

Symposium - salmon fisheries

BY ANDREW KIMBRELL

It is a truism of free societies: One's freedom to extend one's arm ends at anyone else's nose. The role of government in a free society should be to restrict arm movement only in so far as it results in bloody noses. Unfortunately, government consistently fails to grasp this simple idea. Often it restricts perfectly harmless activities while simultaneously failing to halt individuals whose exercise of self-interest means potential disaster for the rest of us.

1. A compelling example of this kind of government malfeasance is the current controversy over the commercialization of genetically engineered salmon and other fish species. For decades sportsmen's and conservationist organizations have spent endless time and resources to protect native salmon and trout species. These magnificent creatures have become food and outdoor recreation staples and have come to symbolize the wild.

Many efforts to protect these fish have been success stories. Rivers have been saved and cleaned up. Many formerly depleted Pacific salmon and trout ecosystems are thriving. The continuing efforts to save the Atlantic salmon have met with more-sporadic results. The survival of that species still hangs in the balance. Its numbers continue to decrease, and it has been declared an endangered species in the Northeast.

In the midst of this widespread and remarkable effort of so many to preserve the Atlantic salmon and other fish species comes a Canadian company called Aqua Bounty Farms. The company has applied to the U.S. government for approval to commercialize genetically engineered Atlantic salmon, otherwise dubbed as "frankenfish." These fish have been genetically altered to contain a growth-hormone gene from a Chinook salmon and an antifreeze protein gene promoter from an ocean pout that keeps the growth hormone active. Due to the continuous production of the growth-hormone gene, these fish grow as much as 10 to 30 times faster than normal salmon.

So what's wrong with faster-growing, super Atlantic salmon? Does it represent a threat to our already-fragile Atlantic salmon populations? Does it ever. Studies by scientists at Purdue University, as well as several other researchers in the United States, Canada and Europe, have shown that frankenfish, due to their larger size, have a significant mating advantage over native fish. However, the offspring of frankenfish have a one-third greater mortality rate because of the impact of the added growth genes and other genetic material.

Frankenfish stand Darwin on his head. The gene-altered fish have an advantage in mating, but their offspring are dying at a far greater rate than the nonengineered fish. The Purdue scientists worked out the math and revealed that the escape of only 60 engineered fish into a native population of 60,000 would lead to extinction in just 40 generations. This catastrophic result has led scientists to call the new growth genes, engineered into the fish by Aqua Bounty, "Trojan genes." Just as the faux horse of old led to the destruction of Troy, so these Trojan genes will lead inevitably to the extinction of salmon and other fish species.

These findings on genetically engineered fish recently were acknowledged in a report by the National Academy of Sciences (NAS). The NAS recognized that genetically engineered fish inevitably will escape net pens and, once these fish escape, they easily will outcompete their wild cousins and drive the wild population to extinction. The same NAS report also cautioned that frankenfish could introduce new allergens into the food supply.

It is important to remember that the environmental threat posed by frankenfish is called biological pollution or "living" pollution. When most people think of environmental pollution they probably envision a spewing smokestack, a car emitting exhaust or a sewage pipe emptying sludge into a river. This is chemical pollution, a "contamination" model of pollution; as toxic chemicals pollute air, water, our soil or food. The biological pollution brought to us by frankenfish is a "disease" model of pollution; the invasion of a living organism into our environment or ourselves. The most familiar paradigm of biological pollution is how most of us become ill--a bacteria or virus invades our system. We also may recall the devastation caused by the Asian fungi that were brought to our shores and proceeded virtually to eradicate our magnificent elm and chestnut trees.

Obviously, biological pollution creates some very different risks than chemical pollution. Chemical contamination, whether an oil spill or factory exhaust, generally becomes diluted and less concentrated over time. Biological pollution lasts forever. It does not dissipate, and it cannot be controlled or recalled. Whether chestnut blight or frankenfish, this form of pollution will reproduce, travel and mutate as it wishes. Once the frankenfish are released or escape into the wild, neither Aqua Bounty nor any government or scientist can recall them or stop the resulting eradication of native salmon. Each use of these fish will be a dangerous game of ecological roulette where the only certainty is that we and the salmon will be the ultimate losers w all so one company can make a quick buck.

