Leanne Brunt declined to speak with Raincoast for this report. Omega said there was no one else available to answer questions.

⁸⁷ “Pan Fish layoffs surprise North America,” Intrafish, 12 August 2003.

⁸⁸ “Lay-offs at Skretting in three of its factories,” Intrafish, 10 December 2001.

⁸⁹ “Marine Harvest to close Vancouver sales office,” Intrafish, 15 September 2004.

Scotland's Western Isles, on the other hand, are expected to suffer significant job losses as a result of the merger between Stolt and Nutreco. The future of Stolt's processing facility at Scalpay, which employs 100, remains uncertain. One of the goals of the merger is to "reduce costs," company spokespeople have said.

In 2004 in Norway, Cermaq's research and development institution, EWOS Innovation, announced that about 10 percent of its 75 staff would be laid off. "This is a grave state of affairs for those concerned. It's not particularly pleasant for those of us that are left either," said EWOS Innovation Managing Director Per Olav Skjervold.⁹⁰

The Englewood Packing Company Ltd., in which Stolt owns a 50 percent share, is also part of the industry's lay-off trend. Englewood's website says 140 people work at the Port McNeill plant on northern Vancouver Island. Yet during the winter of 2003 and the spring of 2004, following cutbacks in production at salmon farms throughout the coast, Englewood had only about 100 on its payroll.⁹¹

In the future even more salmon farming jobs will be lost as employees are replaced by automated feed barges and automated processing equipment. Future automation of fish processing plants in Norway is expected to reduce the number of employees on production lines from 40 or 50 per line to just six workers on each line per shift. Norwegian researchers are currently working on automation designs that will bring down processing costs per kilo to the same level as those in Poland and China.⁹²

Salaries in B.C.'s salmon farming industry

Salaries in B.C.'s salmon farming industry vary considerably from company to company. The most an average salmon farm employee in B.C. could expect to make, however, is about \$35,000 a year. Cermaq, according to the Globe and Mail, pays its Ahousat salmon farm employees about \$12 an hour, or just under \$25,000 a year if employees work a 40-hour week – far less than the \$34,000 to \$35,000 a year that Pan Fish says it pays fish farm employees.⁹³ At Port McNeill's Englewood Packing Plant, in which Stolt owns a 50 percent share, employees earn an average of \$17.25 an hour plus benefits. Englewood claims these workers are among the highest-paid in the industry.⁹⁴

Stolt would like to reduce the amount it pays employees by eliminating overtime pay on B.C. fish farms. Documents obtained under B.C.'s Freedom of Information Act show that the company has requested the provincial government to have the aquaculture industry reclassified under the Farm Act. Farm workers in B.C. are not entitled to overtime pay and are excluded from statutory holiday pay. In a presentation to the B.C. government Finance Committee, Stolt stated its reasons for promoting the reclassification, "Currently, regular working hours spread over a summer's day are possible only if significant amounts of overtime are paid."⁹⁵

In sharp contrast to the earnings of B.C. salmon farm employees, executives who run multinational salmon farming companies earn salaries and bonuses that can top

⁹⁰ "EWOS Innovation Slimming Down Staff Numbers," Intrafish, 13 April 2004.

⁹¹ Pers. comm., 1 March 2004.

⁹² "Technology to boost Norwegian fish processing," Intrafish, 27 February 2004.

⁹³ John Stackhouse, "Trouble in Paradise," Globe and Mail, 19 November 2001. Keith Bullough, chief financial officer of the Omega Salmon Group, Campbell River, presentation to the Select Standing Committee on Finance and Government Services, 20 September 2002, Campbell River.

⁹⁴ Englewood Packing Co. Ltd. website.

⁹⁵ Stolt Sea Farm, "Presentation to Finance Committee," [no date], obtained in March 2004 under B.C.'s Freedom of Information Act.

In sharp contrast to the earnings of B.C. salmon farm employees, executives who run multinational salmon farming companies earn salaries and bonuses that can top one or two million dollars a year.

one or two million dollars a year. Galen Weston, head of the conglomerate that owns Heritage Salmon, is the top wage earner among the executives of multinationals that dominate B.C.'s salmon farming industry. Weston had an annual salary and bonus of \$2.6 million in 2003. Nutreco's top boss, CEO Wout Dekker, earned exactly one-half that amount, or \$1.3 million, in 2003. Dekker's right-hand man, Hans den Biemann, chief of Nutreco's aquaculture division, made close to one million dollars as well that year – \$965,604. Cermaq head Geir Isaksen took home far less than his counterparts in other companies – a comparatively meager \$330,677 in 2003.⁹⁶ That same year, Pan Fish's new managing director, Atle Eide, earned almost \$470,000 in wages, taxable remunerations, pension premiums and bonuses.⁹⁷

The individual earnings of Stolt-Nielsen corporate directors in 2003 were unclear, as the company does not release information about individual salaries.⁹⁸ In 2003, however, seven members of Stolt's senior management (excluding non-executive directors) took home a total of \$5.1 million in compensation. Even though Stolt-Nielsen had what the company called an "immensely difficult year" in 2003, posting a full-year net loss of \$397 million, the salaries of senior management appear to have increased considerably that same year. In 2002, nine members of Stolt's senior management (excluding non-executive directors) earned \$5.05 million⁹⁹ – just shy of total compensation of \$5.1 million paid to only seven members in 2003. In 2003, the company contributed a total of \$1.09 million to pension plans on behalf of such directors and members of executive management. Additionally, non-executive directors who serve on the company board and committees received an aggregate fee of approximately \$288,000 plus expenses in 2003.¹⁰⁰

⁹⁶ "Nutreco bosses top salmon industry's salaries," Intrafish, 1 June 2004.

⁹⁷ Pan Fish Annual Report 2003.

⁹⁸ Valerie Lyon, Stolt-Nielsen SA, pers comm., 13 October 2004.

⁹⁹ "United States Securities and Exchange Commission," Form 20-F/A, filed by Stolt-Nielsen SA for the fiscal year ended 30 November 2002.

¹⁰⁰ "United States Securities and Exchange Commission," Form 20-F/A, filed by Stolt-Nielsen SA for the fiscal year ended 30 November 2003.

Salaries of Big Five executives in 2003

Person	Position	Company	Salary*
Galen Weston	Chairman and President	George Weston Ltd	\$2.6 million
Wout Dekker	CEO	Nutreco	\$1.3 million
Hans den Biemann	Chief of Aquaculture Division	Nutreco	\$964,604
Gier Isaksen	CEO	Cermaq	\$330,677
Atle Eide	CEO	Pan Fish	\$470,000
Niels G. Stolt-Nielsen	CEO	Stolt	unknown
Combined salaries of seven senior Stolt executives		Stolt	\$6.19 million

*May include pensions, taxable remunerations, and/or bonuses

In 2003, Nutreco received more warning letters and violation tickets than any other salmon farming company – five violation tickets of \$115 each for contravening fisheries act regulations.

Track record: regulatory compliance

From time to time, fish farming multinationals run afoul of government regulations and are slapped with various financial penalties. In British Columbia, out-of-court fines typically range from \$115 to \$1,000, and it appears that, for salmon farming companies, these fines are a small cost of doing business. The Big Five are also involved in various legal and jurisdictional disputes as they try to extend their influence worldwide. In some cases, multinationals have been charged with significant breaches of the law.

Fines in B.C. and worldwide

Four of the five multinationals that dominate B.C.'s salmon farming industry received violation tickets or warning letters in 2002: the Omega Salmon Group (Pan Fish) EWOS Aquaculture (Cermaq), Nutreco, and Connors Bros (Heritage). Stolt was the only one of the five that did not receive a warning or violation ticket. Omega received the most tickets – five – for contravening provisions of the provincial fisheries act. Each Omega ticket carried a \$115 fine. Nutreco received the highest ticket – \$173 for failing to keep drug records – while Cermaq and Heritage were given more warning letters – six and seven, respectively – than other companies. Cermaq received warning letters for failing to keep drug records, while Heritage was sent warning letters for failing to comply with the conditions of its license under the provincial fisheries act.¹⁰¹

In 2003, Nutreco received more warning letters and violation tickets from the province than any other salmon farming company – five violation tickets of \$115 each for contravening fisheries act regulations. Heritage received one violation ticket of \$115 for contravening the fisheries act. Stolt was given a \$173 ticket for violating aquaculture regulations.

Charges, investigations and other fines

Pan Fish

More than 27,000 salmon escaped from a Pan Fish (Omega) pen in Marsh Bay in the late spring of 2001. Scuba divers discovered a hole in the pen during a routine collection of dead fish from the bottom of net cages. Omega did not report the escape for five days, even though provincial regulations require that escapes be reported within 24 hours.¹⁰² For this infraction the company was assessed a fine of \$1,000. Omega was fined another \$1,000 in November 2002 for failing to keep drug records. Overall, Omega has been fined a total of \$8,500 since November 2001. (Notably, by comparison, the Stolt company got off scot-free after 30,000 of its farmed Atlantic salmon swam into the Pacific in August 2000 during the company's second mass escape in B.C. in one year.)

¹⁰¹ B.C. Ministry of Agriculture, Food and Fisheries and B.C. Ministry of Water, Land and Air Protection, "3rd Annual Inspection Report on Marine Finfish Aquaculture Sites," August 2003.

¹⁰² Regina v. Omega Salmon Group Ltd., Reasons for Sentence (re: Omega Salmon Group Ltd.) of The Honourable Judge Gould, Port Hardy, 5 November 2002.

EWOS Canada, a Cermaq subsidiary that manufactures fish feed pellets in Surrey, B.C., was convicted three times in six years for fish oil spills in B.C. The company was fined a total of \$90,000.

In August 2003, Pan Fish (Omega) was fined \$5,500 for putting one million fish in the water without a permit. The infraction occurred in March 2002 when the company relocated salmon from a fish farm near Victoria to a site on Kent Island that is home to endangered abalone beds. Omega relocated the fish while its application to do so was still under consideration. Omega subsequently notified the government it had moved the fish, saying that the Kent Island site offered “superior environmental attributes such as minimal traffic and less frequent algae blooms.” In this instance Omega could have been fined up to \$570,000 for violating provincial law.

DFO launched its own investigation to determine if Omega had contravened Canada’s Fisheries Act by harming the abalone beds. DFO concluded that Omega had not violated the federal fisheries act and that there had been no damage to abalone beds or long-term damage to the seabed. If Omega had been found guilty, it could have been fined up to \$300,000 or the person found responsible could have faced a six-month prison sentence.

Omega’s parent company, Pan Fish, also owns Orca Shipping Inc. Orca was fined \$1,000 for failing to take reasonable precautions to prevent the escape of fish during transport in 2001. About 4,500 Atlantic salmon escaped due to an improperly fastened hatch on a ship en route to a packing plant.

The Pan Fish subsidiary Lighthouse of Scotland Ltd. was fined almost \$70,000 in May 2004 after the company pleaded guilty to charges of failing to properly maintain lifejackets used by staff and overloading an aluminum workboat. A Lighthouse fish farm employee drowned in January 2003 when a boat he was piloting, loaded with 1,000 kilos of fish feed, capsized en route to net cages and his life jacket failed to inflate. Pan Fish was fined almost \$20,000 for the lifejacket offence and close to \$50,000 for the overloading offence.¹⁰³

¹⁰³ “Fish farm fined over death,” Fish Update, 28 May 2004.

Cermaq

Cermaq, too, has been fined repeatedly for various infractions, including a fish oil spill in B.C. that harmed wild salmon habitat. EWOS Canada, a Cermaq subsidiary that manufactures fish feed pellets in Surrey, B.C., was convicted three times in six years for fish oil spills in B.C. The company was fined a total of \$90,000.

In December 1994, EWOS pled guilty to charges relating to the spill of Menhaden fish oil while unloading the oil from a rail car and was fined \$10,000. The next spill, which harmed coho spawning grounds in Surrey’s Bear Creek Park, took place in July 1998 when an EWOS employee attempting to move a tote of 225 kg of fish oil

In 2003, EWOS/PNA pleaded guilty to 11 charges and was fined a total of \$3,110 for regulatory violations.

caused the tote to slip and the oil to spill. The oil flowed into a storm sewer discharging into a tributary of Bear Creek Park. “Test samples were taken from the stream; the samples disclosed a high concentration of hydrocarbons, capable of harming the environment. The Company’s actions caused the mortality of approximately 30 fish in the habitat,” wrote the Honourable Judge H. H. Field. Additionally, the spill “had a deleterious affect on the rearing area of young coho. The secondary effects from oil spilling into the receiving environment include alterations to water and sediment quality.”

The third spill took place in April 1999, when a large tank containing fish oil overflowed. Approximately 5,000 kg (10,000 gallons) of fish oil escaped to a faulty containment area and found their way to the same tributary. In this case, heavy rainfall prevented actual damage to fish habitat, although, as Judge Field noted, “the potential for serious damage to the environment was great.” Even though EWOS took corrective action following the first oil spill, spending \$150,000 in physical improvements to implement spill prevention measures and containment of spills, the judge found that “complete measures to contain an oil spill were not done. This lack of diligence prevented the safe containment of the contaminant.”¹⁰⁴

In 2002, Cermaq’s fish farming subsidiary Pacific National Aquaculture (now Mainstream) was charged with 19 counts of provincial regulatory violations. Most of the charges stemmed from what a Crown prosecutor described as the company’s failure to take reasonable measures to prevent fish escapes in 2001 and 2002. According to PNA operations manager Kevin Onclin, about 8,000 to 10,000 fish escaped during that time. Although PNA could have faced a total fine of nearly \$38,000, the company was charged only \$2,500 because its misdemeanors were not considered major. PNA was “also accused of failing to report escapes within the specified time.”¹⁰⁵

In 2003, EWOS/PNA pleaded guilty to 11 charges and was fined a total of \$3,110 for regulatory violations. The fines included a total of \$1,250 for three counts of failing to take reasonable precautions to prevent escapes, and a total of \$750 for three counts of failing to keep drug records. Other fines were levied for contravening unspecified conditions of the fisheries act.¹⁰⁶ In one instance regarding a May 2002 escape from a Cermaq salmon farm in Clayoquot Sound near Tofino, EWOS/PNA pled guilty to charges of failing to take reasonable precautions to prevent escapes and was fined \$400. Although only 10 to 20 salmon escaped in that particular incident, crown counsel pointed out that the company had failed to follow its own standard operating procedures during harvesting of a salmon pen when it did not use catch nets to prevent fish from spilling. Notably, it was the second time in four months

¹⁰⁴ Regina v. EWOS Canada Ltd, Reasons for Judgment of the Honourable Judge H.H. Field, B.C. Provincial Court, 25 February 2000.

¹⁰⁵ “Cermaq subsidiary faces 19 counts of provincial violations,” Intrafish, 4 December 2002. Although Intrafish reported that Cermaq had been fined \$2,500, court records indicate that the company was fined \$1,000 for that incident. Regina v. EWOS Aquaculture Ltd, Pacific National Group Ent. Ltd, Provincial Court of B.C., Proceedings, Tofino, B.C., 5 May 2003.

¹⁰⁶ B.C. Ministry of Agriculture, Food and Fisheries, B.C. Ministry of Water, Land and Air Protection, “3rd Annual Inspection Report on Marine Aquaculture Sites,” August 2003.

¹⁰⁷ Regina v. EWOS Aquaculture Ltd, Pacific National Group Ent. Ltd, Provincial Court of B.C., Proceedings, Tofino, B.C., 5 May 2003.

¹⁰⁸ Ted Colley, “You are not wanted here,” The Now newspaper, 26 May 2003.

¹⁰⁹ Brian Jenkins, manager of enforcement, New Brunswick ministry of Agriculture, Fisheries and Aquaculture, pers. comm. March 2004.

that the company had failed to use catch nets during transfers of fish. In February 2002, about 30 Cermaq salmon escaped into Clayoquot Sound’s tidal waters during a transfer of smolts from a tanker into pens, resulting in a \$100 fine.¹⁰⁷

Cermaq has encountered other regulatory troubles as well. In May 2003, managers of the company’s fish feed plant in Surrey, EWOS Canada, squared off against angry residents fed up with plant emissions that for years had “blanketed a good part of Newton and North Delta with a rotten-fish smell.”¹⁰⁸ Residents also criticized the Greater Vancouver Regional District (GVRD) for not strictly enforcing air quality standards and imposing fines on the company. The GVRD gave EWOS until June 30, 2003 to cut odour emissions; the company claimed it had spent more than \$2 million installing new equipment to reduce emissions and said it would meet the GVRD deadline.

Heritage

In New Brunswick, Heritage was charged with disobeying an order to fallow sites in 2003 in order to prevent the spread of ISA. The order was part of New Brunswick’s new bay area management plan, designed to thwart ISA outbreaks. Heritage pled guilty in October 2003 and paid an \$8,500 fine.¹⁰⁹ In Maine, in March of 2002, Heritage agreed to pay fines totaling US \$15,000 in an out-of-court settlement for failing to inform the state of Maine that fish had tested positive for the ISA virus at its sites the previous year, and for failing to report fish health surveillance results.

Nutreco

Nutreco (Marine Harvest) wrote in its 2002 annual report that it is “doing everything it can to optimize farming conditions for minimal impact on nature and the environment.” Salmon pen nets, for instance, are “cleaned and stripped of algae by drying them in the sun instead of using chemical agents,” the company said. So Nutreco found itself in a very uncomfortable situation when Chilean inspectors discovered malachite green, a banned fungicide, at the company’s Lake Llanquihue hatchery in December 2002. Malachite green, a highly toxic synthetic dye used to clean fish cages, was banned in Chile in 1995 and in the European Community in 2002. (Nutreco says it has now removed malachite green from all of its operations.) Chilean courts fined Marine Harvest US\$2,270.

In 2001, several Cermaq farms were found to be in violation of the Waste Management Act.

Provincial inspection violations

B.C.'s fish farms undergo annual inspections to ensure compliance with regulations set by the Ministry of Agriculture, Food and Fisheries (MAFF) and the Ministry of Water, Land and Air Protection.¹¹⁰ Inspectors check to see if the farms are in compliance with regulations designed to protect the marine environment, including waste discharge, handling of blood water and disposal of dead farmed fish. They also pass judgment on other regulatory aspects of salmon farming such as record-keeping requirements and escape-prevention and response. Inspectors may visit a salmon farm more than once a year if an investigation is underway, or if repeated non-compliance is a concern.

The second annual report on B.C. marine finfish farm inspections was issued in 2002 by the Ministry of Water, Land and Air Protection. It provided detailed information about salmon farm compliance with provincial regulations during 2001, listing companies that failed to meet accepted standards.

One of seven Nutreco farms inspected for proper disposal of net-cleaning waste did not comply with regulations, and one of the seven farms did not dispose of footbath disinfectant according to regulations. None of the six Nutreco salmon farms inspected in B.C. for fresh water usage compliant with the Water Act met requirements. The Nutreco farms, however, met most other regulatory requirements. The following year, Nutreco's B.C. farms achieved a 98 percent compliance rate with provincial fisheries ministry regulations and a 98 percent compliance rate with Ministry of Water, Land and Air Protection regulatory requirements.

In 2001, several Cermaq farms were found to be in violation of the Waste Management Act. One farm – out of five inspected – did not adequately dispose of blood-water, and none of the five Cermaq-owned farms inspected disposed of net-cleaning waste as stipulated by the act. Only two of four had adequate spill-collection equipment on site, and two of five did not have a spill-reporting phone number listed. None of the five farms had secure net waste storage. Of four Cermaq-owned farms checked for disposal of footbath disinfectant waste, three failed to meet requirements for proper disposal. One farm of four inspected to see if hazardous materials were protected from precipitation had not complied with regulations. The next year, Cermaq-owned farms that were inspected were 91 percent in compliance with fisheries ministry regulations.

Omega (Pan Fish) farms also had trouble meeting some regulatory requirements in 2001. Two of eight Pan Fish farms did not meet Waste Management Act requirements

¹¹⁰ Inspections are carried out according to a 2002 Service Agreement among the B.C. Ministry of Agriculture, Food and Fisheries (MAFF), the B.C. Ministry of Water, Land and Air Protection (MWLAP), the Ministry of Sustainable Resource Management (MSRM) and the federal Department of Fisheries and Oceans (DFO). The agreement coordinates responsibilities among these agencies. As a result, MAFF has the lead role in compliance and MWLAP has the lead role in enforcement of fish farm regulations. MAFF inspectors examine MWLAP responsibilities related to protection of the marine environment and refer cases to MWLAP for follow-up and investigation.

for disposal of dead fish. None of the eight farms met requirements for disposal of net cleaning waste. The one Pan Fish farm inspected to see if it met with regulations for predator prevention also failed to pass muster. Five of eight Pan Fish farms inspected did not meet regulatory requirements for treatment of sewage, and three did not adequately dispose of sewage. None of the six Pan Fish farms inspected for proper disposal of footbath disinfectant met requirements.

Two of nine Stolt salmon farms inspected were found to be discharging footbath disinfectant waste directly into the marine environment, in violation of the Waste Management Act. One Stolt farm violated the act's provisions for net-cleaning waste and one failed to secure net waste storage. "A variety of handling and disposal methods resulting in untreated waste being discharged to the environment were documented," the report noted of Stolt, Cermaq, and other companies found in violation of the act. It also stated that the ministry was working with companies to identify better disposal methods.⁹⁹

¹¹¹ Ministry of Water, Land and Air Protection, "Marine Salmon Farming Compliance Report," February 2002.

In the 2003 provincial report on marine finfish inspections undertaken in 2002, Stolt was found to be 99 percent in compliance with Land, Water and Air Protection Ministry regulations, and 97 percent in compliance with the B.C. Fisheries Act and aquaculture regulations. Areas of non-compliance were not made public since they did not result in violation tickets or warning letters.

Heritage failed to secure net waste storage at three farms of four inspected in 2001. One of four Heritage farms inspected also failed to meet requirements for secure hazardous materials storage and one farm failed to protect hazardous materials from precipitation. Three Heritage salmon farms did not comply with regulations for disposal of net cleaning waste, two did not meet requirements for disposal of sewage, and two did not properly dispose of footbath disinfectant. Neither of two Heritage farms inspected for fresh water usage met regulatory requirements. In the 2003 report, Heritage achieved a 99 percent compliance rate with Ministry of Water, Land and Air Protection requirements, and a 94 percent compliance rate with fisheries ministry regulations.

“We don’t want fish farms in Bute Inlet because we don’t want to risk our aboriginal fishery,” said newly elected chief Darren Blaney.

Track record: lawsuits

Legal dealings with First Nations

Heritage has long coveted Bute Inlet on B.C.’s south coast for salmon farming. Bute is the only remaining large inlet on B.C.’s south coast without a fish farm. Located about 40 kilometres northwest of Campbell River, the inlet is not zoned for fish farming. But starting in 2001, Heritage sought approval for a zoning permit to set up fish farms. The Comox Strathcona Regional District rejected the Heritage application after hearing overwhelmingly from the public that fish farms were not welcome in Bute Inlet, an area where guests at affluent lodges pay up to \$500 a day to fish for wild salmon.¹¹² Among other concerns, opponents worried that inclement weather in the inlet, including notorious high winds, would facilitate salmon escapes. They were also fearful that diseased farm salmon would pose a threat to thriving commercial and sports fisheries.

