

SALMON RANCHING EXAMINED

Pacific Pastures Under Siege?

Is Salmon Farming a better way to protect wild salmon?

Each year over 5 billion hatchery-reared Pacific Salmon smolts are purposely released into the Pacific Ocean to forage for feed. Is it any wonder that the ocean pasture is becoming over-grazed and the truly wild fish are rapidly disappearing?

BY BILL VERNON

Contrary to popular belief, there are two salmon aquaculture systems in existence in the North Pacific.

- Salmon Farming as practiced in BC.
- Salmon Ranching as practiced in the common pasture of the North Pacific Ocean, with the juvenile fish originating from hatcheries in Japan, the United States, Russia, BC and Korea.

The purpose of this article is to compare the use of fish resources that are consumed as feed in the two systems and to discuss the possible consequences arising from these activities.

Salmon farming in BC uses feed resources sourced from the South Pacific while ocean ranching uses feed resources naturally occurring in the North Pacific.

- On average, over the past 10 years BC salmon farmers introduced to their farms 20 million smolts per year, which consumed about 155,000 tonnes of fish from the South Pacific to produce about 75,000 tonnes of marketable product.
- In that same time period, on average, salmon ranching introduced to the ocean 5 billion smolts per year, which consumed as much as 11 million

tonnes of feed from the North Pacific to produce about 700,000 tonnes of product.

Ranching introduces 250 times as many smolts, consumes 70 times as much feed to produce less than 10 times the volume of marketable salmon!

Whilst the salmon farming sector in BC has been subjected to scrutiny, vilification, political opportunism and uncertainty, salmon ranching has been allowed to operate without constraint. Heavily subsidized by governments, and demonstrably less efficient in terms of feed conversion, ranching also creates intense competition for food to native wild salmon and is a real threat to the integrity of the gene pool of the wild fish – but it receives none of the scrutiny and negative publicity directed at salmon farming.

In recent years, much public attention has been given to the decline of the traditional BC salmon fishery. Many scientific papers have raised the issues of native salmon returning smaller and older to the streams and rivers of the Pacific and of some returns disappearing entirely. Given the fierce competition for feed from the vast quantity of hatchery fish – and the enormous quantity of feed they consume, is this really so surprising?

In the accompanying graphs feed utilization

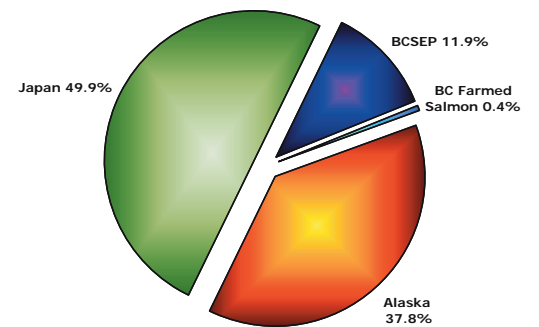
Aquaculture Feed Consumption¹

Region/ Sector	PRODUCTION			FEED CONSUMPTION (wwmt) ²			
	Smolt Intros (pcs)	Harvested Fish (pcs)	Production (mt)	By Ocean Mortalities	By Fish Harvested	By Broodstock	Totals
Alaska ³	1,500,000,000	80,938,296	1,48,588	340,590	891,548	44,576	1,276,714
Japan ⁴	1,977,205,000	7,847,800	2,53,484	586,320	1,521,234	76,045	2,183,599
BCSEP ⁵	470,000,000	1,880,000	71,440	116,560	428,640	21,432	566,632
Total ⁶	3,947,205,000	178,216,296	4,73,512	1,043,470	2,841,421	142,054	4,026,945
BC Farms ⁷	17,647,059	1,500,000	75,000	4,656	150,175	7,509	162,340

¹ No data included for ranching and/or enhancement from WA, OR, CA, ID, Russia and Korea
² wwmt = wet weight metric tonnes
³ Alaska Department of Fish and Game (2005)
⁴ North Pacific Anadromous Fish Commission (2004)

⁵ British Columbia Salmon Enhancement Program (NPAFC 2001/2003)
⁶ Estimates for Ocean Ranching feed consumption could be much higher.
⁷ BC Salmon Farming (BC Ministry of Environment web site, pers. comm.)

