

A new breed of fish farming

Aquaculture has long been a target of environmentalists, but the critters at this operation in B.C. tick all the right eco-boxes

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AGASSIZ, B.C. — "It was like being a leper."

Bruce Swift is remembering his first attempts to generate interest in his B.C.-farmed coho salmon. It was four years ago, and the trip from his property in Agassiz, B.C., to Vancouver was a disaster.

"There wasn't one person who would take it," he recalls. "I came back and had to cull 1,500 to 2,000 fish. We shipped them all to the mink farm."

How times have changed: Mr. Swift's farmed coho are now an exclusive delicacy, available only at three high-end restaurants in Vancouver - Bishop's, Raincity Grill and the Show Case Restaurant in the Marriott Pinnacle. These critters tick all the right boxes with the local, sustainable and organic movement.



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Bruce Swift's land-based salmon farm has environmentalists excited because it addresses a lot of the problems of ocean-based aquaculture. *(LAURA LEYSHON FOR THE GLOBE AND MAIL)*



This may come as a surprise to conscientious consumers, for whom "farmed" remains the f-word when it comes to fish. But Mr. Swift's product is a far cry from the farmed variety found at the supermarket.

Atlantic farmed salmon is reared in ocean-based pens - a practice widely accepted to be the cause of the preponderance of sea lice and concomitant disease in wild fish stocks.

Only last week it was announced that the pink salmon stocks in B.C.'s Broughton Archipelago had collapsed. In one key indicator stream, only 19,000 spawners have been counted this year, compared with 264,000 in 2007.

The time has come to look for sustainable alternatives and Mr. Swift's project may be the answer.

His farm is land-based, the coho kept in a series of enormous tanks, removing any possible contamination effect on wild salmon.

It's a system that has environmental groups excited.

"As part of the Coastal Alliance for Aquaculture Reform, we are advocating strongly at the provincial and federal level for investment in closed-containment pilot programs," said Catherine Stewart, Salmon Farm Campaigner at Living Oceans. "The system addresses a lot of the problems of open pens and we need a thorough analysis of what is a potential solution to a vital issue."

And the difference between the farmed salmon Mr. Swift rears and regular farmed salmon isn't only a matter of breeding grounds.

More than simply salmon reared in gigantic fish bowls, Mr. Swift's farm is part of a Canadian research concept known as integrated multi-trophic aquaculture being tested on both coasts by the universities of New Brunswick and Victoria. The idea is to grow one species in conjunction with others in a multi-level system that balances out biological and chemical processes.

It involves one fed species - in this case, the salmon eat pellets made from wild marine material developed by animal nutritionist Dr. MaryLou Swift (Mr. Swift's wife). Then other plants and animals that extract their nutrients from either the solid or water waste are introduced. At Swift Aquaculture, waste solids are filtered and become fertilizer for field crops such as garlic and beans, while waste water is used to grow wasabi, watercress and algae. The algae, in turn, become a feed supplement for the crayfish bred in Mr. Swift's freshwater pond.

No additional nutrients are brought onto the farm. It's a meal in one backyard.

"We only have four acres," says Mr. Swift. "Yet I could grow hundreds of thousands of fish - that's the beauty of aquaculture. One tank can hold 2,000 fish, and that's not high-density at all. The key thing when you're looking at a land-based system is that you can go up - you just make your tanks taller and deeper."

Nevertheless, Mr. Swift says he prefers to operate a smaller system, supplying to a niche market. "I like to avoid the middlemen," he explains. "I sell direct, meet the chef - these coho are not a commodity to me."

His approach is to grow small salmon - only 1 to 1.2 kilograms - that produce two fillets each. The brood stock are kept in tanks inside, under strict biosecurity conditions. From this stock, eggs and milt (sperm) are removed for fertilization and then transferred to the tanks where they will grow until harvest.

Keeping the fish small - and, as a result, not grading the fish for size - is important to reduce handling. If handled too much, grown Pacific salmon become stressed, triggering proliferative kidney disease, Mr. Swift explains.

Being unable to guarantee consistency is the one drawback to this system. "Sometimes that can be frustrating to restaurateurs, because there isn't this nice, evenly sized fish," he says. But the advantages to his broader approach more than compensate. "We don't use antibiotics or vaccines and we are also one of only two salmon stocks in Canada to be health certified by the DFO [Fisheries and Oceans Canada]."

Though he has no interest in expanding his own operation, Mr. Swift offers his services as a consultant. He imagines a future where every major city has land-based fish farms supplying high-quality, sustainably grown fish for a local market. The key, he argues, is to find people with existing horticultural infrastructure. "There's a lot of interest right now in Alberta and Saskatchewan to introduce aquaculture into the swine barns. They're losing \$50 to \$70 a head on pigs, so they're looking for a new business."

This is a market ready to explode, he says, citing the fact that a land-based system in Washington is supplying Whole Foods. "You get a place like that interested, and that triggers a market. I think there's going to be a big shift, and coho is a fish that can do it."