Heritage, on its rejected applications, had listed the Homalco First Nation band as one applicant. Then the company put forward another application in 2002. This time, the Homalco band was listed as the principal applicant. Subsequently, the provincial Ministry of Water, Land and Air Protection issued a two-year temporary aquaculture tenure at the Downie Range, a 30-minute boat ride up the scenic inlet from lodges on Stuart and Sonora Islands. The tenure is currently awaiting an environmental assessment by the federal Department of Fisheries and Oceans.

To further complicate matters, the Homalco band’s new leadership has withdrawn its support for proposed salmon farming sites in Bute Inlet. “We don’t want fish farms in Bute Inlet because we don’t want to risk our aboriginal fishery,” said newly elected chief Darren Blaney. Instead of lobbying for fish farms, the Homalco have signed an agreement with an environmental group, the Georgia Straight Alliance, to work together for the restoration and preservation of Bute Inlet waters.

In other dealings with First Nations, Heritage, along with Stolt Sea Farm, has been taken to court by three First Nations groups. A lawsuit filed by the Sierra Legal Defence Fund alleges that the two salmon farming companies, as well as the provincial and federal governments, violated aboriginal fishing rights by failing to protect pink salmon runs in the Broughton Archipelago. In 2002, the Broughton’s wild pink salmon run collapsed, with only a relatively small number of fish returning to spawn. The Pacific Resource Conservation Council found that the most likely cause of the run’s near decimation was an epidemic of sea lice, a parasite associated with fish farms worldwide.

¹¹² “Heritage tries end-run with controversial BC site lease,” Intrafish, 18 August 2002. Andrew Findlay, “Fighting to Keep a Fish Farm at Bay,” The Tyee, 12 January 2004.

Pan Fish (Omega) stirred up a major controversy in 2002 when it announced it wanted to build a \$15 million Atlantic salmon hatchery at Ocean Falls on B.C.'s north coast.

The lawsuit seeks potential damages for the Tsawataineuk, Kwicksutaineuk-Ah-Kwaw-Ah-Mish and Namgis First Nations groups and the Gwawaenuk Tribe.¹¹³ The First Nations want to be consulted when salmon farm sites are allocated. They also want direct First Nations involvement in salmon farm monitoring. The lawsuit also seeks injunctions to prevent Stolt or Heritage from stocking or restocking salmon pens in the Broughton and from using emamectin benzoate (Slice) or Ivermectin for treating sea lice. Back in 2002, lawyers for the Kwicksutainneuk/Ah-kwa-mish Tribes registered a federal court action against the Department of Fisheries and Oceans for granting permission for Heritage to shoot seals and sea lions at its Burdwood Islands site. The sea lions and seals were eating Heritage's farmed fish.

¹¹³ The Namgis later withdrew from the suit.

Pan Fish (Omega) stirred up a major controversy in 2002 when it announced it wanted to build a \$15 million Atlantic salmon hatchery at Ocean Falls on B.C.'s north coast. The local Heiltsuk First Nation, who lay claim to about 33,700 square kilometres of land and water that includes Ocean Falls, responded by launching a lawsuit, accusing Omega of building on its traditional territory without adequate consultation.¹¹⁴ In September 2003, a B.C. Supreme Court judge ruled in Omega's favour. Justice L. B. Gerow said that Omega had attempted to consult with the Heiltsuk several times, and that the Heiltsuk's delay in bringing their objections to court resulted in Omega spending \$9.5 million on the hatchery. The judge did say, however, that Omega must continue efforts to negotiate with the Heiltsuk. Omega deputy CEO Keith Bullough declined to reveal what the litigation had cost, saying only that "it's never cheap to walk into a courtroom."

¹¹⁴ The lawsuit was filed by the Sierra Legal Defence Fund.

The Heiltsuk Hemas (hereditary chiefs) are involved in a judicial review challenging B.C.'s consultation process for issuing aquaculture permits. The province claims it consulted with both the Heiltsuk and the Kitasoo – another band that also lays claim to some of the same area and which supports salmon farming – before giving the go-ahead to Kitasoo-supported salmon farms in the disputed region. Litigation, however, has brought the parties to the negotiating table. The Heiltsuk hope a fish farm on Arthur Island will be moved out of the area as a result.

Global litigation

In June 2003, Heritage and Stolt Sea Farm faced a large and significant lawsuit in the state of Maine. The suit, brought by the U.S. Public Research Interest Group, accused the two salmon farming companies, along with Atlantic Salmon of Maine, of discharging pollutants into the ocean without appropriate permits.¹¹⁵ Heritage reached an out-of-court settlement, agreeing to comply with a number of stringent conditions aimed at reducing the environmental impact of its salmon farms. Heritage also agreed to pay \$375,000 to fund wild salmon restoration (Atlantic salmon have been on the U.S. endangered species list since 2000) and an equal amount in legal fees to the U.S. Public Research Interest Group. Furthermore, Heritage agreed to fallow sites, to stop raising European salmon strains,¹¹⁶ to ban experimental drugs without an environmental review and to stop using prophylactic antibiotics in salmon feed.

Stolt, for its part, was fined US \$50,000 in 2003 for polluting the Atlantic Ocean. In 2004, Stolt was also ordered to pay US\$581,869 for legal fees and expenses incurred by the U.S. Public Research Interest Group. As a result of the lawsuit, all salmon companies operating in Maine have been ordered to stop stocking European salmon.¹¹⁷ Stolt reports that it wrote off US \$468,000 of inventory as a result. Court-mandated fallowing will reduce the company's 2004 stockings by about 900,000 fish.¹¹⁸

Marine Harvest and parent company Nutreco face a U.S. lawsuit over alleged short-weighted packages of smoked salmon sold by Costco. The suit was filed by Lafjord USA, a small Washington state vendor that until recently held a contract to supply Costco with smoked salmon. Lafjord lost the contract in December 2003 when it was revealed that the smoked salmon packages it provided Costco, under the private label Costco Kirkland Signature, were underweight. Lafjord's salmon supplier was Marine Harvest, and Lafjord claims that Marine Harvest "intentionally calibrated its processing line in Flekkefjord, Norway, to pack the smoked salmon to a weight below" specifications outlined by Costco and Lafjord. It also alleges that this was not the first time that Marine Harvest weights were below package specifications. "The complaint alleges Marine Harvest engineered the 2003 short-weight problems to take over the lucrative private label contract from Lafjord and work directly with Costco."¹¹⁹

Nutreco filed a US \$5.7 million counter-claim against Lafjord in February 2004. In the claim, Nutreco denies fraudulently short-weighting smoked salmon to take over Lafjord's smoked salmon Costco contract. Nutreco also responded to "a long list of allegations including breach of contract, fraud and unjust enrichment with a string of denials."¹²⁰

The industry practice of adding artificial colouring to farmed salmon led to a class action lawsuit against three of the largest grocery chains in the U.S. – Kroger Co, Safeway Inc. and Albertson's Inc. The suit, filed by the Seattle law firm Smith & Lowney, accused the stores of misleading customers by failing to put the words "colour-added" on the farmed salmon they sold. The U.S. Food, Drug and Cosmetic Act requires all salmon containing the artificial colourants astaxanthin and canthaxanthin to be labeled. (Without colourants, farmed salmon would range

¹¹⁵ "US judge rules Stolt and Fjord violating federal law," Intrafish, 19 June 2002.

¹¹⁶ Heritage had reported it was using 100,000 fish of non-North American strains.

¹¹⁷ Fjord, as a result, announced it will close its two Maine hatcheries because it cannot find enough fish that have passed genetic tests ordered by the U.S. Fish and Wildlife Service. Fish tested at seven Canadian hatcheries, from which Fjord hoped to buy smolts, did not pass North American-origin genetic tests either, the company said.

¹¹⁸ "United States Securities and Exchange Commission," Form 20-F/A, filed by Stolt-Nielsen SA for the fiscal year ended 30 November 2003, p. 17.

¹¹⁹ "Marine Harvest sued over Costco contract," Intrafish, 2 January 2004.

¹²⁰ "Nutreco denies smoked salmon fraud allegations, files \$5.7 million counter-claim," Intrafish, 19 February 2004.

Stolt believes that the flurry of environmental and consumer challenges to the salmon farming industry will increase in the future.

¹²¹ Kathy Stephenson, "Suit leads grocers to label artificially colored salmon," the Salt Lake Tribune, 24 September 2003.

from grey to pale yellow or pink). Immediately after the suit was filed, grocery stores across the U.S. began to label farmed salmon.¹²¹ A similar suit in Washington state was dismissed in October 2003 when a Superior Court judge ruled that private parties cannot sue to enforce federal and state labeling laws.

Two environmental groups filed a lawsuit in California court in January 2004 that aims to require farmed salmon to be labeled as containing "potentially dangerous levels of cancer-causing toxins." The suit, filed by the Center for Environmental Health and the Environmental Working Group, names 50 defendants representing 26 companies – including Stolt, Cermaq, Pan Fish, Marine Harvest and Heritage. The complaint was brought under California law, which says that a company must inform consumers if they are exposed to chemicals known by the state to cause cancer. The suit was filed after a study published in the journal *Science* found that farmed salmon contain on average ten times the amount of PCBs of wild salmon.

Stolt believes that the flurry of environmental and consumer challenges to the salmon farming industry will increase in the future. Escaped fish, the spread of disease and parasites such as sea lice, the impact of antibiotic residues, synthetic pigments in feed and chemical residues such as PCBs in farmed salmon are some of the issues Stolt believes the industry may have to confront. The company notes that environmental and consumer concerns "could lead to litigation against SSF and more stringent government regulation of the aquaculture industry and SSF, each of which could require SSF to change its fish farming practices and incur additional costs."¹²²

¹²² United States Securities and Exchange Commission, Form 20-F/A, filed by Stolt-Nielsen SA for the fiscal year ended 30 November 2003.

Stolt awash in investigations

Stolt-Nielsen's 2002 annual report revealed that it paid a fine of US\$95,000 to settle a U.S. federal investigation of its transportation unit's dealings with Sudan. Stolt ships delivered molasses and the fuel additive MTBE to Sudanese ports between 1998 and October 2000, even though Sudan was on a U.S. embargo list for supporting human rights violations and terrorism. According to the *Wall Street Journal*, the deliveries were part of Stolt unit's maneuvering for two decades around "strict" U.S. trade embargoes on Sudan, Cuba and Iran. The paper reported that "Stolt used various means to continue this trade. It participated in a plan to set up phony cargo documents, embargoed ports in radio transmissions, and excised Iranian names in a communication from Tehran."¹²³

¹²³ James Bandler, "U.S. Probes Whether Shipper Acted to Bust Trade Embargoes," *Wall Street Journal*, 20 May 2003.

Documents cited in *Wall Street Journal* reports also "suggest that Greenwich, Conn.-based Stolt executives were involved in an effort to set up a joint venture with the Iranian state-owned petrochemical marketing company to export liquid chemicals from

¹²⁴ James Bandler, "Stolt-Nielsen Unit to Cooperate In Probe of Trading Activities," *Wall Street Journal*, 21 May 2003.

¹²⁵ James Bandler, "Seagoing Chemical Haulers May Have Colluded on Rates," *Wall Street Journal*, 20 February 2003.

¹²⁶ Stolt-Nielsen SA, Annual Report 2002, pg. 27.

¹²⁷ "U.S. Revokes Deal Offering Amnesty To Stolt-Nielsen," *The Wall Street Journal*, 23 March 2004.

¹²⁸ In August 2004, the European Commission Competition Directorate informed Stolt that it has closed its investigation into possible collusion in the intra-European inland barge industry. The commission's investigation into deep-sea tanker operations continues.

¹²⁹ United States Securities and Exchange Commission, Form 20-F/A filed by Stolt-Nielsen SA for the fiscal year ending 30 November 2003.

¹³⁰ James Bandler, "Ex-counsel at Stolt Is to Testify," *The Wall Street Journal*, 22 September 2003.

¹³¹ James Bandler, "Dow Chemical Sues Four Shippers, Alleging Bid Rigging, Conspiracy," *The Wall Street Journal*, 25 November 2003.

¹³² *Ibid.*

the oil-rich state."¹²⁴ The U.S. Department of Justice has launched a criminal inquiry to determine whether Stolt's dealings with Iran violated U.S. trade sanctions laws.

In February 2003, it was revealed that Stolt-Nielsen was the subject of a second U.S. criminal probe. This time the company came under investigation for alleged price fixing and collusion in the liquid chemical transportation business. Stolt and a second Norway shipping company, Odfjell, according to *The Wall Street Journal*, appear to have colluded for years to divvy up the global liquid chemicals marine transportation market. The companies "...discussed which shipping business each would bid for, route by route, even at times exchanging information on bid prices, Stolt documents and interviews with former company officials suggest."¹²⁵ In September 2003, Odfjell and two of its senior executives were convicted in the U.S. of criminal price fixing. Odfjell agreed to pay a fine of US \$45.5 million.

Stolt-Nielsen, in exchange for cooperation with the U.S. probe, was accepted into the U.S. Department of Justice's Corporate Leniency Program. This means the company and its directors "will receive amnesty from criminal antitrust prosecution and fines in the United States for anti-competitive conduct in the parcel tanker business, provided that stated conditions, included continued cooperation, are met."¹²⁶ As 2003 drew to a close, a senior Stolt transportation-group official who was removed from immunity had been charged with one criminal antitrust count. In March 2004, the U.S. Department of Justice revoked Stolt's amnesty agreement, marking the first time a company has been stripped of protection under the department's antitrust division program.¹²⁷ The U.S. investigation continues.

The European Commission is also investigating competitive practices in deep-sea parcel tanker and intra-Europe inland barge operations. The EC, too, has accepted Stolt into its Immunity Program, giving Stolt-Nielsen immunity from EC fines for anti-competition behaviour as long as the company cooperates with the EC investigation.¹²⁸ All told, the U.S. and European anti-trust investigations cost Stolt US \$15.5 million in legal fees during 2003.¹²⁹

In addition to these investigations, Stolt is also the subject of three high-profile lawsuits in the United States. Stolt first faced a lawsuit by Paul O'Brien, its transportation unit's former general counsel. O'Brien, whose lawsuit sparked a U.S. government criminal probe (above), claims that Stolt refused to investigate or prevent price fixing and collusion. When he questioned these practices, O'Brien says he was forced to resign to avoid becoming complicit in what he perceived to be illegal conduct.¹³⁰ Stolt, on the other hand, maintains that O'Brien's allegations are baseless and that its policy is to "operate in full compliance with the laws of the United States and with all countries."

O'Brien's allegations sparked two additional lawsuits against Stolt-Nielsen. After documents were revealed showing how Stolt's close relationship with Odfjell could have resulted in a 25 percent increase in some freight rates over what would be considered normal,¹³¹ Dow Chemical, Stolt's biggest customer, sued. Dow alleges that Stolt, Odfjell and two other smaller ocean carriers "rigged bids and conspired to inflate shipping prices artificially."¹³² Dow also seeks to recover legal costs and damages for

services affected by the alleged conspiracy. Union Carbide Corp., Dow's wholly owned subsidiary, has also filed suit against Stolt and the shipping firms. Stolt disputes the lawsuit claims, saying they are without legal basis and that the company will "vigorously" defend itself.

Stolt, in addition to facing investigations, charges and criminal probes, is also locked in a dispute with the U.S. Department of Commerce. In 1998, U.S. salmon farmers complained about alleged dumping of Chilean salmon on the American market. Fifteen of Chile's largest producers were investigated. Stolt's Ocean Horizons business in Chile was charged with dumping, and a 4.7 percent duty was slapped on salmon Stolt shipped to the U.S.

When Stolt Sea Farm purchased Eicosal, another Chilean fish farm company that had also been charged with dumping, Stolt became further embroiled in the dispute over dumping duties. At the time Stolt bought Eicosal, the Chilean company had received three consecutive clean dumping reviews. Normally this would lead to a revocation of dumping charges. In Stolt's case, however, the Department of Commerce said the potential merger of Eicosal and Ocean Horizons could lead to future dumping. Consequently, and much to Stolt's dismay, the department refused to revoke Eicosal's anti-dumping charges. Stolt Sea Farm is in the process of appealing this ruling. The outcome should be known sometime in 2004.

¹³² Dan MacLennan, "Salmon Farmers Association 'misrepresented' result of dropped court case against Stolt Sea Farm, says Crown lawyer," *Courier-Islander*, 6 July 2000. Carla Wilson, "Salmon farm charges tossed," *Times Colonist*, 29 June 2000.

STOLT'S PRIVATE PROSECUTION

Stolt Sea Farm faced a private prosecution in B.C. in 1999 when former New Democratic Party MP Lynn Hunter brought criminal charges against the company for allegedly harming fish habitat. Hunter claimed that the buildup of feed and fecal matter beneath Stolt's Carrie Bay farm constituted a harmful alteration of fish habitat. The former MP cited a 1996-97 provincial report that found pollution from excess salmon feed and feces was accumulating under some B.C. salmon farms and spreading at least 50 metres beyond. Hunter said she launched the private prosecution because neither the province nor the federal Department of Fisheries and Oceans had acted on the provincial report. She cited evidence claiming divers had found waste half a metre deep underneath one Stolt farm. Based on her evidence, the Crown agreed to consider the case.

After an extensive 12-month study, the federal Department of Justice stayed the charges. The department agreed there was evidence of environmental damage from Stolt's farm but said a conviction was unlikely given the evidence, and because of complicated legal and regulatory issues. (The Crown must be satisfied there is a reasonable prospect of conviction to press charges.) Nonetheless, Federal prosecutor John Cliffe said that a press release from the B.C. Salmon Farmers Association, claiming the decision gave salmon farming a clean bill of health, was a "complete misrepresentation" of the facts. Cliffe said Stolt was expected to argue that it operated the farm at a site approved by the federal Department of Fisheries and Oceans and with an approved provincial license: "We took the view that this would be a successful defense to these charges."¹³²

It didn't take long for the scandal in Chile to become front-page news in Norway and severely embarrass the Norwegian government, Cermaq's de facto owner.

Cermaq labour rights controversy

In recent years, Cermaq has come under much scrutiny in Chile for labour law violations by its subsidiary, Mainstream Chile. These allegations first surfaced in 2001 in a monthly U.S. magazine called Latin Trade, which reported that: "Interviews with industry consultants, current and former company workers and government regulators reveal a company that talks publicly about cost cutting and efficiency but, government officials charge, pays less than the legal minimum wage and invests little in worker orientation and safety training."

Hector Moyano, an investigator with Inspeccion del Trabajo, the Chilean government body responsible for monitoring labour law, revealed to Latin Trade that Mainstream "... is paying its workers less than minimum wage for overtime. Those hours have to be at least minimum wage. If we can't negotiate a settlement, we will have to fine them," said Moyano. And fine Mainstream the government did. Since 2002, the Chilean government has fined Mainstream 13 times for a range of violations. These include failing to issue employees with protective equipment, not giving workers employment contracts and not giving them a day off each week. The Chilean government even fined Mainstream for illegally suspending the company's first legally elected union leader.¹³³ In a report to Mainstream, Chile's labour inspectorate wrote that the company violations revealed a "high degree of unreliability in Mainstream."¹³⁴

It didn't take long for the scandal in Chile to become front-page news in Norway and severely embarrass the Norwegian government, Cermaq's de facto owner. The Norwegian newspaper Dagbladet published several scathing articles on labour conditions at Mainstream Chile based on an internal report from the Chilean Labour Inspection Authority that was leaked to Dagbladet and "not intended for public viewing."¹³⁵ The newspaper accused Mainstream of "persecution of union members, breaches of the law, safety discrepancies and fatalities." Among other allegations, Dagbladet reported that:

- A young Mainstream filleting worker miscarried after being put on an 11-hour night shift. Such shifts are illegal for pregnant women under Chilean law.
- A single mother was fired because of her 9-year-old handicapped son.
- A Mainstream diver – and father of three – died due to inadequate safety precautions. "The Chilean public health ministry also confirms that error and inadequate safety were the reasons for a diver's death on the job," stated Dagbladet.

¹³³ The union leader was reinstated after Dagbladet contacted Mainstream and told them about the impending article.

¹³⁴ "Cermaq Chairman failed to mention violations," Intrafish, 5 December 2003.

¹³⁵ "Chilean authorities praise Norwegian Mainstream," Intrafish, 12 December 2003.

The newspaper also reported that a Chilean government official had warned the Norwegian embassy in Chile about labour violations at Norwegian-owned fish farming companies, but said the embassy did not appear to have taken any remedial action. (Dagbladet also noted that the husband of Norway's Chilean ambassador worked for a Norwegian-American pharmaceutical company that sells vaccines to the Chilean salmon industry.)

The resulting furor sparked a public rift between Ansgar Gabrielsen, Norway's Minister of Trade and Industry, and Cermaq's chairman Sigbjørn Johnsen. Gabrielsen complained that Johnsen had not even mentioned the Chilean fines in a 20-page report to him, commenting that "these aren't things I enjoy hearing." Johnsen, in his report to Gabrielsen, had written that Mainstream "naturally complies" with Chilean regulations and laws. Johnsen would later explain that information about the fines for labour rights violations "was of such a nature that we did not deem it necessary to inform the department (of trade and industry) of this."¹³⁶

¹³⁶ "Cermaq Chairman failed to mention violations," Intrafish, 5 December 2003.

¹³⁷ "Cermaq subsidiary lashes out at media accusations," Intrafish 7 July 2003.

Dagbladet continued to write about Mainstream, even after the company issued a public statement rejecting what it called Dagbladet's "misleading and deceitful accusations." The company said it strives to have excellent relations with workers and that its Chilean management is dedicated to "maintaining the highest internal standards on work safety, training courses, communication with employees, etc."¹³⁷

When 70 percent of the workers at Mainstream's processing plant signed a letter refuting Dagbladet's allegations and pledging support for the company, Dagbladet wrote that workers it interviewed had been subjected to pressure by Cermaq's Chilean management. Workers had been told their jobs would be in danger if they did not respond, according to Dagbladet.

To enhance its public image in Chile, Cermaq has embarked on several projects, including the construction of a foster care centre for children from troubled or destitute families in the city of Ancud on the island of Chiloé, known as SOS Children's Village. Cermaq has also agreed to pioneer a new method for improving safety standards and working conditions in Chile. Created by the Chilean government, the voluntary program aims to implement "international standards with regard to employment conditions, social rights, hygiene and safety." Mainstream and other companies participating in the program will carry out internal audits to ensure compliance.

Cermaq's willingness to participate in the program has been praised by the Chilean government, which issued a press release in December 2003 congratulating Mainstream for its efforts. Ironically, just two weeks before the government press release lauding Mainstream, new fines were imposed on Cermaq's Chilean subsidiary. Neither the nature of the violations nor the sum of the fines has been revealed. "These fines are not final, precisely because they are still being considered by the authorities," according to board chairman Johnsen.¹³⁸

¹³⁸ "Cermaq chairman questions Norwegian broadsheet's motives," 12 December 2003.