Annual Smolt Releases BC Farmed and Ranching

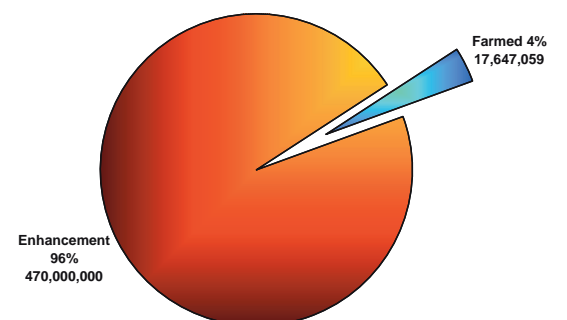


Annual Releases and Smolt Entirely Ratched and Farmed

Ratched	Alaska	Japan	BCSEP	Total
	1,500,000,000	1,977,205,000	470,000,000	3,947,205,000
BC Farmed				17,647,059

Alaska: ADF&G
 Japan: NPAFC
 BCSEP: NPAFC
 BC Farmed: BC Gov. M.O.E./ Pers. Comm.

BC Farmed and Enhancement Releases



BC Enhancement and Farmed smolt releases

BCSEP	470,000,000
BC Farmed	17,647,059

BCSEP: DFO Pacific Region, NPAFC
 BC Farmed: Calculated

DEFINITIONS

Aquaculture: The farming of aquatic organisms including fish, molluscs, crustaceans and aquatic plants with some sort of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc. Farming also implies individual or corporate ownership of the stock being cultivated.

Salmon Enhancement: Salmon enhancement programs have used various techniques, including hatchery production to augment, restore and sustain natural stocks of wild salmon.

Ocean Ranching: Commercial ocean ranching operations release very large numbers of hatchery smolts into wild common property marine pastures to maximize specific national commercial fisheries.

..... *The Difference*

Salmon farmers retain custody of the fish until harvest; salmon ranchers release the fish into the ocean.

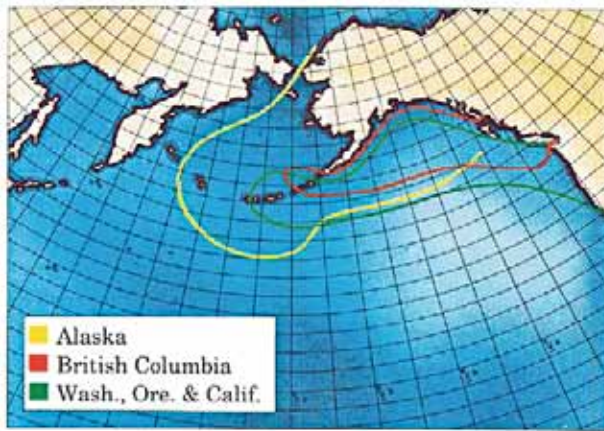
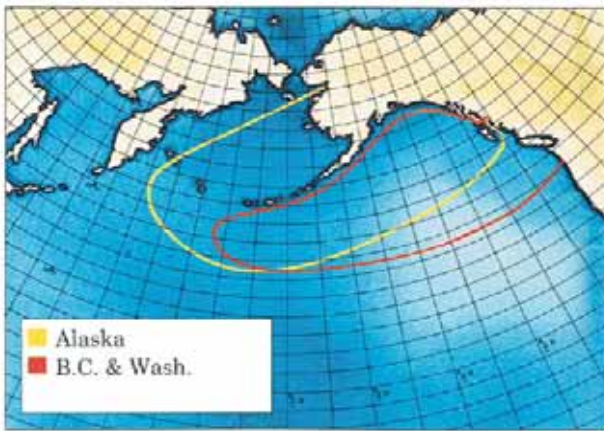
calculations are compared for the two activities – farming and ranching. It illustrates that the BC salmon farming industry is much more efficient at feed conversion, produces healthful, affordable market fish and is not competing with wild salmon for feed resources from the North Pacific.

I believe much of the current criticism of the BC salmon farming industry is misguided and, perhaps more importantly, is having a negative effect on the nation's health by scaring working families away from an affordable healthy product. I also believe that the indignation of the environmental campaigners, their financial supporters and the lazy-science politicians would be better directed towards salmon ranching. A comprehensive scientific appraisal of all the consequences arising from this activity is needed.

