



To the State Water Quality Resource Board: Your study was done with the wishes of Governor Brown with only one real goal in mind. It is simply a water grab! There seems to be a concerted effort to disregard the successful local efforts to manage Tuolumne water over the last hundred years. This management of our rivers has created a useful, economically viable resource for food and employment for many thousands of folks who call this area home. To meddle with the multifaceted protocols that have given the upper Central valley of California an important change from the arid grasslands it once was would be a gross mistake. An important concern in any effort must first consider the holding capacity of the land. Over built Southern California has reached north in an ever increasing quest for our water- an essential consideration before growth is even started! The Central Valley Project has for many years taken advantage of northern water. All of California has paid for the costly efforts to help our southern neighbor. Edmond Brown set the stage for dams, canals and pumping stations that have siphoned water to the south and he set up the Resources board. Now Governor Jerry Brown has continued this dream and for his own legacy by taking on the high speed train project and the twin tubes under the Delta. The diversion of Tuolumne river water will destroy thousands of jobs, fallow thousands of acres of productive farmland and destroy communities that depend on that water.

Stanislaus county alone is expected to grow to over 800,000 people in the next 45 years. Our water sources are stressed to keep up in draught years even now. To confiscate our water is to destroy this area and turn it back to the dry grasslands our pioneer families changed with their thoughtful hard work. The Tuolumne watershed is spoken for. From Hetch Hetchy to The Crystal Springs near Silicon Valley this watershed supports miles of canals, water to twenty six Bay area cities, lakes for drinking water, recreation, flood control, a vast farming operation and a wide array of supporting industries. How can the board even think of taking a portion of this to supply more water to an overpopulated area of overbuilt housing that has created a smog burdened pale over a once beautiful valley.

This is not really about salmon, it is a ruse to capture more water! The Tuolumne will continue to have salmon and, if not, it will be like the demise of salmon all up the coast even into Canada, our east coast and in western Europe. Dry land salmon factories are showing impressive progress and are being replicated across the country. This is a commercial grade effort that bypasses many of the current salmon problems. We are wasting huge amounts of money listening to folks similar to those who chained themselves to the rocks to prevent Malone's Dam being filled years ago. Then it was to save white water rafting. Today it's the salmon. Why not listen to those less vocal who strive every day to make our communities better. If the Control Board's studies really looked at our communities, the people who dreamed up the short sighted ideas would be ashamed to think about stealing our water. Also, for the State to take one hundred million from the 2014 7.5 billion water bond Proposition 1 passed overwhelmingly in the election and give it to the Coastal Conservatory to build a trail along the coast is a disgusting misuse of that fund and undermines the faith we should have with government. We can only hope that the water Board has listened to the people and will not replicate a similar error in moral judgment. Rather than taking our water build, on future southern needs, only with surplus water we will willingly share after our water banks are full and able to support our northern homes, industry and fisheries now and in the future -Regards, Dr. Don Swatman, 1213 Coffee Rd. Suite B, Modesto CA 95355. * see attached dry land salmon farms.

A handwritten signature in black ink that reads "Donald Swatman" followed by the date "3/11/17".



the **salt**

PRODUCERS

Can Salmon Farming Be Sustainable? Maybe, If You Head Inland

May 2, 2013 · 3:19 PM ET

ALASTAIR BLAND



These sockeye salmon were raised at a land-based fish farm in Langley, British Columbia.

Courtesy Willowfield Enterprises

Is salmon farming ever sustainable?

For years, many marine biologists have argued that the floating, open-ocean net pens that produce billions of pounds of salmon per year also generate pollution, disease and parasites.

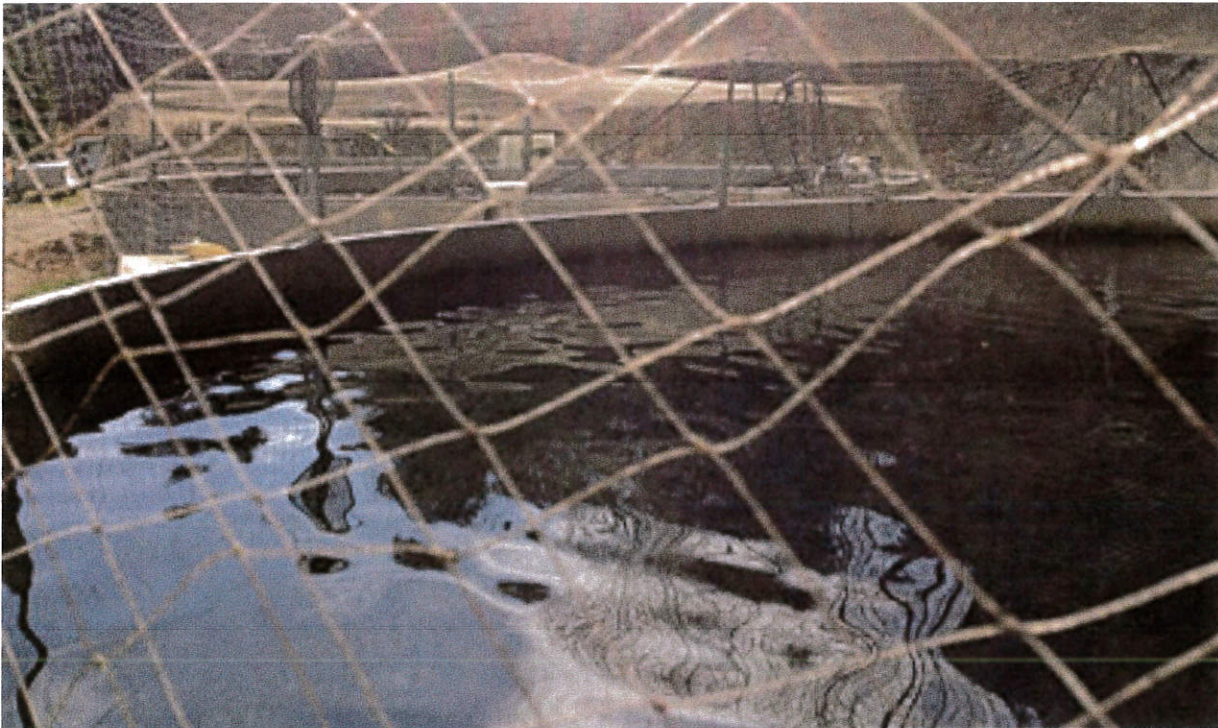
In some places in western Canada, the open-ocean salmon farming industry has been blamed for the collapse of wild salmon populations in the early 2000s — though other research has challenged that claim.

