

TESTIMONY OF RICHARD (DICK) RUSSELL
HOUSE SUBCOMMITTEE ON FISHERIES, WILDLIFE AND OCEANS
On
NATIONAL OFFSHORE AQUACULTURE ACT OF 2007 (H.R. 2010)
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My name is Dick Russell, and I appreciate the opportunity to testify before you this morning concerning the National Offshore Aquaculture Act of 2007. I am the author of four books, including *Striper Wars: An American Fish Story* and *Eye of the Whale*, and I have written numerous articles for national magazines about the state of our oceans and in particular our fisheries.

I am also a longtime recreational fisherman. During the 1980s, I was a leader of an Atlantic coastwide campaign seeking stronger regulations to protect the then-endangered striped bass, called rockfish in the Chesapeake region. I testified before House and Senate committees on several occasions. The federal government stepped in at that time to pass important legislation that forced reluctant states to curtail the fishing pressure. This helped bring about what has been called the biggest success story in the history of marine conservation. Stripers have staged an incredible comeback, proving that if a species jeopardized by overfishing is given a real chance, it can generally overcome pollution and other habitat-related problems.

Today, however, the striped bass face a new threat related to the food source they most depend upon during their early years in the Chesapeake Bay. Menhaden are being depleted off the Virginia coast by a single corporation, Omega Protein. Besides grinding up the menhaden to provide meal for the animal feed industry, Omega is also the world's primary manufacturer of liquid fish protein for aquaculture. As menhaden abundance has declined, striped bass along these shorelines have not been finding enough to eat. An estimated 70 percent of the bass in this region now suffer from a chronic bacterial infection that many scientists believe is stress-related, and that ultimately kills them.

Which brings me to the subject of this legislative hearing, and a deep concern that is shared by many other fishermen and women. At a time when forage species such as menhaden and herring are already being fished to their limits for various purposes, still greater numbers of these small fish will be needed as feed for the offshore raising of carnivorous finfish such as salmon and cod. This will have a further detrimental impact upon wild fish like striped bass that depend upon the same baitfish to survive. Marine ecosystems like the Chesapeake's will also be placed in greater danger, because menhaden play a critical role in keeping the waters cleaner by consuming massive volumes of algae.

It is certainly understandable that the United States – which currently contributes less than two percent of global production of aquaculture – would like to decrease our seafood trade deficit by gaining a larger share of a \$70 billion business that accounts for approximately forty percent of the seafood consumed worldwide today. It is also a certainty that aquaculture will have a continuing role in filling the planetary need for protein from the sea. However, this cannot be allowed to happen at the expense of what remains of our existing wild fisheries and ecosystems. Nor can it be an excuse to permit

continued overexploitation by the high-tech commercial fishing operations that are destroying so many wild fish populations.

According to the Millennium Ecosystem Assessment, “Nearly one third of the world’s fish caught in the wild, such as small pelagic fish like anchovies and menhaden, are not consumed directly by humans but rather ‘reduced’ to fish meal and fish oil and consumed by farm-raised animals, such as chickens, pigs, and carnivorous fish in some aquaculture systems. Aquaculture consumes more fishmeal so far than terrestrial livestock and poultry, as these have increasingly switched to vegetable-based meals.”

Indeed, nearly half of the world’s production of fishmeal now goes into aquaculture, which also takes more than three quarters of the fish oil. Over the past fifty-some years, the amount of fish taken to be “reduced” into meals, oils, and other non-food purposes has increased from 3 million tons to 21.4 million tons. The largest of these reduction fisheries are in South America and the Far East and most of these, according to the UN’s Food and Agriculture Organization (FAO), are already fully exploited. According to Ulf Wijkstrom, Chief of the FAO’s Fishery Development Planning Service, “The world production of fish oil...could be finished before 2015, just in the use for aquafeeds. Fishmeal would last a bit longer, but it could run out sometime before 2030.”