A growing number of coastal First Nations in British Columbia – and likely the majority – are opposed to salmon farming in principle.

**Track record:
First Nations**




In the past decade, many First Nations in B.C. have asserted their constitutional right to proper consultation and accommodation with regard to industrial activities in their traditional territories. Permission from First Nation groups is now a part of the application process when new salmon farm tenures are reviewed for approval in traditional territories. However, the question of who can grant permission for tenure remains a highly contentious issue. Provincial government disregard for overlapping territories and lack of consultation with band officials has led to the location of fish farms in areas of contention – and corresponding divisions between communities linked by culture and family.

The B.C. government helps salmon farming multinationals foster closer relationships with First Nations. In 2003, for instance, it gave the B.C. Salmon Farmers Association \$20,000 to “assist selected First Nations groups and representatives to attend forums and events related to aquaculture for educational and developmental purposes.”¹³⁹

Fish farming agreements between multinationals and First Nations continue, as do statements of zero-tolerance for fish farms and the banning of open net cages by First Nations governments. Most recently, Pan Fish negotiated a 30-year deal with

¹³⁹ Request for Information – Aquaculture Expenditures, obtained under the B.C. Freedom of Information and Protection of Privacy Act.

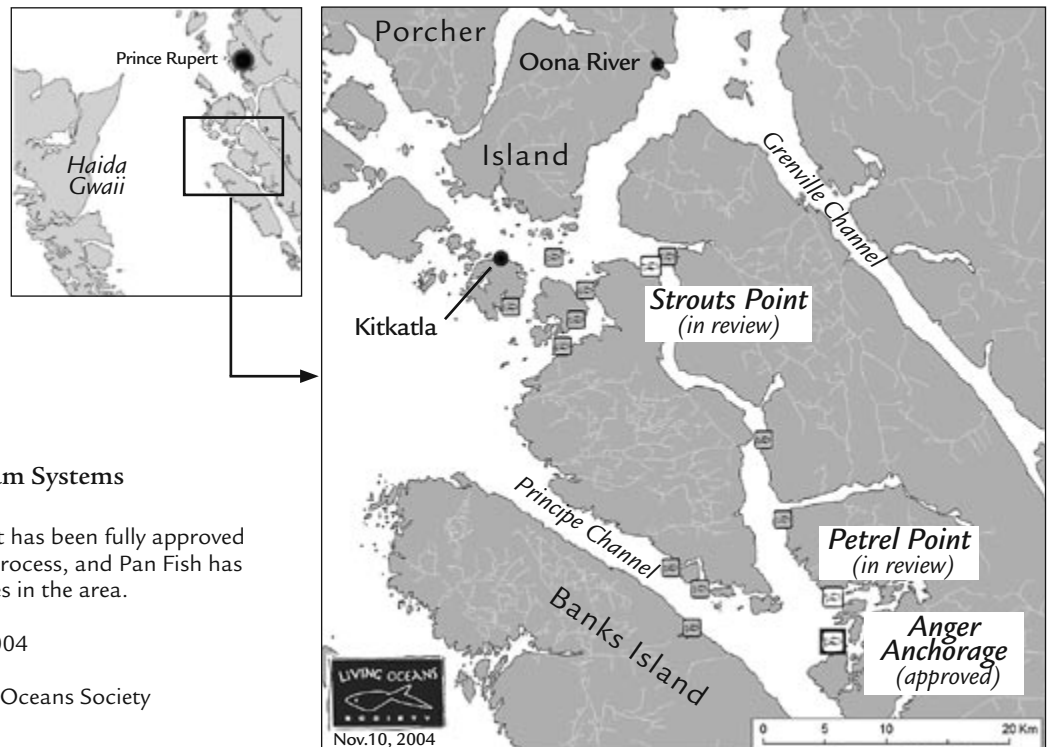
Pan Fish north coast salmon farming tenures (proposed, in-review, and approved)

-  Approved (1)
-  In Review (2)
-  Proposed (12)

 Salmon Bearing Stream Systems

Note: One farm for the north coast has been fully approved as of July 2004, two others are in process, and Pan Fish has identified numerous additional sites in the area.

Farm locations: BC MAFF, April 2004
 Salmon Streams: BC FISS
 Map: J. Ardron. Courtesy of Living Oceans Society
 www.livingoceans.org
 Projection: BC Albers Equal Area



the Kitkatla First Nation on B.C.'s north coast, south of Prince Rupert, to relocate at least 10 farms into Kitkatla traditional territory. Former B.C. fisheries minister John van Dongen helped expedite matters when he met with both parties at a meeting in Prince Rupert in 2001,¹⁴⁰ and by April 2004, Land and Water B.C. had granted tenures for three new Pan Fish salmon farming sites in Kitkatla traditional territory. (Sites still need to be approved federally. The other planned relocations have yet to be approved.) The deal gives the band rights to employment benefits and a biomass royalty. Pan Fish says this will "result in the injection of millions of dollars into the economy of northern British Columbia and potentially [create] 300 or more jobs over the long-term."

In August 2004, the federal government granted approval for the first of the three sites currently being processed for the north coast. This will become the home of Canada's most northern fish farm. To the great concern of the Alaskan government, which is worried about the impact any escaped Atlantic farmed salmon may have on the state's wild salmon stock, the Skeena River site is only 60 kilometres from the Alaskan border. The Alaska Department of Fish and Game has asked Canada to delay permits for salmon farms near the border until technology exists to prevent escapes and the fish farming industry's potential impacts on marine environments and wild fisheries resources are determined.

Pan Fish has also brokered deals with the Kwakiutl First Nation and the Gwa'Sala-Nakwaxda'xw First Nation in the Port Hardy area. Pan Fish agreed to relocate two salmon farming tenures into each of two First Nation traditional territories, promising to offer sub-contracting work and jobs to the First Nations. The company also agreed to provide royalties directly to the bands.¹⁴¹

Cermaq has brokered a partnership with the Ahousat First Nation in Clayoquot Sound. (The Ahousat became the B.C. Salmon Farmers Association first aboriginal member in 2003.) Nutreco, for its part, has entered into partnerships with the Kitasoo/Xaixais nation on B.C.'s mid-coast and the Kyuquot/Checkleset First Nations on the west side of Vancouver Island. Stolt, too, aims to develop closer relationships with First Nations in British Columbia. In June 2003, representatives from Stolt and Global Public Affairs, a national public relations firm hired by Stolt, met with representatives from the federal Department of Indian and Northern Affairs. Stolt wanted to know, among other things, what government resources are available for First Nations groups interested in becoming involved in aquaculture.¹⁴²

A growing number of coastal First Nations in British Columbia – and likely the majority – are opposed to salmon farming in principle. The Heiltsuk of Bella Bella on B.C.'s mid-coast, for instance, have a zero-tolerance policy for salmon aquaculture. They claim farming Atlantic salmon on the Pacific coast threatens native salmon stock and their way of life. The Heiltsuk say farmed salmon promote disease and the pens pollute the ocean and blight the area's natural beauty, making it less attractive to a burgeoning eco-tourism industry. "We don't want the central coast to become the garbage dump for the Atlantic salmon farming industry," explained Heiltsuk elder Ed Newman. "This territory is our food basket. We live off the sea and we are trying to protect our way of life."

The Heiltsuk fear that a new Pan Fish hatchery in Ocean Falls, north of Bella Bella, is

¹⁴⁰ "Ministry of Agriculture Food and Fisheries Briefing Note," 17 April 2001, obtained under the B.C. Freedom of Information and Protection of Privacy Act.

¹⁴¹ "Ministry of Agriculture, Food and Fisheries Briefing Note," 16 October 2001, obtained under the B.C. Freedom of Information and Protection of Privacy Act.

¹⁴² Department of Indian and Northern Affairs, information obtained under the federal Access to Information Act.

the first stage in a plan to expand operations on B.C.'s north coast. Pan Fish has given mixed messages about its aspirations. On one hand, the company has said it might establish between 10 and 20 north coast sites. On the other hand, Pan Fish has assured the Heiltsuk and the neighbouring Nuxalk First Nations, who are also opposed to salmon farming, that it has no plans for expansion in their traditional territories. The company says the purpose of the Ocean Falls hatchery is to provide stock for fish farms in other locations.¹⁴³ Pan Fish points out that up to 30 people will be employed at the hatchery, which has the capacity to produce up to 10 million smolts annually. "The employment carrot is always dangled in our faces," countered hereditary chief and fisherman Harvey Humchitt. "We do need employment, but it's unfortunate that it's these prices we have to pay."

The Musgamagw Tsawataineuk Tribal Council from Alert Bay is a member of the Coastal Alliance for Aquaculture Reform. The three bands that comprise the MTTC have a policy of not permitting open net cages in their territory. Yet, with 27 farms, their territory is home to the densest conglomeration of salmon farms in the province. Elected band officials have joined the salmon farm debate. In an opinion editorial published in the National Post, Chief Bill Cranmer writes: The Musgamagw Tsawataineuk Tribal Council and its member First Nations are stating, as we have done on other occasions, that our Aboriginal rights are being affected by what we believe are illegal activities stemming from open net fish farms in our territories. We want that activity to stop."

Other bands, too, have made formal statements against open net cages in their territories. Lawsuits alleging failure to consult or damage to ecosystems have been filed against nearly all the major salmon farming companies operating in B.C.

¹⁴³ "Protests halt work on multi-million dollar Pan Fish hatchery," Intrafish, 15 January 2003.

Track record: worker strikes and public protest

Workers strike against Nutreco

"Nutreco staff shall be entitled to join the Trade Union of their choice."

(NUTRECO CODE OF CONDUCT)

In 2001, the Canadian embassy in the Netherlands declared Nutreco the "Company of the Year" and the Canadian ambassador to Holland presented Nutreco CEO Walt Dekker with a trophy honouring the company's recent investments in Canada. That same year, 55 workers at a unionized Nutreco (Marine Harvest) manufacturing plant in Chile were fired after a strike.

The 11-day strike involved 433 of the plant's 560 workers. Protesting workers demanded a pay increase of US \$15 a month. Samuel Cuevas, secretary of the plant's union, said workers needed more money to support their families. "While Marine Harvest has obtained great profits in earlier years, buying companies and starting the construction of a giant fish feed factory in Puerto Montt, it continues to maintain very low basic salaries," explained Cuevas.

According to the Chilean environmental organization EcoOceanos, most of the Marine Harvest plant's workers are women. At the time of the strike, the vast majority – 80 percent – earned a based salary of not much more than US \$130 a month.¹⁴⁴

¹⁴⁴ "Marine Harvest fires over 55 workers in Chile," Intrafish, 22 November 2001.

Marine Harvest says the 55 workers were dismissed “for reasons of loss of trust resulting from threats of violence and destruction of public property.” Union spokesperson Cristián Araos called the move “nothing more than an exercise of prejudice against unions and an act of discipline against workers who have only made use of their constitutional rights.” Araos said the fired workers were the same ones who had staged a one-hour “go-slow” protest after the strike had ended. Ultimately, workers received a two percent pay increase spread over three years, far less than they had requested.

Stolt found itself the focus of controversy in Scalpay, Scotland, in 2002 after workers at a company processing plant joined the GMB trade union. Most of the plant’s 32 workers joined the union largely because of widespread dissatisfaction over contracts the company had asked them to sign, the local media reported. The media also quoted workers as saying they had been threatened with dismissal if they joined the trade union, an allegation denied by Stolt. The managing director of Stolt Sea Farm operation in Scotland’s Western Isles, Petter Krabberod, said the plant’s work force had expectations that were “too high.” Among other requests, workers wanted the day off on Saturdays.¹⁴⁵

¹⁴⁵ “Stolt Sea Farm hopes for peaceful solution to industrial dispute,” Intrafish, 21 May 2002.

Public protests

Pan Fish has been the target of repeated public protests in B.C. and around the world. Following its decision to build a controversial fish hatchery at Ocean Falls, opposed by the local Heiltsuk and Nuxalk First Nations, 14 boats carrying 60 protesters arrived at the company’s Ocean Falls hatchery site in December 2002. The following month, a flotilla of 30 boats transported 200 demonstrators, many from the Heiltsuk and Nuxalk. The First Nation members, in traditional regalia, planned to deliver a message to company executives, none of whom made an appearance. Four planeloads of people from the United States also joined the demonstration, including eco-tourism operators, Alaskan fishermen and Lummi and Swinomish First Nations representatives.

The Ocean Falls demonstration coincided with other protests against Pan Fish in Vancouver, the United States, Germany and Hong Kong. In Vancouver, almost 300 protesters converged at the Norwegian consulate carrying signs with messages such as, “We already have the world’s best natural fish farm: why wreck it?” Following the protest, 25 First Nations representatives met with Norwegian consulate personnel in a closed-door session. Five weeks later, 25 members of the Nuxalk Nation staged another protest at Ocean Falls. They camped at the hatchery site, halting construction. Despite the protests, the hatchery began operations in 2003 and was expected to put 1.5 million smolt into net pens in the spring of 2004.

To the east of Heiltsuk territory, members of the Nuxalk First Nation blockaded a truck loaded with Marine Harvest salmon coming from Marine Harvest farms near Klemtu in December 2002. The following month two band members again blocked Marine Harvest trucks. The Nuxalk, who are opposed to salmon farming, want Marine Harvest to stop moving farmed salmon through their traditional territory.

Heritage fish farms in the Broughton Archipelago were targeted by 250 protesters in February 2003 as a flotilla of “seine, troll, gillnet vessels and skiffs” circled Heritage

farms at Cliff Bay and Sir Edmund Bay. Demonstrators opposed Heritage's decision to stock hundreds of thousands of smolts at the controversial sites, which are thought to have contributed to a widespread sea lice outbreak on young wild salmon and the corresponding collapse of wild pink salmon runs in 2002. Heritage and Stolt had both agreed to follow 11 migratory route sites, but Heritage said following the Cliff Bay site was not feasible because it would cost the company \$15 million.¹⁴⁶ Then, in the summer of 2004, the environmental group Greenpeace and First Nations groups from B.C. and Alaska launched a 40-boat "floating protest" against Heritage salmon farms in the Broughton Archipelago.

¹⁴⁶ "Protestors target Heritage farms in Broughton," *Intrafish*, 12 February 2003.

In Washington State, plans by Pan Fish subsidiary Cypress Island to install floating warehouse feed barges at its Bainbridge site met with opposition by several dozen local residents in 2002. Homeowners complained the new facilities would wreck their view of the water. A public hearing was scheduled to examine residents' complaints and other regulatory issues. The barges aim to reduce Cypress Island's freight costs by US \$120,000 annually.

Pan Fish's Scottish subsidiary, Lighthouse, has also been the subject of dispute. Lighthouse recently announced plans to turn a rainbow trout farm on the Etrick River into a facility for producing salmon smolts. The Etrick is a tributary of the Tweed, home to the most productive wild salmon fishery in the North Atlantic. Local landowners, anglers and the River Tweed Commissioners, empowered by an act of Parliament to protect native wild salmon species, object to Lighthouse's plans on the grounds that farmed fish could pass on diseases to wild stock and decimate the wild fish industry. "What is at stake here is the permanent, irreversible contamination of the Tweed's wild salmon and the threats that would pose for the very substantial employment and revenue generated by the fisheries," wrote the commissioners. While the proposed smolt unit would create some jobs, commissioners pointed out that approximately 500 jobs in the area depend on the wild fisheries. Lighthouse's proposal is on hold pending a voluntary environmental impact assessment. In the meantime, following media reports expressing concern about the fate of wild salmon, Lighthouse has offered to use land-based fresh water tank systems for its smolt farm.¹⁴⁷

¹⁴⁷ In August 2004, following completion of this report, Pan Fish announced it had cancelled plans for the smolt farm due to stiff opposition.

A Cermaq attempt to expand its Scottish operations was stymied in 2002 when Orkney Islands Council officials recommended refusal of a proposal for a new Cermaq Aquascot. Officials were concerned about the visual impact of such a development in a scenic bay frequented by tourists. The Scottish Environmental Protection Agency was also worried that Cermaq's proposed farm site was close to a brook containing a healthy population of wild trout, especially given fears that sea lice on the farmed salmon might be passed to the wild stock.

In Ireland's Donegal county, a campaign called "Save the Swilly" lobbied the Aquaculture Licenses Appeals Board to reject a Marine Harvest application for a salmon farming license. "Save the Swilly" campaigners argued that the proposed site would have a negative impact on the environment by causing water quality to deteriorate, posing a risk to navigation and detracting from picturesque views in a designated scenic and tourist route. In December 2003, the appeals board rejected Marine Harvest's application.

When farmed Atlantic salmon escape from their net pens, as they invariably do, there is the fear they will become established in local ecosystems and harm native species, much the way that rabbits infiltrated Australian ecosystems to the detriment of native wildlife and habitat.

Track record: escapes

Most salmon farming multinationals in B.C. raise Atlantic salmon. B.C.'s early salmon farmers, mainly little family-run enterprises, tried raising coho and Chinook, but salmon native to the Pacific did not adapt well to crowded net pens. A majority of farms, with the help of the newly formed B.C. Salmon Farmers Association, switched to Atlantic salmon in the 1980s and early 1990s. Atlantic salmon were more adapted to pen culture because of Norway's history in the business: they were more docile, had a high survival rate and converted feed to meat more efficiently. The Norwegian corporations that snapped up B.C.'s small, foundering salmon farms in the 1990s already had decades of experience in raising Atlantic salmon. They had also invested in the development of international markets for Atlantic salmon.¹⁴⁸

¹⁴⁸ John Volpe, *Super-natural B.C.*, David Suzuki Foundation, 2001.

When farmed Atlantic salmon escape from their net pens, as they invariably do, there is the fear they will become established in local ecosystems and harm native species, much the way that rabbits infiltrated Australian ecosystems to the detriment of native wildlife and habitat. There is evidence that escaped Atlantic salmon already have bred in B.C. rivers: "To date, conclusive evidence shows that three Pacific salmon-bearing systems (Amor de Cosmos Creek, Adam and Eve River, and Tsitika River) currently support presumably wild-spawned juvenile Atlantic salmon."¹⁴⁹

¹⁴⁹ Volpe, p. 18.

Even on North America's Atlantic coast the Atlantic salmon raised in fish farms are typically of different genetic stock than the indigenous wild Atlantic salmon. When they escape they too pose a threat to wild stock. As a result of a court case in Maine involving Heritage and Stolt, salmon farming companies in that state were ordered to replace European genetic stock with native stock. Wild Atlantic salmon in Maine were declared an endangered species in November, 2000.

In Scotland, where more than one million farmed salmon have escaped from cages since 1998, there is evidence that escaped salmon reduce survival for wild stock through interbreeding that produces weaker offspring. Scotland's salmon farming industry is mainly located on its west coast, the Western Isles, the Orkney and the Shetland Islands. Escapes from salmon farms "constitute a major threat to wild populations," concluded marine biologist Kenny Black in a 2002 report commissioned by the Scottish parliament. Black warned that if just one percent of the farmed salmon population in Scotland escape each year it is enough to overwhelm wild stocks. (Farmed salmon company executives took issue with the study's findings, pointing out that farmed salmon have a poor chance of survival after they escape.) Approximately 430,000 salmon escaped from Scottish farms in 2002. By the end of November 2003, about 100,000 fish had escaped in 13 incidents.¹⁵⁰

¹⁵⁰ Email from Matthew Allan, Aquaculture Policy and Development Officer, Scottish Executive, 27 November 2003.

A 2003 research paper published by The Royal Society, the independent scientific academy of the United Kingdom, came to conclusions very similar to those in Black's report for the Scottish Parliament. Professors at Queen's University in Belfast studied interactions between farmed and wild salmon: "Our experiments, uniquely carried out over two generations, demonstrate conclusively that these intrusions lower survival and recruitment in wild populations and that repeated escapes produce a cumulative effect, which could lead to extinction of endangered wild populations." The authors of the Royal Society report found that about one-third of adult salmon entering rivers in Norway are escaped fish. Some rivers had more than 80 percent escaped fish. On North American's east coast, escaped farmed salmon outnumbered wild fish in some rivers by as much as 10 to one.¹⁵¹

¹⁵¹ Andy Ferguson, Dr. Philip McGinnity et al, "Fitness reduction and potential extinction of wild populations of Atlantic salmon *Salmo salar* as a result of interactions with escaped farm salmon," Royal Society, 2003.

In Norway, the number of escapees has varied widely. In 2001, 370,000 salmon and trout swam out of holes in Norwegian pens.¹⁵² In 2002, that number jumped to about 730,000; in 2003, it dropped back to some 415,000. New technical criteria for fish farming facilities were expected to reduce escapes in 2004.

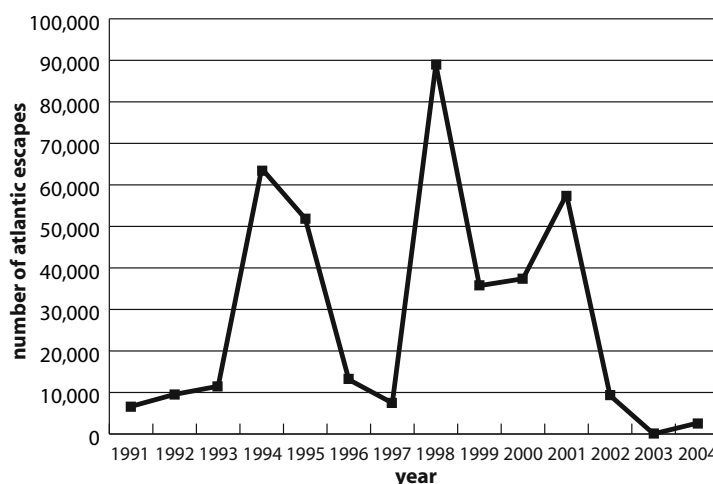
¹⁵² "415,000 salmon and trout escaped from Norwegian farms last year," Intrafish, 11 February, 2004.

In Iceland, escapes of farmed salmon of Norwegian origin have sparked fears that diseases and viruses may be transmitted to Icelandic wild salmon: "It is vital that the purity of their environment never be compromised," stated Orri Vigfússon, chair of the North Atlantic Salmon Fund, after the organization discovered Norwegian farmed salmon entering Iceland's rivers in 2003. The salmon were thought to be some of 3,000 fish that had escaped six weeks earlier from Icelandic farms that raise Norwegian stock.

¹⁵³ "Around 900,000 farmed salmon escapees per year estimated in Chile," Intrafish, 7 January 2003.

In Chile, up to 1.5 percent of all farmed salmon escape each year. That means about 900,000 farmed salmon swim into the ocean annually.¹⁵³ In July 2004, about one million salmon fled from 22 pens owned by a Japanese company called Salmones Antártica during a rain and windstorm in southern Chile. The salmon, weighing up to two

Reported Atlantic salmon escapes from B.C. salmon farms from 1991 - November 2004



Between 1989 and 2002, nearly one million domesticated Chinook salmon escaped from B.C. fish farms.

kilograms each and altogether worth approximately \$12.6 million, would have been ready for harvest several months later. Although new environmental regulations established in 2003 require fish farming companies in Chile to recover all escaped fish, it was unclear how one million fish would be found and caught. Cover-up of escapes in Chile now results in fines of up to US \$150,000 and even jail time.