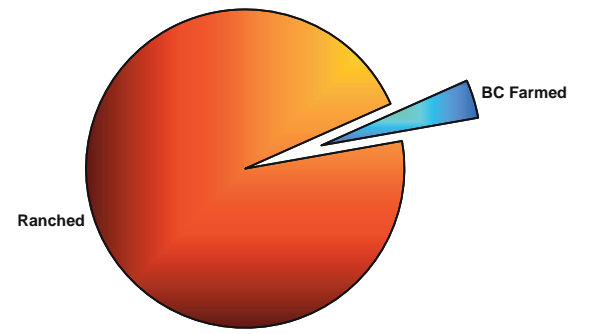
What's more, it seems clear that this issue raises much larger questions. For instance, during my research, I discovered that the scientific evidence of the effects of salmon ranching on the native wild salmon have been known for years. Papers on the subject have been presented by world-renowned

scientists and have been met with a crescendo of silence. Something strange is happening.

- Alaska's own research suggests that the overlap in distribution of Pink salmon from Asia had a significant impact on wild Sockeye salmon growth during their second and third years in the Bering Sea (G. Ruggerone et al., 2003b). Why has nobody in BC joined the dots and concluded that the introduction every year of 1.5 billion Alaskan smolts into the common waters of the Pacific Pasture might be having a negative impact on BC's Sockeye fishery?
- Why are environmentalists lambasting farmers whilst staying silent on the real, scientifically accepted, threat of dilution of the wild salmon gene pool that is presented by salmon ranching?
- Why are they not addressing the threat to the iconic Chinook and Sockeye species from the competition for feed caused by the indiscriminate introduction of hatchery Pinks and Chums?



Feed Consumption in Tonnes

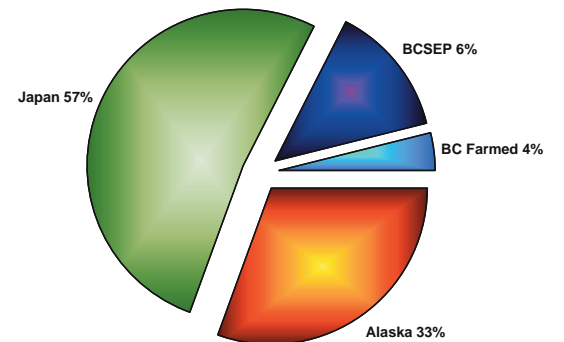


Feed Consumed in Wet Weight Metric Tonnes

Ranched	Alaska	Japan	BCSEP	Total
	1,276,714	2,183,599	566,632	4,026,945
BC Farmec	162,340			162,340

Alaska: ADF&G
 Japan: NPAFC
 BCSEP: NPAFC
 BC Farmed: BC Gov. M.O.E./ Pers. Comm.

Total Feed Consumed From Ocean Resources



Feed Consumed in Wet Weight Metric Tonnes

Ranched	Alaska	Japan	BCSEP	Total
	1,276,714	2,183,599	566,632	4,026,945
BC Farmed	162,340			162,340

Alaska: ADF&G
 Japan: NPAFC
 BCSEP: NPAFC
 BC Farmed: BC Gov. M.O.E./ Pers. Comm.

"... industrial-scale hatchery salmon production, which releases billions of smolts into the North Pacific Ocean, could be jeopardizing Alaska's wild salmon. Additionally, there are legitimate management questions as to whether hatchery operations in Alaska are in line with current Alaska Department of Fish and Game policies, including the Sustainable Salmon Fisheries Policy."

~ Environment and Natural Resources Institute, University of Alaska Anchorage, Anchorage, AK

- Why are politicians in BC damaging their own industry with their virulent anti-farming rhetoric, whilst allowing ranching activities by Japan, Alaska & Russia to operate without scrutiny or even comment?
- Why are both parties conspiring to drive low-income families away from a healthy affordable food – and therefore towards processed food – when there is an obesity and diabetes epidemic looming?

I may be a simple retired salmon farmer, but I think I am a rational person. I cannot figure it out. Can you?

I welcome any serious appraisal of my conclusions and look forward to a constructive debate.

With assistance from David Groves, Norman Calder and Neil MacLeod.

* * *

Select References: Ruggerone et al (2003b); Environment and Natural Resources Institute, U. of Alaska (Evaluating Alaska's Ocean Ranching Salmon Hatcheries); World Salmon Summit (2003); Cooney and Brodeur 1998; North Pacific Anadromous Fisheries Commission; PICES

Bill Vernon has worked in aquaculture-related businesses for over twenty years. Starting in 1984 he helped build Tofino-based Creative Salmon to become a successful farming company growing Pacific salmon. Vernon has also been a strong supporter of salmon enhancement efforts in Clayoquot Sound as well as in Streamkeepers. Now semi-retired, he concentrates his efforts on a small oyster/scallop farm near his home in Powell River, BC. He can be reached by email at: bill.vernon@shaw.ca Telephone: 250-487-0049

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