Any sensible corporation would realize that there is a dangerous and fundamental design problem with their product and go back to the drawing board. Not Aqua Bounty. Instead the company has asked the Food and Drug Administration (FDA) to approve its dangerously flawed frankenfish. They want permission to grow unlimited numbers of these fish in net pens in open waters and to sell them in our supermarkets (though they do not want the fish labeled). As for the Trojan-gene problem, the company says not to worry: It will sterilize all the fish it produces so that they cannot reproduce and destroy native salmon populations.

This sterilization proposal does not pass the laugh test. Imagine, our taxpayer dollars going to fund leagues of FDA bureaucrats who faithfully will inspect untold thousands of fish, one by one, to make sure they actually are sterile and safe for release and consumption. Unfortunately, far from laughing the FDA actually is considering approving these fish. Once again any sensible government would tell the company to go back and make a product that would not destroy species and require thousands of new federal jobs. But not the FDA; they are predicting approval of these fish as "new-animals drags." FDA officials also have refused to disclose what environmental or human health and safety tests they are demanding of the company.

So here we have government at its worst. A single company is threatening to make Atlantic salmon and other fish species extinct, permanently undoing the work of thousands of organizations and individuals and destroying one of our most treasured species. And the FDA response so far to this biological-pollution nightmare is to give a green light to the company while keeping the rest of us in the dark. Even the pro-biotechnology Pew Initiative recently criticized the FDA's regulation of frankenfish. Its new report, *Future Fish: Issues in Science and Regulation of Transgenic Fish*, states that: "The proposed regulation of transgenic fish does not reflect a unified federal strategy to address the risks of genetically modified fish in a transparent manner that provides public confidence that these risks will be adequately considered and addressed."

Fortunately, there is some hope that the U.S. government is coming to its senses. My organization, along with a number of conservation and consumers groups, has filed legal actions with five different federal agencies to force adequate regulation of frankenfish. We have demanded that these frankenfish never be allowed in open waters, including net pens, and that there be an indefinite moratorium on their approval until all environmental and health issues have been completely resolved.

Legal pressure has produced some progress. The National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service have reacted to the commercialization of genetically engineered fish by advising the Environmental Protection Agency and the U.S. Army Corps of Engineers not to allow the fish into net pens in Maine due to Atlantic salmon being listed as endangered there. The agencies are concerned about the effects the fish may have on dwindling fish populations and, as a result, also have directed FDA to consult with them pursuant to the Endangered Species Act prior to any approval of the fish. Additionally NMFS officially has recognized the "legitimate concerns relative to food safety and potential environmental impacts that should be addressed prior to approval" of genetically engineered fish and committed the agency to participating in the review process with the FDA prior to the issuance of any approvals of genetically engineered fish.

States also have begun to act. Maryland, Oregon and Washington state passed laws that restrict the use of genetically engineered fish within their boundaries. Former Maryland Gov. Parris N. Glendening signed into law a bill that prohibits release of genetically engineered fish into any state waterway connected to another body of water. Oregon considers releases of genetically engineered fish a serious risk to wild populations. Under the Oregon Department of Fish and Wildlife role, the department does not authorize the release of genetically engineered fish into locations where such fish may gain access to wild-fish populations. Washington state, with the most recent ruling on genetically engineered fish, prohibits growers from using transgenic fish in their operations. California also introduced three bills that would ban or restrict the use of frankenfish.

Hopefully with enough pressure sanity will prevail, and the U.S. government will just say no to Aqua Bounty. But that will not be the end for the biological-pollution threat of frankenfish. More than 35 species of genetically engineered fish now are being developed. Pacific salmon, rainbow and brown trout, striped bass, largemouth and small mouth bass, carp, tilapia and many others now are being engineered with novel genes. Whether you love to catch, eat or just look at these wonderful creatures they now are under biological attack by a handful of companies and researchers.

Remember, once these frankenfish are released there is no way to get them back; the damage will be done. So it's time to act. As the Aqua Bounty saga reveals, we obviously can't trust government to look out for our interests unless we get involved and make them listen.

Recently hundreds of prominent chefs signed a pledge not to serve frankenfish until they adequately were regulated and there was a permanent ban on their release into open waters. Unlike Aqua Bounty, they seem to understand the simple rules of a free society.