Approximately one million Atlantic salmon have been reported escaped from net pens in the Pacific Northwest since 1990.¹⁵⁴ Reported escapes have varied wildly year to year. Escaped Atlantic salmon swimming in the Pacific have been caught by gillnetters, seiners and trawlers. Escaped Atlantic salmon from farms in B.C. and/or Washington State have even turned up in Alaska, where salmon farming is banned because of fears of its potential impact on native species and ecosystems. One 10-pound Atlantic salmon, believed to have escaped from a B.C. farm, was caught by a commercial gillnetter in Alaska in September 2003. Over the past decade, hundreds of escaped Atlantic salmon have been found in Alaskan waters, including in spawning streams, according to the Alaska Department of Fish and Game.¹⁵⁵ Reporting of escapes in B.C. is mandatory but “the federal Department of Fisheries and Oceans (DFO) acknowledges that the level of compliance remains unknown.”¹⁵⁶

Chinook salmon are also farmed in open net cages in B.C. In 2003, about 12 percent (or 10,000 tonnes) of farmed salmon produced in B.C. were Chinook. Between 1989 and 2002, nearly one million domesticated Chinook salmon escaped from B.C. fish farms. In 2002, almost the same number of Chinook – 9,098 – escaped from B.C. aquaculture facilities as did Atlantic salmon (9,282).¹⁵⁷

There has been much discussion of the potential threat to Pacific ecosystems posed by the escape of Atlantic salmon; however, we hear very little about the damage that can be caused from escapes of domesticated native species such as Chinook. On Canada’s east coast, where Atlantic salmon are native, scientists conducted a study on the survival of farmed-wild hybrids. It found that when the second generation of hybrids were bred together, 70 percent of their eggs were deformed. The study’s authors stated that the escaped native salmon could potentially cause the extinction of wild salmon populations, particularly in streams with depressed populations.¹⁵⁸

Some salmon farming companies believe that raising Chinook salmon instead of Atlantic is a way to escape the costly diseases that have plagued farmed Atlantic salmon production on the Pacific Coast. Organic certification currently under consideration in B.C. poses Chinook as a rational alternative to raising Atlantic salmon in Pacific waters. However, farming native salmon species comes with its own unique set of problems and should by no means be viewed as a panacea for ecologically-sound production.

¹⁵⁴ “Another Atlantic escapee confirmed caught in Alaska waters,” *Intrafish*, 7 October 2003.

¹⁵⁵ *The Juneau Empire*, 7 October 2003.

¹⁵⁶ Volpe, p. 16.

¹⁵⁷ Fisheries and Oceans Canada, Atlantic Salmon Watch Program, “Reported B.C. Aquaculture Escapes,” DFO website. Coho and, very infrequently, sockeye are also farmed in B.C. Farmed coho have also escaped from B.C. salmon farms.

¹⁵⁸ McGinnity, P., et al, “Fitness reduction and potential extinction of wild populations of Atlantic salmon, *Salmo salar*, as a result of interactions with escaped farmed salmon,” proceedings of the Royal Society London B., 2003.

In November 2002, an environmental organization reported Pan Fish to the police after 11,000 salmon escaped from a company farm in Norway.

Pan Fish

Unlike some other salmon farming multinationals, Pan Fish (Omega) does not publicly report details of escapes from its global farms. However we do know that in 2001 a hole in a net pen holding 47,000 Atlantic salmon was found at the Omega Marsh Bay site near Port Hardy on Vancouver Island. No information was available about how many salmon might have escaped.

In Washington State, where Pan Fish owns eight salmon farms under the name Cypress Island, new regulations introduced in 2002 require all fish farms to report all escapes, even small ones. Cypress is also required to open its operations to annual inspections by the Washington State Fish and Wildlife Commission. The regulations were imposed following an unknown number of escapes from Cypress Island's net pen sites in Puget Sound. In 2003, up to 250 juvenile Atlantic salmon as long as 30 centimetres were found in a creek that is home to a healthy coho salmon population. The salmon were believed to be from a Cypress Creek hatchery. (A spokesman for the hatchery blamed the escape on vandals.) In 1999, 100,000 salmon escaped from a Cypress Island pen near Bainbridge Island.¹⁵⁹

¹⁵⁹ Ericka Pizzilla, The Bellingham Herald, reprinted in Growfish, 16 May 2003.

In November 2002, an environmental organization reported Pan Fish to the police after 11,000 salmon escaped from a company farm in Norway. The salmon swum through a sea cage tear that occurred when it was lifted out of the water, a Norwegian newspaper reported. Authorities were considering laying charges against Pan Fish. The company's 2002 annual report said simply: "During the past year Pan Fish experienced several serious escape incidents in Norway and the Faroes." Pan Fish says it has implemented an "internal company plan of action against escapes." Atlantic Salmon in the Faroe Islands, in which Pan Fish is a minority shareholder, reported that 600,000 fish escaped during a storm in February 2002, the largest single escape ever reported until the summer of 2004, when one million farmed salmon escaped in Chile.

Cermaq

In 2003, Cermaq was charged in B.C. with regulatory violations stemming from the escape of about 10,000 fish between the fall of 2001 and spring of 2002. (For details see section on “Track Records: Regulatory Compliance.”) The company said it has installed new cage systems designed to withstand strong seas as well as a new security net to thwart predators. In Scotland, Cermaq’s Aquascot Group lost 15,000 one-year-old fish in 2000 after a storm damaged a cage in Loch Clash, Kinlochbervie. In 2001, about 59,000 Cermaq fish escaped in Scotland. In Chile that same year, strong tidal currents caused the loss of 10 cages of salmon containing some 380,000 fish.¹⁶⁰ The company said it did not have exact figures for escapes in Canada in 2001, but reported that “there were several incidents where fish escaped.”

¹⁶⁰ Cermaq Annual Report 2001.

Nutreco (Marine Harvest)

In May 2000, a Marine Harvest farm in B.C.’s Kyuquot Sound lost more than 30,000 female chinook salmon smolts after a boat propeller tore a hole in a net pen.¹⁶¹ Worldwide, Marine Harvest farms lost between 15,000 and 16,000 fish to escapes in 2002 – one-quarter the number that escaped in 2001.¹⁶² During 2003, two escape incidents at Marine Harvest farms in Scotland resulted in the escape of more than 27,000 fish. In April 2003, approximately 16,000 fish escaped from a Marine Harvest farm in Loch Ewe, Scotland, after a fire caused by a faulty compressor burned through a plastic pen.¹⁶³ The rest of the fish escaped through a hole in an inadequately refurbished net at another site. A further 2,600 salmon escaped from Marine Harvest farms in other countries during 2003.¹⁶⁴

¹⁶¹ CP Wire, 4 May 2000.

¹⁶² Nutreco, Social and Environmental Report 2002.

¹⁶³ “Salmon farm fire causes escapes,” Intrafish, 12 May 2003.

¹⁶⁴ Nutreco, Social and Environmental Report 2003.

Heritage

In November 2000, Heritage lost 13,100 salmon from a farm in Maine after a boat ripped a hole in a net. “Between 1994 and 1998, Heritage lost a total of 90,359 fish, although not all of these losses reflect escapes.”¹⁶⁵ Heritage lost an additional 2,000 salmon from a Maine farm in November 2003. The escape, thought to be caused by mooring equipment that became tangled in a net and ripped a hole in it, occurred less than 24 hours after the Heritage site was inspected and found to be in compliance with state regulations.

¹⁶⁵ United States District Court, District of Maine, United States Public Interest Research Group vs. Heritage Salmon, Inc., 19 February 2002.

The political saga of Stolt escapees

In 2001 a B.C. government investigation into a large salmon escape at a farm owned by Stolt touched off a wave of controversy. It sparked an RCMP commercial crimes unit investigation into provincial fisheries minister John van Dongen’s handling of the Stolt file, a rift between two provincial ministries, and a direct appeal by Stolt to the provincial government to “work with us, rather than against us.”

The furor began in August 2000, when more than 30,000 Stolt Atlantic salmon escaped through a tear in a net in Sargeaunt Passage opposite Viscount Island in the Broughton.

The furor began in August 2000, when more than 30,000 Stolt Atlantic salmon escaped through a tear in a net in Sargeaunt Passage opposite Viscount Island in the Broughton. This was the second salmon escape from a Stolt farm in B.C. in one year. An investigation into the Sargeaunt Passage escape by the Ministry of Agriculture, Food and Fisheries found that a “shackle helping to hold the net in place likely ripped the net and water currents and tidal flows eventually tore a large 5" by 5" hole in the net...”

Stolt’s inspection guidelines called for divers to examine the salmon cage once a month; that summer, however, inspections were left up to dive contractors and, “in effect, no checks were made from May 30 to August 16,” according to the fisheries ministry report. The investigation concluded that while Stolt did not violate aquaculture regulations in place at the time of the escape, the company had failed to meet new aquaculture standards that came into effect about two months after the Sargeaunt Passage escape: “Natural justice dictates that Stolt can not be held to the new standard for activities which occurred before the new standard was set, however, they should be put on notice that they will be held to that standard in the future.”¹⁶⁶ The ministry recommended a letter of warning be sent to Stolt. It also said officials would inspect Stolt’s Campbell River-area farm before reissuing Stolt’s license.

The Ministry of Water, Land and Air Protection (WLAP) was dissatisfied with this conclusion, however, and it opened its own investigation to determine if Stolt could be charged under the stronger federal Fisheries Act. WLAP maintained that the escaped Atlantic salmon posed a threat to Pacific salmon stocks and ministry officials recommended charges be laid. “The company did not exercise due diligence based on an escape at a different site in 1999 (Eden Island) and the Sargeaunt Passage site,” said a ministry report. “WLAP is suggesting that the company was less than diligent in preventing this newest escape, and as such released live fish into a fish habitat without authorization.”

The controversy thickened after a CBC Disclosure television report revealed that Stolt’s vice-president had phoned the lead investigator from WLAP working on the Stolt file. Stolt vice-president Dale Blackburn “made it clear he knew the details of the confidential case,” according to Disclosure. Also, according to the program, Blackburn had been tipped off by none other than the Minister of Agriculture, Food and Fisheries, John van Dongen.

Blackburn tried to have Stolt let off the hook. He wrote a letter to WLAP Minister Joyce Murray, saying he was “very concerned” about the recommendation to lay charges: “Instead of working with us, I see the recommendation to lay charges as

¹⁶⁶ “Report recommends letter of warning to Stolt,” Intrafish, 23 February 2001.

In July 2004, approximately 2,600 salmon escaped from a Stolt fish farm in the Broughton Archipelago.

just one more effort to discredit British Columbia's salmon farming industry..." Blackburn asked Murray to drop the charges. He requested that WLAP staff "work with us, rather than against us, so as to ensure the viability of our industry..."

A top official in van Dongen's department also fired off a memo, stating that salmon farms were "a key ministerial priority." Laying charges would be "sending conflicting messages to the industry" and create "negative" impacts, the official said. Both van Dongen and interim fisheries minister Stan Hagen – appointed while van Dongen temporarily stood down pending the RCMP investigation into his handling of the Stolt case – recommended the official's memo be sent to Premier Gordon Campbell's office. Campbell denied he ever read the memo.

Later, the RCMP investigation concluded that van Dongen had indeed disclosed a report to Blackburn. However, a prosecutor found no evidence of any criminal intent and no charges were laid. Van Dongen resumed his position as minister in April 2003. The investigation was closed.

In July 2004, approximately 2,600 salmon escaped from a Stolt fish farm in the Broughton Archipelago. The fish swam out of holes in a net, prompting Stolt to take disciplinary action against a manager and others who failed to check the net.¹⁶⁷

¹⁶⁷ "BC farmed salmon escape sparks more criticism," Intrafish, 16 July 2004.

4

GOVERNMENT SUPPORT FOR THE BIG FIVE



Federal Fisheries Minister Geoff Regan (right) unveils the new Brand Canada aquaculture logo at the Boston Seafood Show, March 14 2004. On the left is Joe McGuire, MP.

In September 2002, the government lifted a seven-year moratorium on establishing new salmon farms in the province. Fish farming would now enter an era of expansion.

It can hardly be said that the five biggest multinationals behind British Columbia's salmon farming industry lack resources. Nor are the people who own some of these corporations financially needy. Galen Weston, who controls 62 percent of George Weston, Heritage Salmon's parent company, is Canada's second-richest person. Jacob Stolt-Nielsen, the founder of his namesake company's oceanic business empire, is amongst Norway's richest people. Yet, in an economic trend that has become all too familiar, considerable amounts of public money are being spent to help out B.C.'s salmon farming multinationals. In addition to providing direct and indirect subsidies, the provincial and federal governments support an ever-expanding array of research and development initiatives that specifically aid the salmon farming industry. The added benefit of direct political support cannot be discounted either.

Political support for industry expansion

Lifting the moratorium

Almost immediately following the Liberal Party's election victory in British Columbia in 2001, salmon farming companies began courting new Agriculture, Food and Fisheries Minister John van Dongen. In August 2001, van Dongen met with representatives of Cermaq's board of directors, who were visiting from Norway to review the corporation's Canadian operations. In October of that year, van Dongen held a meeting with the Omega Salmon Group (Pan Fish) to discuss the company's proposed expansion near Port Hardy and on B.C.'s north coast. Also in 2001, the government finance committee met with representatives from Stolt Sea Farm. Then, in January 2002, van Dongen met with Marine Harvest executives to discuss new central coast tenures for the company.¹⁶⁸ Later that year, in September 2002, the government lifted a seven-year moratorium on establishing new salmon farms in the province. Fish farming would now enter an era of expansion. "We intend to grow at a relatively modest rate of 10 new farms per year, which will roughly double the industry's current footprint within a decade," announced Anne McMullin, then executive director of the British Columbia Salmon Farmers Association.

¹⁶⁸ Documents from the B.C. Ministry of Agriculture Food and Fisheries, obtained under the Freedom of Information and Protection of Privacy Act.

At a policy convention in November 2004, B.C. Liberal Party members voted to support fast-tracking for salmon farms along the coast.

Reducing community control through legislation

More recent legislation aimed at expanding fish farming in B.C. is Bill 48, passed in October 2003. The bill will reduce local zoning control over aquaculture in B.C. waters, allowing the provincial government to designate shoreline “farming areas” – whether or not local communities are in favour. The regional district of Comox-Strathcona on Vancouver Island will be one of the first to experience the province’s newfound power to override local decisions when it comes to salmon farming. The district rejected a rezoning application for fish farms in nearby Bute Inlet in the summer of 2002. Yet Land and Water B.C., the provincial agency that manages the allocation of Crown land and water resources, granted a two-year experimental license to Heritage to open a salmon farm in Bute Inlet, asking the federal Department of Fisheries and Oceans to carry out an environmental assessment. The license was due to expire in the summer of 2004. It remains to be seen if the provincial government will use Bill 48 to override the regional district and essentially impose a fish farm in an area where residents have overwhelmingly rejected aquaculture.¹⁶⁹

¹⁶⁹ Out of 787 submissions from the public, 603 were opposed to salmon farming in Bute Inlet.

Fast-tracking salmon farms

At a policy convention in November 2004, B.C. Liberal Party members voted to support fast-tracking for salmon farms along the coast. Blaming the federal government for slowing down the aquaculture approval process, Liberal delegates resolved to redouble efforts to convince Ottawa to speed up salmon farm approval. Delegates also voted down a resolution asking B.C. to ban fish farms from areas frequented by migrating wild salmon.¹⁷⁰

¹⁷⁰ “BC Liberals vote to fast-track salmon farms,” Intrafish, 8 November 2004.

POLITICAL CONTRIBUTIONS

From 1996 to 2002, the Liberal party received \$67,992 in donations from the aquaculture sector. (The opposition New Democratic Party, by contrast, received no contributions at all from the aquaculture industry.) By far the Liberals’ largest aquaculture donor was Stolt Sea Farm, which gave the party more than \$20,000. The Omega Salmon Group was next, donating \$14,460. Heritage Salmon followed a distant third, giving a comparatively small \$6,820. The B.C. Salmon Farmers Association – itself funded in part by the provincial government – donated \$4,765 to the Liberal Party. Marine Harvest (Nutreco) gave \$1,420, violating its own corporate code of conduct, which states that: “Nutreco does not make political contributions in any of the countries where it operates.” Cermaq was the only one of the five biggest salmon farming companies in B.C. that did not make a donation to the Liberals.¹⁷¹ Also contributing \$5,000 to the B.C. Liberal election campaign was Monty Little’s Syndel Laboratories. (See Taxpayer-funded support for agriculture.)

Stan Hagen, Minister of Sustainable Resource Management from 2001 to 2004, and the interim Fisheries minister responsible for forgiving the industry \$2.3 million in back rent and various other penalties, received \$5,000 from three fish farming companies for his election campaign. Election B.C. disclosure forms show that the Omega Salmon Group and Heritage together donated \$4,500 to Hagen in the final week of the 2001 provincial election.

Provincial political contributions from industry

Company	Amount of donation	Political Party or individual
Stolt	\$20,000	Liberal
Pan Fish	\$14,460	Liberal, Stan Hagen
Heritage	\$6,820	Liberal, Stan Hagen
BCSFA	\$4,765	Liberal
Nutreco (Marine Harvest)	\$1,420	Liberal
Syndel Laboratories	\$5,000	Liberal
TOTAL	\$67,992	

¹⁷¹ Other contributions in the range of \$1,000 to \$4,000 were made by Brown’s Bay Packing Co. (\$4,150), Seatech Construction Ltd.(\$3,300) Target Marine Products (\$3,200), Nor Am Aquaculture (\$2,500), and West Coast Fish Culture (\$1,050).

Taxpayer-funded support for aquaculture

DFO support

Brand Canada

The prestigious Boston Seafood Show in March 2004 was a special event for Canada's salmon farming industry. Geoff Regan, Canada's new Minister of Fisheries and Oceans, traveled to Boston for a swank reception hosted by the Canadian consulate. There, Regan unveiled Brand Canada, a new logo for Canada's aquaculture industry that features two salmonoids swimming across a maple leaf. Across the logo's sun-like top are the words: "Canadian Aquaculture Products." At the bottom are three shellfish in an ocean: a clam, a mussel and a scallop. A big check mark, like the stem of the maple leaf, lies between the words "Quality Assured."

Nell Halse, president of both the Canadian Aquaculture Industry Alliance (CAIA) and the New Brunswick Salmon Growers Association, said Brand Canada aims to highlight the quality of Canadian aquaculture products and the environmentally sustainable practices employed by the industry. "When people choose Canadian aquaculture products we want to remind them, through Brand Canada, of our pristine waters, dedicated and highly skilled workforce, vibrant rural and coastal communities, and high quality seafood products," explained Halse.

Aquaculture mandate

Today aquaculture is a significant part of DFO's mandate. And along with this burgeoning interest comes infusions of federal funding to support everything from research on salmon feed to compensation for New Brunswick salmon farms for a deadly disease outbreak. DFO even spent more than half a million dollars to develop data to support the registration of aquaculture pesticides – even though the use of these pesticides may contravene Section 36 of Canada's Fishing Act.¹⁷²

It was only to be expected that DFO would eventually establish a separate aquaculture division, and in April of 2004 minister Regan announced the formation of the Aquaculture Management Directorate. Yves Bastien, Canada's Commissioner for Aquaculture Development, will become the directorate's new executive director. (The Office of the Commissioner for Aquaculture Development, established in 1998, was only given a mandate until the spring of 2004.)

The change in federal government policy can be pinpointed to 1995 – the year DFO released the Federal Aquaculture Development Strategy. The strategy sought to promote the expansion and competitiveness of Canadian aquaculture and to promote new species development. Three years later, the aquaculture industry gained access to significant federal funding when a pivotal DFO paper was drafted. The name of that paper was telling: "Policy and Implementation Procedures for Access to Wild Fisheries Resources for Aquaculture Development." For the first time, the paper explained, "...aquaculture requirements will be given equal consideration with those of commercial and recreational fishers in the development of Integrated Fisheries Management Plans (IFMP)."

¹⁷² (Pest Management Regulatory Agency, Health Canada, "Availability of pest control products for aquaculture," [no date], obtained under the federal Access to Information Act. The use of sea lice pesticide baths in Canada has declined as companies turn to oral treatments.

The total amount of money the B.C. government forgave salmon farmers in 2002 – \$2.3 million – was more money than the government has received annually from the industry in recent years from fees, rents and tenures.

¹⁷³ DFO briefing binder for October 26, 1998 presentation, obtained under the Access to Information Act.

¹⁷⁴ Ibid.

¹⁷⁵ DFO briefing binder, “Canadian Capacity for Aquaculture Research,” National Research Council Institute for Marine Biosciences, prepared by John P. van der Meer, Director of Marine Biology.

Aquaculture funding

By the fall of 1998, DFO’s science sector had 92 full-time employees with responsibility for aquaculture research in Ottawa and regionally. The operating research budget was \$6.3 million.¹⁷³ The National Research Council of Canada, too, increased annual funding for aquaculture from \$350,000 in 1989 to more than \$1.6 million in 1994. (In 1998, funding remained at \$1.6 million.¹⁷⁴) In 1994, the NRC Institute for Marine Biosciences made a “strategic decision to redirect the Institute’s research program significantly towards aquaculture research.” The Institute is now recognized as one of Canada’s foremost aquaculture research centres.¹⁷⁵

Forgone provincial revenues to taxpayers

In February 2004, CBC-TV revealed that the provincial government had told fish farms they would not have to pay unpaid back rents for the lands they occupied. This added up to some \$1.5 million of foregone revenue to taxpayers. Moreover, salmon farming companies who had been assessed penalties for operating in specific locations without licenses were also reimbursed by the government – \$812,000 in total. Stolt alone was refunded \$175,000.¹⁷⁶ Notably, in May 2004, B.C.’s auditor general concluded that government employees should have sought ministerial approval before forgiving the fines and back rents. Premier Gordon Campbell had earlier supported the refunds, saying they were the result of a paperwork backlog.

The total amount of money the B.C. government forgave salmon farmers in 2002 – \$2.3 million¹⁷⁷ – was more money than the government has received annually from the industry in recent years from fees, rents and tenures. In 2003, the government collected \$1.788 million for aquaculture rents and tenures (including aquaculture other than salmon farming). In 2002, the government collected almost the same amount – \$1.783 million – for aquaculture rents and tenures and, in 2001, it collected about \$498,000.¹⁷⁸

¹⁷⁶ B.C. New Democratic Party, “Liberal friends getting special treatment from government, says James,” news release, 5 February 2004.

¹⁷⁷ “B.C. quietly forgave debts to fish farmers,” CBC News, February 2004.

¹⁷⁸ Documents from the B.C. Ministry of Agriculture Food and Fisheries received under the Freedom of Information Act, March 2003. The figures were sent by email from Dale Ekelund, manager of administration for Land and Water B.C. Inc., 19 March 2004, in response to a request for clarification of figures contained in the information request.