But now, a few salmon farms have moved inland, producing fish in land-locked cement basins separated from river and sea. One land-based fish farm in West Virginia has been commended as a sustainable alternative to conventionally produced salmon. On Vancouver Island, there is at least one such facility. And just last month, Willowfield Enterprises, based in Langley, British Columbia, harvested its first inland-farmed sockeye salmon, to be marketed under the brand name West Creek. Sockeye is a Pacific species that has rarely been cultivated before.

"In terms of environmental sustainability, I think [these closed-system farms are] a huge step forward," says Martin Krkosek, an assistant professor at the University of Toronto who has been among the leading critics of ocean net pen salmon production. "Waste material, disease, pollution, parasites — all these things aren't a concern with most closed-system aquaculture."

Some forms of aquaculture may have the potential to help ecosystems by taking fishing pressure off of wild fish stocks. But this hasn't been the case with the salmon farming industry, argues Daniel Pauly, a professor of fisheries at the University of British Columbia. One reason why, Pauly tells *The Salt*, is that the food that salmon farmers feed to their fish is usually fish meal made from wild — sometimes overfished — species. He points out that humans could be eating these species instead of farmed salmon.





A view of one of Willowfield's land-locked sockeye tanks.

Courtesy of Willowfield Enterprises

Open-ocean salmon farms can also generate high densities of organic and inorganic waste material — which can cause toxic marine algae blooms and create low-oxygen "dead zones." Residues from antibiotics and other chemical treatments can also drift from the pens.

And then there's sea lice. These pea-sized copepods cling to free-moving fish, and under natural circumstances, they aren't usually a threat to salmon. But when many thousands of adult salmon swarm together in crowded net pens, sea lice populations often boom. When juvenile salmon exiting the rivers of their birth pass near such infested pens, the smolts may be swarmed by the parasites and quickly killed. By this process, salmon farms have caused entire runs of wild fish to nearly disappear from streams in the Vancouver Island area, according to Krkosek's research.

The Monterey Bay Aquarium's Seafood Watch program advises consumers to avoid farmed salmon in general, but it makes a specific exception for farmed salmon from

contained systems, which the aquarium recommends, according to spokesperson Alison Barratt.

Likewise, the Vancouver Aquarium's seafood rating program, called Ocean Wise, has not approved as "sustainable" a single open-ocean salmon farm, says Teddie Geach, an Ocean Wise representative in Vancouver. However, Ocean Wise has given West Creek's sockeye salmon a top sustainability grade, based on assessments of several criteria. These include the risk of diseases and parasites spreading from farmed fish to wild, and the risk that farmed fish will escape, which can negatively affect the gene pool of wild fish. And then there's something called the "feed conversion ratio," a measure of resource efficiency that considers how much food a given fish species requires to produce each pound of marketable product.

"The closer that ratio is to 1 to 1, the better," Geach says. "You don't want a 10-to-1 ratio."

Krkosek says the feed-conversion ratio of farmed salmon "is improving" and several years ago was about 5 to 1. Wild salmon, he says, are probably less efficient at converting food into flesh, since they are not eating an engineered, optimized nutrition formula, and because they expend great amounts of energy that farmed salmon do not.

Inland aquaculture facilities may be a more environmentally sound way to farm salmon than their open-ocean counterparts. But Krkosek says it's not yet clear whether it would be feasible for the entire salmon farming industry — which produced 5 billion pounds of fish in 2012 — to make the move. He says "new environmental problems" would likely arise — "probably mostly associated with energy and water consumption."

Krkosek also notes that right now, the economics favor cheaper, conventionally farmed salmon.

"In the open-ocean pens, they get clean water and waste disposal for free," he says, adding, "Everyone's waiting to see if the economics work out. But currently, the common refrain in the salmon farming industry [about inland farms] is, 'It's too expensive.' "

Willowfield Enterprises President Don Read, who is farming the West Creek sockeye with partner Lawrence Albright, says his fish sells for about double the price of conventionally farmed salmon and for about 20 percent more than wild sockeye.

"We can't compete with open-ocean aquaculture, but that's today, and maybe we'll get there," Read says. "For now, our fish will be a niche player in the salmon industry."

farmed fish

Get The Stories That Grabbed Us This Week

Delivered to your inbox every Sunday, these are the NPR stories that keep us scrolling.

What's your email?

SUBSCRIBE

By subscribing, you agree to NPR's terms of use and privacy policy.

More Stories From NPR

