Food & Water Watch Response to Kona Blue Farms Report,
"The Ecological Efficiencies of Farmed Fish"

Scientific papers should be written in a style that is exceedingly clear and concise, with the purpose of informing their audience.[1]

Based on standards for scientific writing, as expressed above, the document "The Ecological Efficiencies of Farmed Fish" by Neil Anthony Sims, President of Kona Blue Water Farms, LLC is not a scientific paper; it is more like part of a marketing campaign. Sims cleverly includes some legitimate calculations and citations in his less-than-four-page promo piece, but manipulates them in such a way that they do not stand for their original purpose – calling into question their validity. In the end, Sims hopes people will believe that he has managed to trump nature and that the farmed fish he produces are about 60 times more "efficient" than those from the wild.[2] Sims employs a self-serving definition of efficiency – that farmed fish use more of what they consume to grow, transfer energy better and accrue less bycatch, therefore ultimately "wasting" less natural resources than wild fish. Sims' points are based on questionable statistical analysis that are not clearly explained or cited in his paper. While it makes for an interesting read and a fun activity to try to decipher the creative calculations, it should not be considered a meaningful piece to support ocean fish farming.

Here's why:

Sims' first point, "farmed fish have it easy,"[3] at first seems to be a joke. Being stuck in a cramped cage amongst fish waste and fish feed does not evoke the idea of having it easy, does it? But then, reading further, it is clear that he's being serious about this. Next he says, because his fish "have it easy," "a farmed fish's life cycle might therefore be between 3 and 10 times more efficient than that of a wild fish,"[4] without much further substantiation. There is no citation to show the source of the numbers he uses to "prove" his claims. They look good, but lack substance.

Use of unpublished data to support statements

This is not the first time Kona Blue has used unpublished data. In 2003, Kona Blue sent state officials an environmental assessment on their facility. The company relied not on published findings, but instead on unpublished data from Cates International,[1] a competing aquaculture operation.

The second point attempts to argue the efficiency of the diet of farmed fish in comparison to that of wild fish. Sims cites that fish are subject to the laws of trophic transfer, meaning that on average, only 10% of their prey's food value is transferred up the food chain.[5] This is a scientifically based estimate, but the way Sims uses this number is off. To get the full picture of the fishes' relative sustainability, it is necessary to examine all the inputs to produce the fish, including animal by-product ingredients that comprise the balance of the fish feed.[6] Sims only accounts for a portion of his farmed fish diet (anchovies), and omits discussion of impacts from the other forms of protein and plant matter in Kona Blue's feed, like chicken byproducts and grains.

Research is being done throughout all types of aquaculture to reduce the dependence of farmed fish on wild fish for feed.[7] To raise a cleaner, greener and healthier product for consumers, the source of the protein in fish feed is important and should be fully disclosed.

Sims' third point relates to bycatch and is generally correct. The anchovy fisheries tend to be associated with lower bycatch because of the type of gear used in the catching process and the schooling nature of the fish.[8] There are several fisheries that have reduced bycatch by using gear that can better target a specific species.[9]

The devil is in the details.

Some of the data Sims uses comes from peer-reviewed and published scientific papers. Though these are reputable sources, the numbers cannot be manipulated statistically any way and still maintain their original validity. The statistical analysis that is conducted on the numbers presented in Sims' "report" to produce the table of relative ecological efficiencies of farmed and wild-caught fish is opaque at best and largely self-serving. In Sims' notes he states, "There are no published estimates of the relative life-cycle efficiencies of farmed vs. wild fish,"[10] then he presents a chart of numbers and somehow determines a global mean. The term "mean" in statistics can be ambiguous, as it can have several meanings: it can refer to harmonic mean, geometric mean or arithmetic mean. Also, finding how Sims got to the global mean shown in his chart, 6, is baffling, given the other numbers that Sims has "estimated." The fact that this piece begins with *some* good data does not necessarily lend validity to the conclusions that are reached from their creative use.

Looking for a better choice.

There are many forms of aquaculture. Recirculating aquaculture systems (RAS) are closed-loop facilities that retain, treat and recycle the water within the system. RAS can reduce discharge of waste, the need for antibiotics or chemicals used to combat fish and parasite escapes and diseases. RAS should be explored for expanded use in the United States to help meet rising seafood demand with cleaner, greener, safer domestic fish, rather than looking to imports or farmed fish from open water facilities.

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[1] "A Guide to Writing in the Biological Sciences." George Mason University Department of Biology Fairfax, VA. http://classweb.gmu.edu/biologyresources/writingguide/ScientificPaper.htm

[2] Sims, Neil. "The Ecological Efficiencies of Farmed Fish." available at: http://www.kona-blue.com/download/pr_ecologicalefficiencies.pdf.

[3] Sims, Neil. "The Ecological Efficiencies of Farmed Fish." available at: http://www.kona-blue.com/download/pr_ecologicalefficiencies.pdf.

[4] Sims, Neil. "The Ecological Efficiencies of Farmed Fish." available at: http://www.kona-blue.com/download/pr_ecologicalefficiencies.pdf.

[5] Pauly, D. and V. Christensen. "Primary production required to sustain global fisheries." Nature. 1995. 374 at 255-257. Sims, Neil. "The Ecological Efficiencies of Farmed Fish." available at: http://www.kona-blue.com/download/pr_ecologicalefficiencies.pdf.

[6] Tyedmers, Peter et al. "Biophysical Sustainability and Approaches to Marine Aquaculture Development Policy in the United States; A Report to the Marine Aquaculture Task Force." School for Resource and Environmental Studies, Dalhousie University. February 2007 at 31.

[7] Clean, Green, Sustainable Recirculating Aquaculture Summit. Washington D.C. Hosted by Food and Water Watch. January 2009.

[8] "Northern Anchovy" FishWatch: U.S. Seafood Facts, National Marine Fisheries Service, National Oceanic and Atmospheric Administration. Available at: www.nmfs.noaa.gov/fishwatch/

[9] Castro, Kathleen and Erik Williams. "Bycatch." Rhode Island Sea Grant Fact Sheet. Available at: http://seagrant.gso.uri.edu/factsheets/Bycatch.html Accessed on May 4, 2009.

[10] Sims, Neil. "The Ecological Efficiencies of Farmed Fish." available at: http://www.kona-blue.com/download/pr_ecologicalefficiencies.pdf.