In short, taxpayer money once earmarked to support wild salmon runs and other wild fisheries needs was redirected to support the fish farming industry.

Research programs for aquaculture

Aqua-E Fund

As with any government-regulated enterprise, one should expect there to be a network of inter-connections between the aquaculture industry and the provincial government. A key figure in this respect is Monty Little, former chair of the government-funded Science Council of British Columbia and a current member of the council's board of directors. Little is also the founder and chair of a Vancouver biotechnology company called Syndel Laboratories, which specializes in aquaculture health and reproduction technologies. Among other products, Syndel markets Ovaprim, a spawning hormone designed to address the reluctance of fish to breed in captivity. Syndel is also the North American distributor for Alpharma, a pharmaceutical company that develops vaccines for use on farmed salmon. Syndel also manufactures Aqua Life TMS, used for a federal government-approved product for fish sedation. The company is the exclusive Canadian distributor for two other approved therapeutants – Parasite-S and Perox-Aid.

Little was appointed to the Science Council in October 1999 by the former New Democratic Party government. He stepped down as chair in March 2003, but remains one of four council directors. During his tenure as council chair, Little helped raise the profile of the aquaculture sector and unearth new funds to support the salmon farming industry. Under his stewardship, the Science Council expanded its programs to include a new B.C. Aquaculture Research and Development Committee, established in 2001.¹⁷⁹

While Monty Little was Science Council chair, on April 16, 2002, he met with three key provincial government ministers, among others – Fisheries Minister van Dongen, Sustainable Resource Management Minister Stan Hagen and Joyce Murray, Minister of Water, Land and Air Protection. The meeting was also attended by Odd Grydeland. At the time, Grydeland was both executive director of the B.C. Salmon Farmers Association and Heritage Salmon's director of development.

A briefing note prepared for van Dongen explained one reason for Little's request for the rendezvous. Research and development, the note said, were "required to move the industry forward in production efficiencies, new species and to address areas of public interest." An earlier briefing note prepared for van Dongen noted that "pressure will be placed on the province to contribute funding in support of Research and Development – in particular, Research and Development that is defined as in the public interest."

¹⁷⁹ B.C. Ministry of Agriculture, Food and Fisheries, "Funding of Scientific Research on Aquaculture," background.

Significantly, the note suggested that the ministry consider establishing a five-year funding legacy utilizing “residual fisheries renewal funding.” The timing is notable: just several months earlier, in November 2001, the B.C. Liberal government had eliminated Fisheries Renewal B.C., a Crown corporation that funded the restoration of wild salmon habitat and stock enhancement, amongst other endeavors.

On September 12, 2002, following the meeting with Little and Grydeland, the government announced that the Aquaculture and Environment Fund administered by the Science Council would receive \$3.75 million in provincial funding. Of that funding, \$2.75 million came from Fisheries Renewal. (Another \$1.25 million in residual Fisheries Renewal funding went to the University of B.C. to establish a research chair in Aquaculture and Environment.¹⁸⁰) In short, taxpayer money once earmarked to support wild salmon runs and other wild fisheries needs was redirected to support the fish farming industry.

The Aquaculture and Environment Research Fund (known as the Aqua-E Fund) is overseen by the Science Council of B.C.’s 14-member Aquaculture Research and Development Committee (BCARDC), which was established in 2001. Monty Little, while still Science Council chair, was appointed as the fund’s chair as well. The fund’s mandate is to “support research on the environmental aspects of finfish and shellfish aquaculture that are of concern to British Columbians.” The committee identifies priorities for the Aqua-E Fund and issues requests for proposals.

One of the priorities for the Aqua-E Fund was fish disease, the biggest single concern for B.C.’s salmon farming multinationals. In 2003, the Aqua-E Fund sponsored a study of sea lice in the Broughton Archipelago and supported research designed to “assist fish health managers and regulatory agencies make decisions” regarding IHNV disease. The fund also financed a study to evaluate bloodwater management systems for the B.C. salmon farming industry. In early 2004, the Aqua-E Fund announced it had \$400,000 to give sea lice researchers and issued a request for proposals.¹⁸¹

¹⁸⁰ Documents obtained from the B.C. Ministry of Agriculture, Food and Fisheries under the Freedom of Information Act. The remaining \$110,563 in Fisheries Renewal went to six aquaculture projects approved prior to November 2001.

¹⁸¹ The bloodwater research project (\$80,880) was awarded to NovaTec Consultants Inc. Malaspina University College received \$137,116 to study shellfish culture. Fisheries and Oceans Canada received a total of \$189,500 to study sea lice, while the University of Victoria received \$109,120 to study sea lice as well.

GO NORTH YOUNG FISH

Federal government funding helped salmon farming companies expand into B.C.’s north coast when Human Resources Development Canada contributed \$30,200 to a North Coast Integrated Aquaculture Planning Project in B.C. The project included meeting with Northwest Community College to discuss the job skills the companies require, and to aid the college in developing related curriculum. Community Futures of the Pacific Northwest, a grassroots community development initiative that has affiliations with government agencies such as the Department of Fisheries and Oceans, contributed \$34,000 to the project. The B.C. Salmon Farmers Association contributed just over \$16,000.¹⁸²

¹⁸² “North Coast Integrated Aquaculture Planning,” document received from the B.C. Ministry of Agriculture, Food and Fisheries under the Freedom of Information Act.

In September 2004, the B.C. and federal governments announced they will give \$2.4 million to fund the Centre for Aquatic Health Sciences.

Centre for Aquatic Health Sciences

Funding research into IHNV was one of first decisions the Aqua-E Fund made in 2003, a priority encouraged by a three-day IHNV workshop held earlier that year. The B.C. salmon farming industry was struggling to recover from the previous year’s devastating IHNV outbreaks, and the workshop’s objective was to “gain a better understanding of IHNV” and to “prioritize research needs.” The Science Council, with Monty Little on the board of directors and chairing the Aqua E-Fund Committee, contributed \$50,000 towards mounting that workshop. (That same year, the Science Council also gave \$20,000 for a workshop on sea lice.)

Included in the “supporters” listed for the IHNV workshop were the B.C. Salmon Farmers Association, the Ministry of Agriculture, Food and Fisheries, Fisheries and Oceans Canada and EWOS (Cermaq). Five companies selling pharmaceutical products to the salmon farming industry, including Little’s company, Syndel International, were also listed as workshop supporters.¹⁸³

Among the 20 scientists, pharmaceutical company representatives and corporate spokespeople giving presentations was Syndel general manger Jim Brackett. He gave two talks: one on “Biosecurity in IHN Management” and a second entitled simply “Funding Sources.” Mary Ellen Walling of the B.C. Salmon Farmers Association gave a presentation labeled: “IHNV: What It Costs and What We Need.” What the BC-SFA and its industry funders wanted, apparently, was more government funding for research.

“As with many fish health problems in B.C., there is currently no agency or department with the mandate to do field-based, problem-oriented IHN research,” pointed out a White Paper summarizing the workshop’s conclusions. (The paper

¹⁸³ Another workshop supporter was Schering-Plough Animal Health, whose manager of regulatory affairs, Rejean Berman, served on the Salmon Health Consortium board. A third was Microtek, whose CEO Julian Thornton was on the Salmon Health Consortium board before Berman and Brackett became board members. A fourth company was Novartis, whose head of regulatory affairs for the Americas, Myron Roth, also served on the Salmon Health Consortium board. A fifth corporate sponsor, Bayotek, a Bayer company, markets Microtek’s aquaculture vaccines. See Salmon Health Consortium, chapter 5.

Centre for Aquatic Health (CAH) Board of Directors and their company affiliations. The Centre for Aquatic Health is a government-funded initiative to study fish health.

CAH Board Member	Board Position	Affiliation
Jim Brackett	President	Syndel Laboratories
Jim Powell	Secretary – treasurer	Syndel Laboratories
Mary-Ellen Walling	Vice-president	BC Salmon Farmers Association
Grace Karreman	Member	Fish Veterinarian
Richard Harry	Member	Aboriginal Aquaculture Association

written for the Ministry of Agriculture, Food and Fisheries was co-authored by Paul Casey, a Syndel employee.) The paper went on to say that “B.C. lacks an agency with the mandate to conduct and disseminate fish health research to industry and fisheries managers to assist in making disease prevention, control and treatment decisions.”

The solution? Create a Centre for Aquatic Health Sciences, funded by industry and government. The centre, according to the White Paper, would “build a network of researchers, highly qualified service providers and laboratories.” It would coordinate fish health activities, including “diseases identification, investigation and management” and “wild and farmed fish health interactions.”

The provincial government dedicated \$7,000 in fiscal 2004 to support the development of the centre, now a registered society. The government has also designated \$5,000 for the centre to host a workshop on animal welfare issues for farmed fish.¹⁸⁴ The Science Council, Ministry of Agriculture Food and Fisheries and Western Economic Diversification Canada jointly developed a proposal for the fledgling centre to receive funding under the Western Economic Partnerships Agreement. Brackett, on leave from his Syndel job in early 2003, was to set up the initiative.

In September 2004, the B.C. and federal governments announced they will give \$2.4 million to fund the Centre for Aquatic Health Sciences under the joint federal-provincial Western Economic Partnership Agreement, whose aim is to support economic development in B.C. The partnership agreement money will be used for laboratory equipment and leasehold improvements to create office and laboratory space. The centre, among other pursuits, will facilitate communication of science-based fish health information and develop and operate fish health programs for both farmed and wild seafood industries. It will also investigate the use of genetic testing to determine why some salmon are more resistant to diseases than others.¹⁸⁵ Notably, in the same month that significant federal funding for the centre was announced, federal fisheries minister Geoff Regan told New Brunswick anglers and environmentalists that he does not have money in his budget to create an endowment fund for wild Atlantic Salmon conservation.

The centre, which was registered as a society in January 2004, has close connections to the B.C. Salmon Farmers Association as well as to Syndel. Brackett, Syndel’s general manager, is president of the centre’s board of directors. Jim Powell, Syndel’s product development manager, is the secretary-treasurer. Mary Ellen Walling, executive director of the B.C. Salmon Farmers Association, is the vice-president. Other board members are Nanaimo fish veterinarian Grace Karreman and Richard Harry, director of the Aboriginal Aquaculture Association of B.C., which has close ties to the B.C. Salmon Farmers Association.

¹⁸⁴ Documents from the B.C. Ministry of Agriculture, Food and Fisheries obtained under the Freedom of Information and Privacy Act.

¹⁸⁵ “\$2.4 million funds fish research facility: Campbell River centre will probe aquaculture issues but some critics are questioning its motives,” *The Vancouver Sun*, 29 September 2004.

Aquaculture Collaborative Research and Development Program (ACRDP)

In August 2000, Canada's fisheries minister Herb Dhaliwal established a \$75 million "Program for Sustainable Aquaculture." Included in the program was a \$20-million fund over five years for aquaculture research and development. The Aquaculture Collaborative Research and Development Program (ACRDP) is a partnership between DFO researchers and salmon farming companies and other aquaculture companies. Scientific research projects are proposed by industry. Industry and government both fund the projects, with industry contributions averaging approximately 25 percent of total costs. Research is conducted at DFO facilities or at aquaculture sites in partnership with DFO researchers.

Some projects funded by the ACRDP:

- \$146,000 for the B.C. Salmon Farmers Association to study resistance to Kudoa disease in farmed Chinook salmon.
- \$215,400 to the B.C. Salmon Farmers Association to examine risk factors associated with the Kudoa parasite
- \$64,000 to Marine Harvest Canada (Nutreco) to study genetic variations in farmed Chinook salmon and resistance to Kudoa.
- \$116,600 to Omega Salmon Group to examine the impact of stress on the susceptibility of salmon to the Kudoa parasite.
- \$100,000 to Heritage Salmon, the only commercial producer of farmed haddock in the world,¹⁸⁶ for a project "to improve the quality of eggs resulting from the spawning of haddock by manipulating the spawning cycle of broodstock."
- \$175,000 to Omega Salmon Group (Pan Fish) to determine the best methods and techniques for improving handling and increasing survival of broodstock eggs.
- \$96,200 to EWOS Canada (Cermaq) to study alternatives to costly marine fish oils as nutrition for sablefish, a "candidate" species for aquaculture.
- \$135,000 to Heritage Salmon, St. Laurent Gulf Products and Maple Leaf Foods Agresearch to study how to reduce production costs by experimenting with different types of fish feed.
- \$206,000 to Marine Harvest Canada (Nutreco), Stolt Sea Farm, Aquamix Research Ltd, Lyuquot Seafood Ltd, ALS Environmental and North Island Laboratories to study whether shellfish-finfish polyculture is a viable option for the B.C. aquaculture industry.
- \$25,000 to eight salmon farming companies, including Stolt, Heritage, Omega, Marine Harvest and Cermaq to examine the abundance of algae at specific salmon aquaculture sites.
- \$135,000 to Stolt Sea Farm to examine environmental constraints affecting the long-term viability of aquaculture in the Broughton archipelago.
- \$67,500 to Stolt and Cermaq to use genetic markers to determine the variation of existing strains of Atlantic salmon in production on Canada's west coast.

¹⁸⁶ "Atlantic Canada ramps up haddock and halibut farming," Intrafish, 3 November 2003.

AquaNet

In addition to funding the ACRDP, the federal government announced in 2000 that it would contribute \$14.4 million over four years to launch a separate research and development agency called AquaNet. Like B.C.'s Aqua-E Fund, AquaNet funds researchers to investigate diseases that affect the salmon farming industry. AquaNet members include academic institutions, provincial and federal government agencies, pharmaceutical companies and salmon farming corporations. Heritage, Nutreco, Stolt, Skretting (Nutreco) and EWOS (Cermaq) are all members. So are pharmaceutical companies that manufacture fish vaccines and therapeutants: Microtek International Ltd., Schering-Plough Animal Health and Aqua Health (Novartis). Since its

**TAXPAYER SUPPORT OF THE AQUACULTURE INDUSTRY,
1997-2004: SOME BIG TICKET ITEMS**

Year	Amount	Description
1997-98	\$40,000,000	To the NBSGA for compensation for ISA
1998	\$6,300,000	DFO money used for aquaculture science
2000	\$20,000,000	To ACRDP for aquaculture research and development
2000	\$14,400,000	To AquaNet for aquaculture research and development
2000	\$800,000	Paid out to Heritage and others to accommodate for ISA
2000	\$400,000	Paid to NBSGA from N.B. government
2002	\$3,750,000	Paid to BCARD for aquaculture research (\$2.75 million came from Fisheries Renewal money)
2002	\$1,250,000	To support the UBC Aquaculture Research Chair
1997-2003	\$831,537	Money paid directly to the BCSFA
1999-2003	\$1,004,750	To CAIA from DFO and HRDC
1994-1998	\$6,400,000	\$1.6 million in annual funding to the NRC
2004	\$2,300,000	Forgiven fines and back rents for B.C. salmon farms
2004	\$7,500,000	Loan to deal with ISA
2004	\$2,400,000	To set up the Centre for Aquatic Health Sciences
Total	\$107,336,287	

formation, AquaNet has contributed to research projects that range from evaluating diagnostic tests for ISA to examining the impacts of sea ducks on mussel aquaculture in Prince Edward Island.

Who's who of AquaNet

Uschi Koebberling, AquaNet's communications manager, is the director of strategic planning and external relations for UBC's Centre for Aquaculture and the Environment. Koebberling was the team leader for the Science Council of B.C. project "Framework of BC Aquaculture R&D Priorities" in 2001. The same year she was also team leader for the Science Council project "BC Aquaculture Research and Development - A Proposed Organizational and Program Model."

Scott McKinley, AquaNet's scientific director, is the Canada Research Chair for UBC's Centre for Aquaculture and the Environment. The Centre is the result of a UBC-DFO collaboration that aims to create an internationally renowned aquaculture research centre on the Pacific coast. It is located at a West Vancouver laboratory owned and operated by the Department of Fisheries and Oceans.

David Rideout, executive director of the Canadian Aquaculture Industry Alliance, is chair of AquaNet's board of directors. Monty Little – president and founder of Syndel Laboratories, head of the Science Council's AquaE Fund, and a Science Council director – is an AquaNet board member. Other AquaNet board members include Bill Robertson, director of east coast operations for Heritage Salmon, and John Taylor, chief operating officer for Stolt Sea Farm, Americas.

Some projects AquaNet has funded

- In February 2004, AquaNet issued a call for proposals to develop vaccines to reduce mortalities from IHNV and Kudoa. These two diseases cost the B.C. aquaculture industry an estimated \$150 million a year.
- AquaNet has funded at least three projects on sea lice. One project investigated sea lice resistance to chemotherapeutants. The research team and partners for the project included Marine Harvest Norway, Marine Harvest Scotland, Nutreco and Schering-Plough Animal Health. A second project (2000-2003), this one to examine the risk and consequences of infestation from sea lice, was led by Scott McKinley, AquaNet's executive scientific director. From April 2003 to March 2004, AquaNet funded a third project on sea lice. McKinley was also on that project's research team, which included Linda Sams from Marine Harvest Canada.¹⁸⁷
- Another AquaNet project will "address public perception issues regarding the safety and wholesomeness of farmed salmon." Noting that conclusions from previous studies have been controversial "and may have led to misinformation regarding the safety and nutritive value of farmed salmon for human consumption,"¹⁸⁸ AquaNet intends to provide "objective scientific information about the nutrient composition of, and possible chemical contaminants in, wild-caught and farm-raised salmon."¹⁸⁹ McKinley is part of the research team for this study.

¹⁸⁷ McKinley was an investigator for another AquaNet project that examined seasonal effects on immune function, stress and metabolism of haddock and Atlantic cod.

¹⁸⁸ AquaNet website.

¹⁸⁹ "AquaNet Initiates Groundbreaking Study on Flesh Quality in Farmed and Wild BC Salmon," AquaNet press release, 3 February 2003.

Subsidizing industry groups

The B.C. Salmon Farmers Association (BCSFA)

A major recipient of direct government subsidies – both provincial and federal – has been the B.C. Salmon Farmers Association. Since 1985, almost \$5 million in provincial and federal government funding has gone directly to the BCSFA.¹⁹⁰ The BCSFA calls itself the “voice of the province’s environmentally sustainable salmon farming industry,” but the association is also the voice of the multinationals that control B.C.’s fish farming industry. The most sizeable chunk of BCSFA’s corporate backing comes from its biggest members – Stolt, Heritage, Omega (Pan Fish), and Marine Harvest (Nutra) – who each paid \$130,000 in dues in 2002.¹⁹¹ (Cermaq only re-joined the BCSFA in June 2002.) Associate members of BCSFA pay less. These are mainly smaller companies, although some, too, are multinationals like AKVASmart. (See chapter 5: The Public Relations Connection.)

All of the Big Five are represented on the BCSFA board of directors and, for at least the past six years, the chair of the BCSFA board has been either a Heritage Salmon or Marine Harvest executive. Marine Harvest managing director Ron Kilmury chaired the BCSFA in 2002 and 2003. Odd Grydeland from Heritage Salmon was the previous chair, serving a four-year term.

Funding the BCSFA

In the early years of BCSFA’s existence, provincial government funding was designated for initiatives such as an education video program (\$15,000), egg collection (\$26,767 in 1985 paid directly to W.R. Olmstead & Associates Ltd.), a phytoplankton watch program (\$5,000 in 1987) and market research (\$17,000 in 1987).

From 1985-2001 the BCSFA received \$4,968,500 from the provincial and federal governments. The top year for government funding was 1994, with total contributions of \$873,976.

In recent years, government funding of the BCSFA has dropped dramatically (see sidebar) and in 2003 the provincial government gave the organization a total of \$52,000. Of that funding, \$15,000 went to help the BCSFA conduct an epidemiological study of IHNV outbreaks. The study, among other things, identified IHNV risk factors to salmon farming companies and advised on how to mitigate the spread of the disease. Another \$17,000 went to offset the costs to the BCSFA of hosting a fish health database for one year. Salmon farmers contributed an estimated \$250,000 in-kind to the database.¹⁹²

In 2004, the provincial government gave the BCSFA \$25,000, this time to assess the economic impact of the salmon farming industry on local economies and provide a snapshot of employment in the salmon farming sector.

As government grants have ebbed and flowed, so has BCSFA’s revenue from memberships. In 2001, members paid a total of \$1.34 million to belong to the association, up more than \$0.5 million from the previous year. By 2002, however, membership assessments had dropped to \$945,459. BCSFA’s annual budget dropped from \$1.48 million in 2001 to \$1.26 million in 2002.

¹⁹⁰ This figure includes funding for the B.C. Farmed Salmon Institute, a branch of the BCSFA that promoted trade and marketing of B.C. salmon.

¹⁹¹ Dues paid by the BCSFA’s largest members are listed in the B.C. Salmon Farmers Association, Notes to Consolidated Financial Statements, Years ended March 31, 2002 and 2001.

¹⁹² Documents obtained from the B.C. Ministry of Agriculture, Food and Fisheries under the Freedom of Information act.

**GOVERNMENT FUNDS GIVEN TO
B.C. SALMON FARMERS ASSOCIATION 1985-2004¹⁹³**

<u>Year</u>	<u>Federal</u>	<u>Provincial</u>
1985	\$73,959	\$26,767
1986	123,167	62,500
1987	6,285	31,375
1988	123,776	107,612
1989	161,682	67,407
1990	66,954	46,544
1991	190,388	135,863
1992	457,769	137,475
1993	398,163	152,672
1994	637,031	236,945
1995	483,334	284,044
1996	146,009	233,966
1997	142,958	194,035
1998	22,712	42,880
1999	2,329	1,394
2000 (all gov. funds)		\$3,118
2001 (all gov. funds)		\$54,139
2002 (all gov. funds)		\$197,461
2003 (provincial only, federal unknown)		\$52,000
2004 (provincial only, federal unknown)		\$25,000
Total federal funds		\$3,036,516
Total provincial funds		\$1,838,479
Plus 2000-2001 all government funds (no breakdown available)		\$93,511
Total government funds 1985-2001 (not including federal funds in 2003, 2004)		\$4,968,506

¹⁹³ B.C. Salmon Farmers Association Annual Reports 1985-2002.

AND THE WINNER IS...

The CAIA launched its annual Herb Dhaliwal Sustainable Aquaculture Award in 2001, named after the federal fisheries minister. The first Herb Dhaliwal award went to Ron Kilmury, managing director of Nutreco's Marine Harvest Canada. In 2004, the CAIA gave the Herb Dhaliwal award to Yves Bastien, Canada's Commissioner for Aquaculture Development. Bastien was re-appointed by Dhaliwal in 2002.

The Canadian Aquaculture Industry Alliance (CAIA)

The Canadian Aquaculture Industry Alliance strives to "provide a strong, independent and united voice for Canada's aquaculture industry." Created in 1995 when it replaced the Canadian Aquaculture Producers Council, the CAIA's members include aquaculture associations from one Canadian coast to the other. Among them are the B.C. Salmon Farmers Association, the B.C. Shellfish Growers Association, the New Brunswick Salmon Growers Association, the Prince Edward Island Aquaculture Alliance and the Ontario Aquaculture Association. The CAIA is funded mainly by aquaculture companies; however, the alliance will not disclose voluntary funding amounts from specific corporations or provide a range of funding contributions. The CAIA has an annual budget of about \$400,000.¹⁹⁴

¹⁹⁴ David Rideout, pers. comm., 5 April 2004.

CAIA executive director David Rideout worked for the Department of Fisheries and Oceans before he moved to the CAIA in 2002. Rideout's former DFO positions included that of director-general of Aquaculture Restructuring and Adjustment and executive director of the Fisheries Resource Conservation Council. Rideout is also the former director-general of fish inspection for the Canadian Food Inspection Agency. B.C. Salmon Farmers Association executive director Mary Ellen Walling is a member of the CAIA's executive committee. CAIA board members include Fraser Walsh from Heritage, Ron Gowan from Nutreco (Marine Harvest) and John Taylor from Stolt. Also, Heritage's Gary Wadden is a member of the CAIA's Human Resources Standing Committee.

One CAIA initiative has been to push the federal government for a nation-wide aquatic animal disease program, following devastating outbreaks of Infectious Hematopoietic Necrosis virus (IHNV) in British Columbia starting in 2001, and Infectious Salmon Anemia (ISA) in New Brunswick in the late 1990s and early 2000s. The CAIA wants the program, among other things, to act "as a vehicle for further research" on fish diseases like IHNV. The CAIA plan would promote early detection and mandatory reporting of fish diseases. It would also compensate aquaculture companies for culls and stock removals ordered because of disease. Ultimately, the CAIA wants the federal government to fund the program. Rideout says the Canadian aquaculture industry currently spends \$40 million a year on aquaculture health initiatives and the industry believes it is time the government chipped in.¹⁹⁵

¹⁹⁵ Canadian Aquaculture Industry Alliance, "Disease Outbreaks Highlight Need for National Aquatic Program," press release, May 2002.

Funding the CAIA

The federal government directly funds CAIA work. The organization has received at least three-quarters of a million dollars from Canada's Department of Fisheries and Oceans since 1999:

- In 1999, DFO Minister David Anderson approved \$225,000 in grants to the CAIA. The money came from the budget of the new Commissioner for Aquaculture Development, \$150,000 of which was to be used to determine a Canadian position on the 1998 draft document "Protocols on Introductions and Transfers of non-Local Salmonids". That document was produced by the Scientific Working Group of the North American Commission of NASCO (the North American Salmon Conservation Organization.) The remaining \$75,000 went to support the CAIA's "ongoing activities." (In March 2000, the CAIA reimbursed the Receiver General of Canada \$7,257 for unused funds related to the 1998 draft protocol project.)
- In 2000, DFO Minister Herb Dhaliwal approved up to \$400,000 to the CAIA over two fiscal years. The bulk of the money – \$350,000 – was designated for a shellfish monitoring project that sought ways to streamline the Canadian Shellfish Sanitation Program. The remaining \$50,000 went towards an investigation of commercial species as indicator species for biotoxin monitoring. That money also came from the Commissioner for Aquaculture Development budget. (In November 2002, the CAIA reimbursed the Receiver General of Canada \$26,351 for unused funds from the shellfish monitoring project.)
- In February 2003, new DFO Minister Robert Thibault approved \$54,750 to the CAIA for the first three phases of a project to develop a national aquaculture on-farm food safety program. In October, the CAIA received an additional \$85,000 to continue development of the program.¹⁹⁶

¹⁹⁶ All information about DFO funding to the CAIA comes from an access to information request.

The CAIA has also received an undisclosed amount of funding from Human Resources Development Canada to:

- review management salaries and benefits in the Canadian aquaculture industry. The project was a partnership among HRDC, the CAIA and Connors Bros. (at the time owned by Heritage). It concluded, among other findings, that senior level positions in the Canadian aquaculture industry are paid less than comparative positions in industries such as food processing and resource extraction.
- assist the CAIA's Sector Council. The council's mandate was to study current and projected human resource challenges, identifying solutions and implementing human resource strategies for the aquaculture sector.¹⁹⁷

¹⁹⁷ DFO briefing binder.

¹⁹⁸ Canadian Aquaculture Industry Alliance, "CAIA Youth Program Funded For Another Year," press release, May 2001.

HRDC has also funneled money through the CAIA to subsidize workers on Canada's salmon farms. One HRDC-funded program called the Youth Science and Technology Internship Program paid a wage subsidy of 30 percent to each aquaculture employer who hired new interns for a minimum work term of six months. The CAIA administered the program for six years. In just one year, 2000-01, the government's wage subsidy to aquaculture companies through the program amounted to almost \$240,000.¹⁹⁸

LIMITED RETURNS ON OUR INVESTMENT

Given the significant government investment in the salmon farming industry, the public might question what it gets in return. It turns out there are fewer jobs for British Columbians than anticipated, and direct financial returns in taxes and fees are not very promising either.

There is no direct way of knowing how much income tax the Big Five pay in Canada, so as a test case Raincoast posed the question directly to Jim Gracie, president of Stolt Sea Farm Americas. But Gracie declined to reveal how much Stolt pays in Canadian taxes, saying his company does not release income tax payments for individual operating units.¹⁹⁹

What we do know is that corporate taxes in Canada have been slashed over the past decade. The federal corporate income tax rate in Canada is now significantly lower than it is in the United States – 21 percent compared to 34 percent. And the B.C. Liberal government has cut provincial corporate taxes by 18 percent since it came to power in 2001.

In a presentation to the B.C. government Finance Committee, Stolt Sea Farm said it was pleased with the reduction in B.C. corporate taxes implemented by the Liberal government, as well as personal tax cuts. The company also said it appreciated the elimination of the capital tax,²⁰⁰ a small tax once applied to larger corporations – but not to family farms or cooperatives – to ensure they paid tax on profits earned in B.C.

We also know that when Stolt Sea Farm reports its taxes it does so in two categories: inside the U.S. and outside the U.S. (including Canada). In 2000, Stolt paid US \$4.7 million in taxes outside the U.S. and deferred another US \$2.3 million.²⁰¹ In 2001, the company paid almost US \$6.7 million in taxes outside the U.S. and deferred taxes worth US \$1.4 million. In 2002, Stolt paid US \$5.04 million in taxes outside the U.S. and deferred US \$5.4 million. What we don't know is how much of that tax revenue actually made it into Canada.

Another source of revenue from salmon farming are the various fees the companies pay to conduct business. The amount of money collected by the provincial government for aquaculture licenses has dropped since the moratorium was lifted. In the fiscal year 2000-2001, aquaculture companies paid a total of \$47,370 for licenses. In 2002-2003, they paid a total of \$40,415.²⁰² In 2004, money from salmon farming tenures was expected to add \$920,000 to B.C. government coffers.²⁰³ However, this is not even sufficient to cover the budgeted cost – \$1.06 million – of the ministry's aquaculture licensing and compliance program for 2004.²⁰⁴ Additionally, provincial aquaculture staff salaries for that year amounted to \$2.2 million.

Overall, provincial government aquaculture expenditures have increased since 2000. In 2000-2001, the government spent \$2.74 million on aquaculture development, aquaculture regional operations, fish health, and licensing and compliance. The following fiscal year, aquaculture expenditures rose to \$3.47 million and, in 2002-2003, expenditures topped \$3.14 million. In 2003-2004, the government budgeted \$3.18 million for aquaculture.²⁰⁵

¹⁹⁹ Jim Gracie, pers. comm., 23 February 2004.

²⁰⁰ Stolt Sea Farm, "Presentation to the Finance Committee," [no date], documents obtained under the Freedom of Information Act.

²⁰¹ Stolt-Nielsen Annual Report 2002.

²⁰² Documents from the Ministry of Agriculture, Food and Fisheries, received under the Freedom of Information Act, February 2004. The figures were sent by email from Jeff Thom, Information and Privacy Analyst, MAFF, in response to a request for clarification of figures contained in the original information request.

²⁰³ "Salmon Farming Tenures—A Note from the BCSFA Executive Director," BCSFA article, 5 February 2004.

²⁰⁴ Documents obtained from the B.C. Ministry of Agriculture, Food and Fisheries under the Freedom of Information act.

²⁰⁵ Ibid.

Total taxes paid and deferred by Stolt Sea Farm outside the USA from 2000-2002

Year	Taxes paid outside of the USA	Taxes deferred outside of the USA
2000	\$4.7 million	\$2.3 million
2001	\$6.7 million	\$1.4 million
2002	\$5.0 million	\$5.4 million

Compensation for disease outbreaks

Another facet of government support for the fish farming industry is compensation – the concept that if farmers suffer crop losses or are required to destroy diseased stock, the government should compensate them for those losses. While the Department of Fisheries and Oceans, which oversees aquaculture in Canada, has no authority to order destruction of diseased salmon or to pay compensation, it is currently reviewing options for compensating salmon farms if stocks are eradicated due to disease.²⁰⁶ Should the responsibility for administering fish farms ever be moved to the Ministry of Agriculture and Agri-Food – an idea promoted by Yves Bastien, Canada’s commissioner for aquaculture development – salmon farming companies would be eligible for compensation under the Health of Animals Act. Currently, Canadian fish farming multinationals receive compensation on an ad-hoc basis.

After the ISA virus ravaged New Brunswick salmon farms in 1997 and 1998, the New Brunswick Salmon Growers Association established a one-time \$40 million compensation fund for Heritage and other salmon farming corporations. The federal government contributed the lion’s share of money through its disaster relief fund, and the remainder came from the provincial government and industry. In 2000, DFO gave an additional \$800,000 to compensate Heritage and other companies for ISA losses. The provincial government gave another \$400,000.

In total, from 1997 to 2000, measures to manage ISA in the New Brunswick salmon farming industry cost approximately \$50 million.²⁰⁷ In 2002, as ISA continued to show up on New Brunswick salmon farms, another 2.5 million fish were culled.

The New Brunswick salmon farming industry has set up a non-profit organization called the East Coast Salmon Aquaculture Compensation Association. The association is lobbying the federal and provincial governments to contribute to a fund to compensate salmon farmers if fish must be destroyed because of disease. Industry contributions are mandatory. Nell Halse, general manager of the New Brunswick Salmon Growers Association, says fish farmers should be assured of compensation if disease outbreaks require destruction of stock – just as Canada’s beef farmers were compensated because of mad cow disease.²⁰⁸

²⁰⁶ Sharon Ford, DFO office of sustainable aquaculture, pers. comm. 19 March 2004. Ford is the former director of the Canadian Aquaculture Industry Alliance.

²⁰⁷ “DFO Proposals for Implementing Selected Elements of an Aquatic Animal Health Program in Canada,” December 18, 2000, obtained under the Access to Information Act, March 2004.

²⁰⁸ Nell Halse, pers.com., March 22, 2004.

4 GOVERNMENT SUPPORT FOR THE BIG FIVE

²⁰⁹ “New Brunswick salmon farmers offered millions in federal loans,” Intrafish, 1 April 2004.

In April 2004, the federal government announced a \$7.5 million loan to New Brunswick salmon farmers to help them deal with the ISA virus. Halse, warning that some companies will go under if ISA continues to be a problem, said the loan would buy time for the province’s salmon farming industry.²⁰⁹

5

THE PUBLIC RELATIONS CONNECTION



George Weston, owner of Heritage Salmon, pointed to negative publicity as a culprit for its disheartening fisheries losses halfway through 2004.

Sales of farmed salmon slumped in 2003, a drop some industry observers blamed on widespread negative publicity about the potential health and environmental impacts of eating farmed salmon. George Weston, owner of Heritage Salmon, pointed to negative publicity as a culprit for its disheartening fisheries losses halfway through 2004. By 2003, however, the situation was so critical that the industry mustered its resources to recover lost ground. Making significant investments in public relations and marketing, it devised a broad range of strategies to cultivate a positive image for the salmon farming industry, and to make its product more attractive to potential consumers. Behind the scenes, the salmon farming establishment continues to lobby provincial and federal governments – and their many agencies – to support and subsidize the industry in a seemingly endless variety of ways.

B.C. Salmon Farmers Association hires Hill & Knowlton

The year 2003 began gloomily for the B.C. Salmon Farmers Association. Popular restaurants in B.C.'s Lower Mainland had erased farmed salmon dishes from their menus. A campaign launched by the Coastal Alliance for Aquaculture Reform urged American restaurants and retailers to “think twice” about farmed salmon. Global protests were taking place against salmon farming expansion in B.C.'s Great Bear Rainforest. The Broughton Archipelago's salmon farms were blamed for a sea lice epidemic identified as the probable cause of the collapse of the pink salmon run in 2002, and prestigious magazines such as National Geographic and Time had written critically about B.C.'s salmon farming industry. BCSFA executive director Mary Ellen Walling called the negative publicity a “campaign of misinformation” that was slowing down federal environmental assessments of proposed new salmon farm sites.²¹⁰

So the B.C. Salmon Farmers Association, representing fish farming corporations, did what many multinationals and governments do when facing a costly public relations crisis. It hired one of the world's largest public relations firms to give salmon farming's blemished image a corporate makeover. Hill & Knowlton, with more than 70 offices in 37 countries, including one in Vancouver, was just a phone call away. Its damage-control track record was admirable. The firm's accomplishments include managing public relations after the Three Mile Island nuclear plant accident, developing a public relations strategy for the Kuwaiti government in exile during the Gulf War, and establishing, at the behest of cigarette companies, the Tobacco Institute to promote smoking.

²¹⁰ Mary Ellen Walling, “Swimming with Sharks: The Truth About Salmon Farming,” policy briefing, Fraser Institute, Vancouver, 2 October 2003.

About 70 percent of the BCSFA’s media work is not even visible, Walling said in her presentation on Managing Effective Communications. “It’s the stories that don’t appear in the newspaper that mean we’ve done our job.”

²¹¹ “B.C. salmon farmers hire PR firm for ‘long overdue’ media relations, Intrafish, 21 February 2002.

²¹² “BC salmon farmers hire PR firm for ‘long overdue’ media relations,” Intrafish, 21 February 2002.

The announcement that Hill & Knowlton’s Vancouver office would handle public relations for the B.C. Salmon Farmers Association came in February 2003.²¹¹

“We have a lot of catching up to do,” explained Vivian Krause, Nutreco’s corporate development manager.²¹² Hill & Knowlton said it would provide the BCSFA with a “whole range of communication services and media relations,” beginning with a glossy website full of information for the public and media. Soon the BCSFA launched its “Aquaculture Feeds Families” campaign, distributing more than 20,000 “Aquaculture Feeds Families” cards containing “important facts” about farmed salmon. In February and March of 2003, the BCSFA issued 32 press releases, compared to eight for the entire year in 2002. The association, instead of waiting for journalists’ calls, began to call journalists. It offered tours of salmon farms, provided a steady diet of information on the economic benefits of salmon farms and assuaged fears about their environmental impacts. “[One] of the things we’ve learned this year is a kind of boy scout model,” Walling told a Fraser Institute audience in October 2003. “Be prepared. We’ve done an enormous amount of work to mobilize our industry both proactively and reactively...”

Walling and other BCSFA representatives met with newspaper editorial boards in Vancouver and on Vancouver Island, a tactic that succeeded in gaining favourable media coverage. “We are now seeing [our efforts] positively reflected in the editorial pages of these papers,” Walling told participants in the Aquaculture Canada 2003 conference in Victoria.²¹³ About 70 percent of the BCSFA’s media work is not even visible, Walling said in her presentation on Managing Effective Communications. “It’s the stories that don’t appear in the newspaper that mean we’ve done our job.”

²¹³ Mary Ellen Walling, presentation on “Managing Effective Communications,” Aquaculture Canada 2003, 30 October 2003.

Hill & Knowlton were extremely effective in getting across the BCSFA message.

An Ipsos-Reid poll conducted in late July 2003 showed a six percent increase in public support for salmon farming in just four months. The title of a press release issued by the BCSFA at its annual general meeting that September reflected the association’s new-found optimism: “The Future of Aquaculture Looks Hopeful as the B.C. Salmon Farmers Association Celebrates Progress and Potential at Annual General Meeting.” Said Walling: “...it would appear that the truth about salmon farming – that it is an economically, environmentally sustainable industry – is becoming better understood.”²¹⁴

²¹⁴ “The Future of Aquaculture Looks Hopeful as the B.C. Salmon Farmers Association Celebrates Progress and Potential at Annual General Meeting,” BCSFA press release, 12 September 2003.

Salmon of the Americas (SOTA)

Make salmon the dietary protein source of choice by informing the North American public about its nutritional value, wholesomeness and the environmentally sound practices associated with production of this sustainable natural resource. (SOTA MISSION STATEMENT)

The website for Salmon of the Americas features tasty recipes and cooking tips for farmed salmon, as well as plenty of information about its nutritional value. The organization, its website says, consists of “salmon farmers” in Canada, the U.S. and Chile whose “hard work and high technology” results in “affordable salmon for your enjoyment and health.”

What the website doesn’t tell you, however, is that Salmon of the Americas is very much the brainchild of the same multinationals that dominate salmon farming in Canada. Four of the five biggest companies in Canada – Nutreco, Heritage, Cermaq and Stolt – are represented on SOTA’s board of directors.²¹⁵ Pan Fish is also a SOTA member, although not represented on the board. The president of SOTA’s board is Philip Fitzpatrick, business group managing director for Marine Harvest’s American operations. Jim Gracie, president of Stolt Sea Farm Americas, is secretary of the board.

This hemispheric initiative had its official start-up on June 24, 2003, when industry executives met in Miami for a signing ceremony. At the time, executives didn’t have much to clink glasses about: salmon prices were dismally low and many farming operations were reeling from costly disease outbreaks. Some companies with Chilean operations were under investigation by the U.S. Department of Commerce for allegedly dumping Chilean salmon on the U.S. market. SOTA announced it would bring together salmon farming executives in the U.S., Canada and Chile and “bury protectionist practices that only caused unnecessary economic expenses for both plaintiffs and defendants.”²¹⁶

²¹⁵ Fjord Seafood, one of the world’s largest aquaculture companies, is also represented on the board. Representatives from the three largest Chilean salmon farming companies, Camanchaca Inc., AquaChile Inc. and Salmones Multiexport SA, make up the rest of the board.

²¹⁶ “Salmon of the Americas kicks off in Miami tomorrow,” Intrafish 23 June 2004.

SOTA board members and their company affiliations

SOTA Board Member	Company Affiliation
Philip Fitzpatrick, President	Managing Director, Marine Harvest America
Jim Gracie, Secretary	President, Stolt Sea Farm
David Rideout, Chair of Steering Committee, ex-officio member of the board	Executive Director, Canadian Aquaculture Industry Alliance
Alex Trent, Executive Director	MarketAction

In 2003, SOTA's operating budget was US \$3 million, with corporate contributions being based on the amount of salmon each company exports to the U.S.: the greater the volume, the higher the contribution.

No longer would the industry be divided by unsightly squabbles over the price and volume of Chilean salmon imported into the United States; from now on, executives would work together to brighten the image of farmed salmon in the public eye and increase farmed salmon consumption. SOTA would target consumers and retailers with a marketing strategy designed to “work behind the scenes to alter the perception of farmed salmon in the U.S.” Convincing American consumers to eat more farmed salmon was key to the overall success of the industry. (Currently, 89 percent of B.C.'s farmed salmon exports and one-third of Chile's farmed salmon exports go to the United States.)

Representing the Canadian aquaculture industry on SOTA and chairing its five-person steering committee was David Rideout, executive director of the Canadian Aquaculture Industry Alliance (CAIA). “What we realized was, our silence wasn't golden, our silence was hurting us,” said Rideout who, in February 2003, was literally called away from a workshop on Aquaculture Law and Policy: an Industry Perspective – at which he was scheduled to give a key speech – to meet with salmon farming industry leaders to hammer out the SOTA initiative.²¹⁷ Rideout is an ex-officio member of SOTA's board.

²¹⁷ “Aquaculture Law & Policy: An Industry Perspective,” address delivered by Nell Halse in place of David Rideout, 27 February 2003.

In 2003, SOTA's operating budget was US \$3 million,²¹⁸ with corporate contributions based on the amount of salmon each company exports to the U.S.: the greater the volume, the higher the contribution. To get on with the job of selling more farmed salmon to the public, SOTA hired a New Jersey marketing firm called MarketAction. The marketing firm aims to help corporations and associations increase market share through analysis and a “roadmap to build market share or solve a problem.” SOTA doesn't even have its own office; the communications and marketing initiative is run from MarketAction's Princeton office.

²¹⁸ “Salmon of the Americas kicks off in Miami tomorrow,” Intrafish 23 June 2003.

Alex Trent from MarketAction is SOTA's executive director. Trent has worked for clients as diverse as pharmaceutical giants Novartis and Hoffman-LaRoche, the American Soybean Association and the U.S. Feed Grains Council. At the 2003 Atlantic Aquaculture Exposition Conference and Fair, Heritage Salmon invited Trent to give the keynote speech. The title of Trent's presentation was, aptly, “Marketing Yourself and Your Product.”

No sooner had SOTA officially formed than it went on the offensive, working hard to convince retailers, distributors, nutritionists, restaurants and the media of the many merits of farmed salmon. These groups, in turn, were expected to disseminate the positive message to consumers, allaying any possible health fears or environmen-

tal concerns. As soon as any issue threatened to taint the public's image of farmed salmon, SOTA was ready with a press release, an eye-catching website addition and reassuring contacts for the media. Media tours of B.C. salmon farms were arranged in the summer of 2003. SOTA representatives spoke at a Food Marketing Institute seminar, participated in American Dietetics Association meetings, and had stories placed in the restaurant trade media. The association's views were quoted regularly in the press; in B.C., stories about salmon farming in the province's largest newspaper, *The Vancouver Sun*, began to include SOTA's viewpoints as well those of the B.C. Salmon Farmers Association. SOTA's point of view has also been publicized in Canada's national newspapers *The Globe and Mail* and *the National Post*. Companies like Heritage and Nutreco have also opened a new channel to government policy-makers through SOTA.

In late 2003, after a study by the Environmental Working Group – a Washington and California-based public interest watchdog organization – drew international attention to the presence of PCBs in farmed salmon, SOTA's executive director wrote a letter to Mark McClellan, Commissioner of the U.S. Food and Drug Administration. Trent urged the administration to reassess contaminant recommendations and guidelines for all foods, and to tell consumers about the benefits of eating fresh salmon, a product he says “can literally save people's lives with just moderate consumption” because of its high concentration of omega-3 fatty acids. When a more detailed – and more damning – study of PCBs in farmed salmon was published in the journal *Science* in January 2004, McClellan was quoted in the media lauding the health benefits of salmon and noting that the amount of PCBs in food had fallen over the past several decades. McClellan's statement, along with other supportive statements from FDA officials and scientists like Charles Santerre, a long-time advocate of the farmed salmon industry, is posted on SOTA's website.

In 2004, SOTA launched a new public relations offensive beamed right into consumers' living rooms. The organization sent pre-recorded tapes promoting the benefits of farmed salmon to as many as 300 television stations in Canada and the U.S. The tapes feature celebrated chef Graham Kerr and dietician Kathleen Zelman downplaying fears of PCB contamination in farmed salmon and promoting its high omega-3 fatty acid content. As of mid-March 2004, 13 television stations had promised to air the tape or broadcast live programs with Kerr and Zelman.²¹⁹

SOTA has been so successful that the salmon farming industry in Europe plans to emulate it with the creation of an industrial interest organization called *Salmon of Europe*.²²⁰

²¹⁹ “SOTA launching television spots to counter farmed salmon attacks,” *Intrafish*, 15 March 2004.

²²⁰ “Working for free market access through Salmon of Europe,” *Intrafish*, 30 March 2004.

Despite PAA’s grassroots claims, however, the group is closely linked to three of the multinational corporations that dominate salmon farming in B.C. – Pan Fish (Omega), Marine Harvest (Nutreco) and Stolt Sea Farm.

Positive Aquaculture Awareness (PAA)

In its press releases, the Campbell River-based group Positive Aquaculture Awareness (PAA) calls itself a “grassroots” organization committed to providing the public with “better information” about B.C.’s salmon farming sector. President Laurie Jensen tells the media that PAA is a group of “individuals” – mainly salmon farm employees, not executives or owners. “Most of us work full time, are all volunteers and do not have the same funds that the environmental groups have...” Jensen wrote in a letter to the editor of the Gold River Record, a village of 1,400 on northern Vancouver Island.

Despite PAA’s grassroots claims, however, the group is closely linked to three of the multinational corporations that dominate salmon farming in B.C. – Pan Fish (Omega), Marine Harvest (Nutreco) and Stolt Sea Farm. Jensen, described in a Canada News Wire release as a “salmon farm community member,” works for a Norway-based multinational called AKVAsmart, one of the world’s leading suppliers of fish feed systems and other technology to the aquaculture industry, including to the Omega Salmon Group and Stolt Sea Farm. Jensen is AKVAsmart Canada’s vice-president and sales manager based at AKVAsmart’s Canadian headquarters in Campbell River.²²¹

²²¹ AKVAsmart Canada has offices in Campbell River, B.C. and St. George, New Brunswick. In 2002 the parent company had sales revenue of \$21 million.

PAA vice-president Leanne Brunt and PAA treasurer Betty Christiansen are employed

PAA board members, contributors and their company affiliations

PAA Board Members/Contributors	Company Affiliation
Laurie Jensen, President	Vice President and sales manager of AKVAsmart Canada
Suzanne Dyson, Secretary	Stolt Sea Farm
Leanne Brunt	Pan Fish
Betty Christiansen	Pan Fish
Darin Padlewski	Pan Fish
Jules Power	Pan Fish
Ian Roberts	Marine Harvest/Nutreco
Terry Brooks	Marine Harvest/Nutreco
Peter Chettleburgh	Northern Aquaculture
Catherine Egan	Northern Aquaculture
James Lewis	Capamara Communications Inc. (publishers of Northern Aquaculture)

PAA also engaged in a major letter-to-the-editor writing campaign in 2003, with Jensen signing letters to a host of publications ranging from the Economist and the New York Times to the Prince Rupert Daily News.

by Omega (Pan Fish). Executive member Ian Roberts, one of two members in charge of communications, works for Marine Harvest, as does Terry Brooks, the PAA executive member in charge of membership and fundraising. PAA secretary Suzanne Dyson works for Stolt Sea Farm. Of four PAA “contributors,” two (Darin Padlewski and Jules Power) work for Omega. Two other contributors have been Peter Chettleburgh, editor of the monthly trade publication Northern Aquaculture, and James Lewis of Capamara Communications Inc., publishers of Northern Aquaculture. Chettleburgh was listed as PAA’s literature editor, while Lewis was in charge of PAA website design. Catherine Egan, one of two PAA executives overseeing education/publications, is in charge of advertising for Northern Aquaculture. In 2004 the publication’s website featured, as a colourful banner headline, a link to PAA’s new website.

Although formed in 1998, Positive Aquaculture Awareness did not gain a high public profile until 2003, the same year SOTA was formed and the BCSFA hired Hill & Knowlton. That year, PAA organized “grassroots” demonstrations outside the offices of the David Suzuki Foundation in Vancouver and in Port McNeill against

AKVASMART’S MANY CONNECTIONS

On the AKVAsmart website, a cartoon fish proclaims, “I’ve got friends all over the world.” Indeed, among the company’s major customers for its fish feed technology are the multinationals that operate most of B.C.’s salmon farms. AKVAsmart also has subsidiaries in Norway, the United Kingdom and Chile, where it is the aquaculture industry’s biggest supplier.

One of AKVAsmart’s hottest products is a central feed system that transports fish feed “from a central location or vessel through flexible pipes to the cages.” In 2001, AKVAsmart signed a \$1.1 million contract with Omega in Canada for delivery of a feeding fleet, feeding equipment and a sensor system.²²² In 2002, the company signed a \$667,500 contract with Stolt Sea Farm in Chile for delivery of a feeding facility, including surveillance equipment and software.²²³ AKVAsmart also recently teamed up with Marine Harvest and Nutreco to open Norway’s Centre for Aquaculture Competence, the world’s largest experimental salmon and trout farm. The centre will “address the feed, technology and environmental problems constraining the aquaculture industry.”

²²² “Aquaculture Equipment to Canada,” The Norwegian Guarantee Institute for Export Credits, News, 1 May 2002. The deal was backed by the Norwegian Guarantee Institute for Export Credits (80 percent) and Farm Credit Canada (20 percent).

²²³ “Norwegian backing for Chilean project,” News, Exportagroup.com.

journalist Rafe Mair, an outspoken critic of salmon farming. PAA also engaged in a major letter-to-the-editor writing campaign in 2003, with Jensen signing letters to a host of publications ranging from the Economist and the New York Times to the Prince Rupert Daily News.

PAA's stated aim is to promote the aquaculture industry "at the community level." As Jensen explained in an interview with Intrafish, "We're targeting regular, local people." PAA has promoted aquaculture in diverse locations that include high schools, career fairs, conferences and ball tournaments. In May 2003, PAA organized the first annual "Aquaculture Awareness Day" in a shoreline park in Campbell River, dishing out free farmed salmon and positive information about the industry. PAA's crowning achievement in 2003, however, was the launch of its website farmfreshsalmon.org, intended, in part, as a "send up" of the "farmed and dangerous" website of the Coastal Alliance for Aquaculture Reform. Jensen says the PAA website will be different than the website of the Salmon of the Americas and the revamped website of the B.C. Salmon Farmers Association, pointing out that the PAA can "hit at different levels."²²⁴

²²⁴ "Group takes a page from environmentalists with pro-farmed salmon site," Intrafish, 1 August 2003.

STOLT HIRES LOBBYISTS

Stolt, the largest salmon farming company in Canada, is the only one of the Big Five companies to engage its own government lobbyists. The other four continue to work through the BCSFA. Stolt made the move in 2003 when it hired Global Public Affairs, a company that "manages" policy issues for corporations and has offices in five Canadian cities. Five Global employees registered to represent Stolt in lobbying several different federal government departments and institutions: Environment Canada, the Canadian Environmental Assessment Agency (an independent body accountable to Parliament through the Ministry of the Environment), Western Economic Diversification, Fisheries and Oceans Canada, Indian and Northern Affairs, Industry Canada, the Canadian Food Inspection Agency and Health Canada.

Provincially, Stolt also hired Global lobbyist Kimanda Jarzebiak in 2003 to discuss "activities related to Stolt's interests in B.C." with three different ministries: the Ministry of Agriculture, Food and Fisheries; Sustainable Resource Management; and Water, Land and Air Protection. Global lobbyist Gary Ley was also appointed to represent Stolt in communication with the three ministries from February 21, 2003 to February 21, 2004. The B.C. government, responding to a freedom of information request, said it had no records of any meetings between any provincial government representatives and Global lobbyists representing Stolt.

A decade after the SHC's creation, following what it calls a "Herculean" effort, nine aquaculture therapeutants were licensed for use in Canada.

Salmon Health Consortium (SHC)

Just over a decade ago, salmon farming companies in Canada found themselves in a predicament. Farmed fish – like poultry, swine and cattle – caught diseases that required medication. But virtually no therapeutants were approved for use in Canadian aquaculture, putting Canadian companies at a disadvantage with competitors in other countries. At the same time, the practice of including prophylactic antibiotics in Canadian fish feed was widespread. Aquaculturists knew medication in feed had to be sharply curtailed if they were to successfully market farmed salmon to consumers. Drug residues in Canadian farmed salmon also needed to meet U.S. standards, or fresh shipments risked being stopped at the border.

The Salmon Health Consortium, formed in 1992, had one main objective: to make safe and effective therapeutants available to Canadian aquaculture companies. It began as a three-way alliance among the B.C. Salmon Farmers Association, the New Brunswick Salmon Growers' Association and the Canadian Animal Health Institute. The consortium identified medication needs for farmed salmon, found pharmaceutical corporations willing to develop products and – sometimes with money from the federal government – helped pharmaceuticals jump through Canada's regulatory hoops. The consortium did this for 10 years, until it voluntarily dissolved in 2002, its mission virtually accomplished. "We basically did what we set out to do," explained Myron Roth, former consortium president.²²⁵

SHC had an annual budget of about \$120,000, which it received from the federal government, salmon farming associations, pharmaceutical corporations, salmon farming companies and professional institutions with an interest in fish health.²²⁶ Salmon company supporters included Heritage, Nutreco and Cermaq. Pharmaceutical supporters included Syndel Laboratories Ltd, Aqua Health Ltd. (Novartis), Alpharma Inc (Biomed), Bayotek International, Hoffman-LaRoche Ltd, Microtek International, Pfizer Canada and Schering-Plough Animal Health.

At the consortium's inception in 1992 only three licensed fish therapeutants were available in Canada.²²⁷ "The pharmaceutical companies were just not going to step forward (with aquaculture drug submissions)," said Roth. "The volume was just not there. There was no financial incentive for them. They needed a little push."²²⁸

The SHC, in its first three years of existence, facilitated regulatory approval for two fish therapeutants.²²⁹ By December 1998, the consortium had obtained approved for a total of seven therapeutants.²³⁰ A decade after the SHC's creation, following what it calls a "Herculean" effort, nine aquaculture therapeutants were licensed for use in Canada. They included medications for sea lice and ISA, two of the most challenging health issues for salmon farms.

²²⁵ Pers. comm., 6 April 2004.

²²⁶ Myron Roth, pers. comm., 6 April 2004.

²²⁷ Salmon Health Consortium, pamphlet [no date].

²²⁸ Roth, pers. comm., 6 April 2004.

²²⁹ Fax from the Salmon Health Consortium to Dorothee Kieser of DFO, 10 March 1996, obtained from the Veterinary Drugs Directorate of Health Canada under the federal Access to Information Act.

²³⁰ "Notes : "Request for Contract for Services" Iodophore regulatory approval under the Food & Drugs Act – Phase III, December 9, 1998," obtained under the federal Access to Information Act.

In one early example of how the consortium worked to get aquaculture drugs approved, the SHC wrote to the director general of Health Canada's food directorate for the bureau of veterinary drugs. The consortium explained that a representative of a European company developing an oral treatment for sea lice would visit Ottawa in October 1994. The SHC requested a meeting with representatives of the bureau's manufacturing, human safety and antiparasitic drugs divisions to "discuss the Canadian regulatory requirements for approval of this compound." Said the SHC: "Development of an approved safe and effective sea lice treatment is a priority of the Canadian salmon farming industry."

The Salmon Health Consortium also developed an "on-farm therapeutic use and certification program" called Healthy Salmon. The project aimed to ensure that farm-raised salmon did not exceed maximum drug residue limits set by Health Canada. Companies certified by the program could only use drugs prescribed by a veterinarian, and they had to produce a paper trail for all drugs they used. Contracted to develop the project were: Peter Cameron of Intercon Consultants; Rob Armstrong, the residing Salmon Health Consortium executive director, and; Myron Roth, who was then a contractor for both the Salmon Health Consortium and the Canadian Aquaculture Industry Alliance (CAIA), developing projects on chemotherapeutic evaluation and registration for the Canadian aquaculture industry.

Another function of the consortium was to act as a government-industry liaison, maintaining contact with government bodies such as the Canadian Food Inspection Agency "to improve communication concerning fish health management issues." The consortium also worked with the Pest Management Regulatory Agency to develop a sea lice integrated management strategy. The goal was always the same - to cultivate "a positive industry image through public communications on aquaculture fish health and therapeutic use practices."²³¹

²³¹ "Salmon Health Consortium/Bureau of Veterinary Drugs, Information and Discussion Session," 27 March 2001, obtained under the federal access to information act.

BOARD OF THE SHC: WHERE ARE THEY NOW?

Many former SHC staff and board members today work for pharmaceutical companies that manufacture aquaculture drugs and vaccines.

- Myron Roth, a former SHC executive director and president of the SHC board, is now head of regulatory affairs, Americas, for the pharmaceutical firm Aqua Health Ltd., part of Novartis Animal Health. Novartis has more aquaculture veterinary biological products – such as vaccines – approved in Canada than any other company. Novartis also manufactured the sea lice bath treatment Salmosan, which is being phased out but is still approved for use in Canada until 2005.²³²
- Former SHC board member Rejéan Berman is regulatory affairs manager for Schering-Plough Animal Health. The company manufactures Aquaflor, a broad spectrum antibiotic that can be mixed in feed. Aquaflor was approved for use in Canada in 1996. Schering-Plough also manufactures the controversial sea lice treatment SLICE, approved in Canada for emergency treatment only.
- Former board member Jim Brackett (SHC secretary 2000/01) is general manager of Syndel Laboratories. Syndel is the exclusive Canadian distributor for three of nine therapeutic products currently approved for use in Canadian aquaculture.
- Former SHC board member Julian Thornton is CEO of Microtek International Ltd., a B.C. biotechnology company specializing in the development and manufacture of vaccines for aquaculture.
- Former board member Paul Hardy-Smith (SHC secretary 2001) headed the fish health management team at Heritage Salmon’s west coast operations.

²³² Pers. comm., 6 April 2004.

Former SHC board members and their company affiliation

SHC Board Members	Company Affiliation
Jim Brackett, Secretary	↔ General Manager, Syndel Laboratories
Myron Roth, Executive Director	↔ Regulatory Affairs, Aqua Health Ltd. (Novartis)
Rejéan Berman	↔ Regulatory Affairs Manager, Schering-Plough
Paul Hardy-Smith	↔ Head of fish health management, Heritage
Julian Thornton	↔ Microtek International

RECOMMENDATIONS

Based on the information in this report, as well as additional research identifying the ecological impacts of salmon aquaculture, Raincoast recommends significant changes to the way salmon farming is conducted in British Columbia.

Government policies

1. Redirect existing government funding for multinational salmon farming corporations and industry organizations to support closed-tank alternatives that will control disease and protect wild salmon stocks.
2. Initiate government-funded studies on the environmental and human health impacts of medications and other chemicals used on salmon farms.
3. Make government interactions with salmon farming corporations more transparent. This includes decreasing the cost and increasing the efficiency of Access to Information and Freedom of Information requests.
4. Evaluate the economics of salmon farming in B.C., with special consideration to employment trends, potential impact on wild fisheries and other industries, government financial support, and public revenue generated by the industry from sources such as rents and taxes.

Protection for wild salmon and the environment

5. Reinstate the moratorium on all new salmon farms in British Columbia. Halt the planned expansion of farms on the north and central coasts.
6. Ensure the safe passage of wild salmon through the Broughton Archipelago by fallowing and removing the necessary salmon farms.
7. Begin transition of open net cage salmon farms to closed-tank technology.
8. Increase regulatory requirements for protection of wild fish. This includes larger and more consistent fines for regulatory violations by salmon farming companies.

Use of antibiotics and therapeutants

9. Monitor and test salmon farm sites and their vicinities for antibiotic and Slice residues.
10. Ensure Health Canada's testing for Slice and other therapeutants is adequate and that test results are publicly available.

In all of the above recommendations, it is critical that the legal rights and title of First Nations people be considered and respected.

Appendix A

Extended company profiles

Pan Fish

Pan Fish (formerly Omega) was one of the first multinationals to trawl the waters of Canada's west coast for salmon farming potential. By 1996, the Omega Salmon Group held 13 salmon tenures in B.C., the majority west of the Broughton Archipelago in the region of Queen Charlotte Sound. Five years later, the group held 24 B.C. salmon farming licenses and owned two hatcheries and two smoltification plants.

Before its financial crisis, Pan Fish had 30 salmon farming tenures in B.C. – more than any other company. (Today it has 25 tenures.) Omega's B.C. salmon farm licenses were worth more than \$24 million in 2002. Pan Fish also owns the controversial Ocean Falls hatchery and three well boats. Like other fish farming multinationals, the company covets expansion on B.C.'s north coast: "Most industry observers have speculated that expansion into northern British Columbia offers the best chance for the salmon aquaculture to develop given the significant constraints encountered in the south," explained a briefing note for former B.C. Fisheries Minister John van Dongen.

Pan Fish's new CEO, Atle Eide, is no stranger to the fish farming business. Eide was the former managing director of Hydro Seafood, now part of Nutreco's fish farming empire. Prior to his stint at Hydro, Eide was head of a fish feed company, the Skretting Group, now owned by Nutreco as well. Eide has held other prominent directorships in the aquaculture industry, including serving on the boards of companies such as Salmar and Norway Royal Salmon. When Eide stepped into the Pan Fish wheelhouse he announced that he planned to rid the company of non-core assets so it could become "engaged exclusively in fish farming activities." "There's only one way to survive in salmon production, and this type of food production, and that is by having low costs," the new CEO announced.

Before the company's financial crisis sparked a major restructuring, Pan Fish operated in 10 countries and had almost 2,400 employees worldwide. It produces about one-third of its salmon and trout in North America, including product from its Washington State subsidiary, Cypress Island Inc., the only fish farming company in that state. Cypress operates eight salmon farms and two hatcheries with a capacity of three million smolts.

Another one-third of Pan Fish' total production comes from Norway. Denmark's Faroe Islands and Scotland make up the remaining chunk. In Norway, where it owns three packing stations, Pan Fish farms cod and halibut as well as salmon. In 2003, the company opened the world's largest salmon slaughter plant in western Norway, with a capacity of processing 40,000 fish per shift. It also owns two of the largest salmon smoking plants in Europe – one in France and the other in Denmark.

In Scotland, Pan Fish owns the company Lighthouse of Scotland Ltd., which has about 35 farming sites on Scotland's north and west coasts, as well as a smolt farm

and a processing plant in Cairndow in Loch Fyne. Lighthouse farmed fish are sold under evocative labels such as Mull of Kintyre Turbot and Loch Etive Trout. In the Faroes, Pan Fish shares 12 licenses for salmon production, six smolt farms and two packing stations through its holdings in two companies in the Vestlaks group (PF Vestsalmon and PF Laksaling) as well as in PF Laksholding. However, the company decided not to put any smolts into Faroes waters in 2004, citing the “demanding market situation” and a potential change in Faroes foreign ownership rules that would affect Pan Fish refinancing.

The only major fish farming country missing from the Pan Fish multinational portfolio is Chile. Prior to its financial crisis, Pan Fish said it considered investing in Chilean fish farms but would not do so until the threat of dumping charges in the U.S. has subsided.

Fish farms, while the most significant of Pan Fish’s interests, have by no means been the company’s only venture. In the 1990’s, Pan Fish bought trawlers to catch capelin, herring and other fish for salmon feed. It had ownership interests in fishing vessels such as the Russian Red King Crab trawler “Meridian”, expected to catch as many as 100,000 Red King Crabs in 2002 (worth up to US \$7 million).²³³ Pan Fish also invested in farming cod, halibut, turbot and other seafood. Among its assets was China’s largest turbot-production facility in Qingdao.

²³³ Pan Fish said in its 2002 annual report that it had sold holdings in fishing vessels but did not specify which ones.

Pan Fish also owned 99 percent of shares in Pan Pelagic, a company that manufactures fish meal and oil at two factories in Norway. Everything changed, however, when bankruptcy loomed. In October 2003, Pan Pelagic was sold to Welcon ASA, a company owned by Pan Pelagic manager director Arne Stang. A massive restructuring also saw Pan Fish sell its stake in Pan Marine ASA, which farms a variety of marine species.

Stolt Sea Farm

Stolt Sea Farm has more assets in Canada than in any other country except its homeland of Norway. Stolt’s Canadian assets are valued at \$34.7 million, compared with assets of \$37.3 million in Norway and \$26.7 million in Chile. Most of Stolt’s 27 B.C. salmon farming tenures are in the Broughton Archipelago, off northeastern Vancouver Island, although Stolt also holds tenures on northwestern Vancouver Island.

Stolt began operations in B.C. in 1985 with six employees.²³⁴ It became a major player in B.C.’s fish farming industry in 1992 when it purchased a bankrupt company called IBEC Aquaculture Corporation. The acquisition gave Stolt a hatchery on Vancouver Island’s Kokish River capable of producing 500,000 smolts a year, and eight farming sites in the Broughton.²³⁵ Some four years later Stolt held 22 salmon farming tenures in B.C., 18 of them in the Broughton.

In 1999 Stolt brokered a deal to buy more than fifty percent of International Aqua Foods Ltd. for about \$15 million from two large corporate stockholders, High

²³⁴ Stolt Sea Farm, “Presentation to the Finance Committee,” [no date] information request received under the Freedom of Information Act, March 2004.

²³⁵ David W. Ellis and Associates, “Net Loss: The Salmon Netcage Industry in British Columbia,” A Report to the David Suzuki Foundation, October 1996.

Lines Foods Incorporated and Cote 100 Inc. At the time, Aqua Foods was one of the six largest salmon companies in B.C. It owned sites in Tofino, Campbell River and northwestern Vancouver Island. Aqua Foods also owned Ocean Horizons in Chile and a company in Maine called Maine Pride Salmon Inc., as well as a Maine hatchery facility. The Aqua Foods stock purchase crowned Stolt as king of North America's farmed salmon industry: the company immediately became the largest player on the continent. This includes its 12 to 15 salmon farming tenures in New Brunswick, where fish farms cluster in the Bay of Fundy. (In April 2004, only about six of those farms were active.²³⁶)

²³⁶ Jim Gracie, president, Stolt Sea Farm Americas, pers. comm., 2 April 2004.

In B.C., Stolt also owns 50 percent of the Englewood Packing Company built in 1996 in Port McNeill. The other owner is Batchelor Bay Management, one of B.C.'s largest salmon processing companies. About 80 percent of salmon processed at Englewood is destined for the United States. Another 10 percent is consumed in Canada and five percent is sent to Asia.²³⁷

²³⁷ Pers. comm., 1 March 2004.

Stolt is the world's top producer of turbot. It owns eight turbot farms in Spain, including a brand new operation said to be the largest fish farm in the world. Turbot is only one item on the company's expanding smorgasbord of farmed fish. In addition to Atlantic salmon, Stolt also farms sole, cod, halibut, bluefin tuna, salmon trout, tilapia and white sturgeon.²³⁸ The company's fish are marketed under the brand name Sterling. "Our vision is to become a one-stop fish supplier with as large a range as possible for our customers," explained Pablo Garcia, Stolt flatfish divisional manager.

²³⁸ Commercial production of cod and sold were scheduled to start in 2003 or 2004.

Stolt first dabbled in fish farming in 1972, when it bought Fjon, a salmon smolt farm in Norway that went on to become the country's leading smolt producer. Stolt began to experiment with Chilean production in 1994 when it bought 12.5 percent of Eicosal's salmon farming operations. In 1997, Stolt bought Ireland's largest salmon farm, Gaelic Seafoods, when it was put on the market after its managing director came under investigation for insurance fraud. Stolt purchased the company's Scottish assets for what was thought to be Euro 12.7 million.

Starting in the year 2000, Stolt made a number of investments in various aspects of the fish business. That year it bought La Couronne, a Netherlands-owned company that smokes and processes salmon and other seafood products sold mainly in the Benelux countries. Next it netted Australian Bluefin Pty Ltd, a tuna-ranching company. It then purchased the remaining 49 percent it did not already own of Ocean Horizons in Chile. Stolt had acquired 51 percent of Ocean Horizons the previous year through its purchase of International Aqua Foods Ltd. In all, Stolt dished out \$11.3 million for its 2000 acquisitions.²³⁹

²³⁹ Stolt-Nielsen Annual Report 2002.

Stolt didn't stop there. The following year it bought Harlosh Salmon Ltd, a company that farms salmon in Scotland. It also purchased the 87.5 percent of Eicosa – a second Chilean fish farming company – it did not already own, and snapped up French turbot producer Ferme Marine de l'Adour. The Eicosal purchase gave Stolt "the most advanced brood stock and freshwater fry and smolt program in the industry, as well as a state-of-the-art plant with 35,000 metric tonne processing capacity located near

²⁴⁰ “Stolt purchases remaining share of Eicosal in Chile,” *Intrafish*, 4 July 2001.

Puerto Montt.”²⁴⁰ Stolt’s shopping bill for the 2001 purchases was approximately \$80 million. The company also paid an additional \$2 million that year for a Hong Kong-based seafood distribution company, F & B Sales Ltd, which sells its farmed wares to major supermarkets, hotels, air caterers, private clubs and restaurant chains. Stolt also owns 50 percent of the Chilean hatchery Landcatch Chile Ltd. and 37 percent of the Norwegian hatchery Midt-Finnmark Smolt.

Around the time Stolt Sea Farm was angling to buy individual salmon farming companies in North America and Chile, Stolt tried to buy an even bigger aquaculture business, Hydro Seafood, from its parent company, Norsk Hydro. The deal would have made Stolt the world’s largest aquaculture company, with total salmon production of between 130,000 and 140,000 tonnes a year and a combined net operating revenue of more than \$628.4 million. Stolt’s aspiration was stymied, however, when Hydro was sold to Nutreco for an estimated US \$450 million.

Nutreco

Nutreco’s B.C. operations are miniscule compared with its global operations. Nutreco, operating under the name Marine Harvest Canada, has 21 salmon farm tenures that stretch from Kyuquot Channel on the west side of Vancouver Island to the Gulf Islands and north coast. Marine Harvest also operates a closed containment salmon farm on Saltspring Island, which uses canola-based protein feeds.

Nutreco Holdings was founded in 1994 following a US \$550 million management buyout of the BP oil company’s animal and fish feed business, BP Nutrition. That same year, Nutreco bought Paradise Bay Seafarms in Campbell River. It changed its name to Marine Harvest Canada in 1999.

In Scotland, Nutreco acquired Marine Harvest McConnell in 1999 for \$81.3 million, changing its name to Marine Harvest Scotland Ltd. Along with Marine Harvest’s Scottish operations, Nutreco assumed control over the company’s Chilean operations, merging them with its own Chilean company, Mares Australes, to create what has become Chile’s largest salmon-exporting firm.

In 2000, still hungry for more salmon farming operations, Nutreco announced it would purchase Hydro Seafood GSP in Scotland. The purchase – which would have given Marine Harvest control over one-half of Scotland’s farmed salmon production – was opposed by the United Kingdom Competition Commission and rejected by the UK Department of Trade and Industry. The commission ruled that the proposed merger would not be in the public interest because it would reduce competition in the salmon-feed market and lead to increased feed and salmon prices. In the end, Nutreco purchased only the Norwegian, French and Irish assets of Hydro Seafood.

In September 2002, Nutreco bought the south Chilean salmon processing plant Chisal SA, adding Chisal’s 300 employees to its payroll and strengthening its position in the Chilean market. Two months later, Nutreco bought up the Dutch Selko com-

²⁴¹ Nutreco Annual Report 2002.

pany, which “produces and sells organic components for animal feed as a substitute for antibiotics.”²⁴¹ The purchase of both companies cost Nutreco \$12.9 million.

In keeping with its goal of being more environmentally responsible, Nutreco launched antibiotic-free feed for poultry, pork and calves in 2002. (A European ban on antibiotics in animal feed will take effect in 2006.) The company does not use transgenic and gene modification techniques in its breeding activities. Its Scottish fish farms operated for the first time ever without antibiotics in 2002. That same year, Nutreco started its supply of organic pork. In Spain, the company offers A-brand Cuk poultry, “grown more slowly and fed with the specially developed feed – fully vegetarian and free of antibiotic growth promoters.” On Saltspring Island in B.C. Nutreco raised salmon to the harvest stage using a closed containment system – what the company calls “a world first.”

Overall, Nutreco’s agriculture sales are more than twice as high as aquaculture sales. Sales of poultry products reached \$1.12 billion in 2003, and pork sales brought in \$700 million. Sales of salmon and other farmed fish accounted for \$778.6 million. Salmon and salmon products account for only 42 percent of the company’s aquaculture sales.

More than one-half of Nutreco’s overall sales in 2003 came from its fish feed and animal nutrition operations.

Cermaq

Despite Cermaq’s relative youth, its fish farming operations have gone through multiple name changes. The revolving designations reflect a buying binge that saw the company scoop up a host of salmon farming operations in B.C., Chile and Scotland.

Cermaq bought its B.C. fish farms in one fell swoop in the fall of 2000. Eager to invest in B.C.’s potentially lucrative salmon farming industry, Cermaq purchased the fish farming operations of three different companies: Pacific National Group Ltd., Prime Pacific Seafarms Ltd. and Pacific Aqua Sea Farms. Operations were united under the name Pacific National Aquaculture, a wholly owned Cermaq subsidiary. The purchases gave Cermaq 17 seawater facilities near Tofino, as well as one of Canada’s largest fish hatchery and smolt production facilities near Port Alberni, capable of producing 4.6 million smolt annually. Two Cermaq salmon farms in Clayoquot Sound are in Sulphur Passage Provincial Park, a marine extension to Strathcona Provincial Park that lies in the heart of the Clayoquot Sound Biosphere Reserve.

In May 2003, Cermaq changed the name of Pacific National Aquaculture to Mainstream Canada, so as to bring the nomenclature in line with Cermaq’s Chilean operations, Mainstream Salmones Y Alimentos SA – often just called Mainstream. The primary market for Cermaq’s farmed B.C. salmon is the United States, where the company runs five sales offices.

Cermaq’s B.C. purchases occurred almost simultaneously with major purchases in

Chile and Scotland. The acquisition of 93 percent of Mainstream, Chile's third largest fish farming company, gave Cermaq 25 seawater facilities and a smolt production facility with an annual capacity of 14 million. (Cermaq was reported to have paid US \$100 million for Mainstream.) The company's head Chilean office and a processing facility are located in Puerto Montt, the country's fish farming capital. Almost one-half of Mainstream's salmon farms are in Puerto Montt; the remaining farms are in the Chile area.

In Scotland, Cermaq netted three salmon farming companies in November 2000: Mainland Scotland Ltd, Shetland Norse Fish Farms Ltd. and the Aquascot Group. The Aquascot Group alone owned three hatcheries and 18 seawater salmon farming operations on the Orkneys and the north and west coasts of Scotland. Aquascot also has three land-based farms for salmon, turbot, cod and halibut. The Scottish operations were united under the Aquascot Group name, but Cermaq intends to change that name to Mainstream as well. In all, Cermaq has about 420 employees in Scotland, far more than in Canada.

In keeping with the company's penchant for name switches, the Cermaq Group is itself a relatively new name; the company used to be called Statkorn Holding ASA. Starting in 2002, all Cermaq's agriculture operations were brought together in a subgroup with a new company, Cernova AS, as the parent company. Cernova is a wholly-owned Cermaq subsidiary.

Mainstream Chile is potentially the most valuable fish farming jewel on Cermaq's global crown. The Chilean subsidiary employs 1,260 workers, four times as many as Cermaq employs in Canada and more than twice as many employed by the company in either Scotland or Norway. In the summer of 2004, Cermaq paid \$29 million for the remaining 70 percent of shares in the Chilean salmon farming company Salmones Andes, significantly boosting its lucrative Chilean assets. (Cermaq became a part-owner of Salmones Andes in 2002). Unlike Cermaq's ailing B.C. operations, which have been stricken by disease, the company's Chilean subsidiary has fared extremely well. At the beginning of 2001, Mainstream was the most successful of all Chilean fishing and aquaculture companies, earning US \$4.6 million in the first quarter. The following year, Cermaq's Chilean production grew 30 percent. The company sold 56 thousand tonnes of salmon and trout from Chile in 2002.

Heritage Salmon

George Weston Ltd. was an early investor in B.C.'s aquaculture industry. In the late 1980s, Weston-owned B.C. Packers Ltd. bought several salmon farms from independent owners, along with a 25 percent interest in a hatchery. B.C. Packers expanded its B.C. holdings in the early 1990s, purchasing other farms and several hatcheries. Around the same time, in 1991, Weston consolidated its salmon farming operations, creating the Heritage Salmon Company. All told, Weston invested \$10 million in nine

²⁴² Robert Williamson, "B.C. fish farmers look elsewhere," *The Globe and Mail*, March 1995. Cited in *Net Loss*.

salmon farms between 1990 and 1995.²⁴² By 1996, Weston held 18 net cage tenures in B.C., the majority in the Broughton Archipelago. Today that number stands at 16.

Weston plunged into salmon farming in Chile in 1992, snapping up farms in what the company tantalizingly markets as the "icy pure waters of the fjords of Southern Chile." Weston said the farmed salmon it raised along B.C.'s coast and in the Bay of Fundy was not sufficient to meet growing consumer demand in the United States. Heritage wanted a slice of the potentially profitable U.S. market so, for a reported \$10 million, it bought Fiordo Blanco, the 17th largest company in Chile's burgeoning aquaculture industry.

Today, in addition to its Canadian and Chilean salmon farms, Heritage owns and operates five salmon farms in Cobscook Bay off the Maine Coast. Heritage leases a sixth farm from another company and owns a seventh salmon farm called Goose Island, which was inactive in 2002.

Appendix B

Overview of diseases in salmon aquaculture

243, 244

²⁴³Jarp J. and E. Karlsen, "Infectious salmon anaemia (ISA) risk factors in sea-cultured Atlantic salmon *Salmo salar*," Diseases of Aquatic Organisms 28, 1997 p.79-86.

²⁴⁴Kent, M.L. and T.T. Poppe, Diseases of Seawater Netpen-reared Salmonid Fishes, Pacific Biological Station, Nanaimo, 1998.

Bacterial diseases

Bacterial Kidney Disease (BKD) – A systemic infection that causes severe, chronic inflammation of the kidney as well as the eye, brain and other organs. Infected fish may be dark and lethargic with swollen abdomens, eye lesions and blood blisters. All ages are susceptible. BKD is transmissible in seawater and is difficult to treat either by vaccine or antibiotics.

BKD was responsible for approximately 80% of all deaths due to disease for farmed Pacific salmon and 40% for farmed Atlantic salmon throughout the 1990's.

Furunculosis – An infection of the cardiovascular system, this disease is transmissible in seawater. It may cause anorexia, darkening and lethargy as well as hemorrhages and reddening of the skin as the disease progresses. It may also lead to "furuncles" which are large, bloody ulcers. Furunculosis is difficult to control. Vaccination is available; antibiotic treatment is difficult as antibiotic resistance is common.

Myxobacteriosis – Myxobacterial infections cause large skin ulcers, mouth lesions and high mortality, particularly in farmed Atlantic salmon. The bacteria usually cause frayed skin and tail in Pacific species. External antibiotics are used to control infection. Infection is exacerbated by skin trauma, usually from handling or transport.

Salmonid Rickettsial Septicemia (SRS) or Piscirickettsiosis – This disease exhibits itself differently in different species, but tends to cause anorexia, lethargy, pallor and anemia. It often affects the nervous system of Atlantic salmon causing odd swimming behaviour. No vaccine is available. Resistance develops quickly and antibiotics are used with varying success.

In Chile, Piscirickettsiosis has been the most important infectious disease in farmed salmonids. It caused a loss of US \$48 million in 1995.

Vibriosis – A systemic infection that may cause severe and rapid mortalities (up to 90%). Vibriosis may cause fish to be lethargic with frayed fins and hemorrhaging; however, in many cases no gross pathological changes are observable. Best treatment is prevention and vaccination is available. Antibiotics may also be employed if the disease is detected early.

Viral diseases

Infectious Hematopoietic Necrosis (IHN or IHNV) – IHN can cause widespread mortalities from four days after onset. Transmission of the virus is poorly understood, but it can be passed from fish to fish and through both sea and fresh water. IHN causes hemorrhages around the fins, lethargy, edema and erratic swimming. The virus can only be controlled by avoidance. Vaccines are in development.

Infectious Pancreatic Necrosis (IPN) – Young Atlantic salmon are the most susceptible salmon species to this disease. In young fish, mortality may exceed 90%, and survivors may become carriers. The first sign of the disease is often death, although those affected may stop feeding and exhibit weak swimming ability. IPN is transmitted vertically (from one life stage to the next). Development of vaccines is beginning to alleviate mortalities.

In the 1990's death from IPN cost the Norwegian fish farming industry NOK 400 million (CAD 78 million) per year.

Infectious Salmon Anemia (ISA) – To date, ISA in North America has only affected farmed Atlantic salmon on the east coast. Several serious outbreaks have occurred. Infected fish stop feeding, become listless and tend to sink to the bottom of the pens. Mortality ranges from 15-100%.

Farms within a distance of 5 km (3.1 miles) from infected farms and processing plants handling infected fish without adequate waste treatment are at a 5 -13 times higher risk of getting ISA.

Hemorrhagic Kidney Disease (HKD) – HKD affects pen-reared Atlantic salmon in Atlantic Canada, and is very similar to the ISA virus. It has caused severe mortalities in Atlantic farms, as much as 5% per day. Diffuse kidney hemorrhaging is the signature of this disease, and eradication of stocks and avoidance are the only methods of control.

Viral Erythrocytic Necrosis (VEN) – This virus affects several species of fish and tends to cause sustained low level loss of stock. Fish become severely anemic and tend to exhibit decreased resistance to environmental stress and other pathogens. The disease is horizontally transmissible (passed on in the water).

Other infections, diseases and parasites

Kudoa thyrsites – *Kudoa* is a myxosporean parasite that is also called soft flesh disease. It is widespread in B.C. and is expensive for the farming industry as it ruins the market value of the fish but is largely undetectable before the fish are harvested. Three to six days after harvest, *Kudoa* infected meat becomes very soft and the fish may develop unsightly white patches. There are no drugs available for treatment.

Sea Lice (family Caligidae) – Sea lice that prey on salmon are parasitic copepods that occur naturally in the Northern Hemisphere. Sea lice feed on mucus, skin, and blood; at low levels, damage is minimized to a few individuals within a population. However, high density populations of salmonids may breed robust populations of lice which can be transferred to wild populations. High levels of lice can be fatal to smolts. Treatment and prevention includes single year class stocking, fallowing of sites as well as topical and oral chemotherapy.

Appendix C

Corporate terminology^{245, 246}

²⁴⁵ Taken directly from: Garner, Bryan A., Editor in Chief, *Black's Law Dictionary: Seventh edition*, West Group, St. Paul Minnesota. 1999.

²⁴⁶ Downes, John and Jordan Elliot Goodman, *Dictionary of Finance and Investment Terms: Sixth edition*. Barron's Educational Series, Inc. Hauppauge, New York, 2003.

Acquisition – *n.* 1. The gaining of possession or control over something <acquisition of the target company's assets>. 2. Something acquired.

Antitrust law – The body of law designed to protect trade and commerce from restraints, monopolies, price-fixing and price discrimination..

Bankruptcy – 1. The statutory procedure, usually triggered by insolvency, by which a person is relieved of most debts and undergoes a judicially supervised reorganization or liquidation for the benefit of that person's creditors.

Capital – *n.* 1. Money or assets invested, or available for investment, in a business. 2. The total assets of a business, especially those that help generate profits. 3. The total amount or value of a corporation's stock; corporate equity.

Class action – A lawsuit in which a single person or a small group of people represents the interests of a larger group.

Collusion – *n.* An agreement to defraud another or to obtain something forbidden by law.

Company – A corporation – or, less commonly, an association, partnership or union – that carries on a commercial or industrial enterprise.

Compensation – *n.* 1. Remuneration and other benefits received in return for services rendered; especially salary or wages. 2. Payment of damages, or any other act that a court orders to be done by a person who has caused injury to another and must therefore make the other whole.

Conglomerate – *n.* A corporation that owns unrelated enterprises in a wide variety of industries.

Corporation – *n.* An entity (usually a business) having authority under law to act as a single person distinct from the shareholders who own it and having rights to issue stock and exist indefinitely; a group or succession of persons established in accordance with legal rules into a legal or juristic person that has legal personality distinct from the natural persons who make it up, exists indefinitely apart from them and has the legal powers that its constitution gives it.

Creditor – 1. One to whom a debt is owed; one who gives credit for money or goods. – Also termed *debtee*.

Crown Corporation – A corporation that is organized and owned by a sovereign government, that serves a public purpose and is administered by a government-appointed board of directors allowed to operate in a businesslike way with minimal government supervision.

Deficit – 1. A deficiency or disadvantage; a deficiency in the amount or quality of something. 2. An excess of expenditures or liabilities over revenues or assets.

Divestment – *n.* 1. *Property*. The cutting short of an interest in property before its normal termination. 2. The complete or partial loss of an interest in an asset, such as land or stock.

Dumping 1. The act of selling a large quantity of goods at less than fair value. 2. Selling goods abroad at less than the market price at home.

Economy of scale (*usually plural*) A decline in a product's per-unit production cost resulting from increased output, usually due to increased production facilities; savings resulting from the greater efficiency of large-scale processes.

Embargo – *n.* The unilateral or collective restrictions on the import or export of goods, materials, capital or services into or from a specific country or group of countries for political or security reasons. Also termed *trade embargo*.

Firm – *n.* **1.** The title under which one or more persons conduct business jointly. **2.** The association by which persons are united for business purposes. Traditionally, this term referred to a partnership as opposed to a company. But today it is frequently used in reference to a company.

Fiscal – *adj.* Of or relating to financial matters.

Gross Domestic Product (GDP) – The market value of the goods and services produced by labor and property in [a country in one year]. GDP is made up of consumer and government purchases, private domestic investments, and net exports of goods and services.

Immunity – Any exemption from a duty, liability or service of process; especially such an exemption granted to a public official.

Incorporation – *n.* The formation of a legal corporation.

Market share – The percentage of the market for a product that a firm supplies, usually calculated by dividing the firm's output by the total market output.

Merger – The act or an instance of combining or uniting. *Corporate mergers:* the absorption of one company (especially a corporation) that ceases to exist into another that retains its own name and identity and acquires the assets and liabilities of the former.

Multinational corporation – A company with operations in two or more countries, generally allowing it to transfer funds and products according to price and demand condition, subject to risks such as changes in exchange rates or political instability.

Parent corporation – A corporation that has a controlling interest in another corporation (called a *subsidiary corporation*), usually through ownership of more than one-half the voting stock. Also termed *parent company*.

Share – **1.** An allotted portion owned by, contributed by or due to someone. **2.** One of the definite number of equal parts into which the capital stock of a corporation or joint-stock company is divided. A share represents an equity or ownership interest in the corporation or joint-stock company.

Shareholder – One who owns or holds a share or shares in a company, especially a corporation.

Subsidiary corporation – A corporation in which a parent corporation has a controlling share. Often shortened to *subsidiary*.

Subsidy – *n.* A grant, usually made by the government, to any enterprise whose promotion is considered to be in the public interest.

Vertical integration – A firm can achieve integration by entering a new market on its own, by acquiring a firm that operates in a secondary market or by entering into a contract with a firm that operates in a secondary market.

Appendix D

Acronyms and abbreviations

ABF – Associated British Foods
ACRDP – Aquaculture Collaborative Research and Development Program (federal)
Aqua-E Fund – Aquaculture and Environment Fund (provincial)
ATIP – Access to Information and Privacy (federal)
B.C. – British Columbia
BCARDC – British Columbia Aquaculture Research and Development Committee
BCSFA – British Columbia Salmon Farmers Association
CAAR – Coastal Alliance for Aquaculture Reform
CAD – Canadian Dollar
CAIA – Canadian Aquaculture Industry Alliance
CAH – Centre for Aquatic Health
CEO – Chief Executive Officer
CFIA – Canadian Food Inspection Agency (federal)
DFO – Department of Fisheries and Oceans (federal)
FOC – Fisheries and Oceans Canada (also known as DFO)
FOI – Freedom of Information (provincial)
GVRD – Greater Vancouver Regional District
HRDC – Human Resources Development Canada (federal)
LWBC – Land and Water B.C. (crown corporation)
MAFF – B.C. Ministry of Agriculture, Food and Fisheries
MRL – maximum residue limit
MP – Member of Parliament (federal)
N.B. – New Brunswick
NBSGA – New Brunswick Salmon Growers Association
NDP – New Democratic Party
NOK – Norwegian Kroner (currency)
NRC – National Research Council
OCAD – Office of the Commissioner of Aquaculture Development (federal)
PCB – Polychlorinated biphenyls
PFRCC – Pacific Fisheries Resource Conservation Council
PNA – Pacific National Aquaculture (a wholly-owned Cermaq subsidiary)
ppb – Parts per billion
RCMP – Royal Canadian Mounted Police
SCBC – Science Council of British Columbia
SHC – Salmon Health Consortium
SLDF – Sierra Legal Defence Fund
SOTA – Salmon of the Americas
SPAA – Society for the Positive Awareness of Aquaculture
SSF – Stolt Sea Farm
UBC – University of British Columbia
UNESCO – United Nations Educational, Scientific and Cultural Organization
USEPA – United States Environmental Protection Agency
USPIRG – United States Public Interest Research Group
USD – United States dollar (currency)
WD – Western Economic Diversification Canada (federal)
WLAP – B.C. Ministry of Water, Land and Air Protection
YTD – year to date



FIELD OFFICE
PO Box 26
Bella Bella, BC
Canada V0T 1B0

VICTORIA OFFICE
PO Box 8663
Victoria, BC
Canada V8W 3S2

www.raincoast.org