Let’s zero in on the voracious appetite of the farmed salmon industry. It currently uses about 573,000 tons of processed fish meal and 409,000 tons of fish oil every year. All this is derived from the taking of millions of other fish. A study in the prestigious journal, *Nature*, revealed that more than three pounds of wild fish – herring, menhaden, sardines, anchovies, mackerel – are needed to produce a single pound of marketable farmed salmon. In fact, the ratio could be as high as six to one, because the industry began increasing production in the 1990s by adding additional fat content that metabolized more efficiently. This necessitated using a dramatically larger amount of oil in the feed. Looked at another way, only about one third of each farmed salmon ends up in fillets in the supermarket – the rest being head, guts, bones, and so on – so each pound of salmon sitting on ice actually took about nine pounds of wild fish to produce. Even if it were only a 3-to-1 ratio, the fact is that this is not sustainable. It is a net loss of fish resources, not a gain as the industry would have us believe. Most fisheries experts concur that the process of raising salmon and other carnivorous species ends up consuming far more fish protein than it produces, and puts much greater pressure on overexploited ocean fish populations.

Consider what is already happening with the herring populations in New England. There massive “factory” trawlers are dragging small-mesh nets wider than a football field and several stories tall at high speeds through the waters. These vessels are one hundred feet long and can hold up to a million pounds of fish. A single 380-foot at-sea processor – the American Freedom – is being allowed to process 20,000 metric tons, or about one-fifth of the total herring catch. The result is, the herring are being rapidly depleted, at this time primarily to be canned or used as bait for other fisheries like lobstering. Yet nearly all of the important fish stocks – tuna, haddock, codfish, stripers, whiting, dogfish – rely upon herring as a key component of their diets. A newly-formed Herring Alliance is seeking to get catch limits established, something that is sorely needed. Finally, last December, the Secretary of Commerce approved an amendment to the New England Fishery Management Council’s herring plan that explicitly recognizes the fish’s

importance as prey for larger predators and establishes management measures to protect that forage base.

What happens when greater quantities of herring are deemed necessary to fuel the new offshore aquaculture regime? Do the herring then disappear from our waters? Or does the industry turn instead to menhaden – which have been called, along with herring, the most important fish in the sea – and 300,000 of which can be corralled in a single setting of a purse seine net? Here are the reported landings of menhaden at the home-base for the Omega Protein Corporation in Reedville, Virginia: 488 million pounds in 2001, 382 million pounds in 2002, 375 million pounds in 2003. As Maryland charterboat captain Jim Price has pointed out, “That’s equivalent to more than a thousand pick-up truck loads of fish a day. It’s equal to five times the amount of seafood that the entire Maryland commercial fishery is able to land – counting oysters, clams, fish, everything.”

If menhaden and herring are pumped into the feeding base for American offshore aquaculture, will we see continuing declines of striped bass, bluefish, and weakfish in the Chesapeake – and no doubt, elsewhere - due to starvation? Until recent years, flocks of loons in the Chesapeake could be observed feeding on large schools of menhaden. Yet, over the past decade, the loon count has fallen steadily on the birds’ fall migration. And if fewer menhaden are around to filter the water, this means an inevitable increase in nutrient pollution coming from sewage treatment plants, farm and lawn fertilizers – and more dead algae contributing to stagnant waters that cannot support life.

While on the subject of pollution, there is also an important food safety issue involving offshore aquaculture. Testing of fishmeal and fish oil has shown widespread contamination with PCBs and dioxins, which are known to cause cancer. These toxins tend to bio-accumulate at more dangerous levels in the fatty tissues of fish that are higher on the marine food chain. A comprehensive sampling of farmed and wild salmon products in supermarkets across the U.S. and Europe shows a much higher concentration of PCBs and dioxins in farmed salmon – because of the food that these raised fish are being fed. (Wild salmon feed naturally on a large variety of marine life.) As Dr. David Carpenter of the Institute for Health and Environment at the University of Albany has pointed out: “If we concentrate the fish meal and fish oil from trash fish that nobody wants to eat, then shove it to fish in a cage and push their weight gain, we can develop animals that are dangerous to eat because of the accumulations of toxins.”

Ecosystems like the Chesapeake’s are already at a frightening crossroads, with yet-unknown impacts from global warming sure to be coming down the pike. We need as healthy a marine environment as possible, in order to weather the storms of the future. And we are only beginning to move in the positive direction of ecosystem-based fishery management, rather than the time-honored single-species approach.

In this same vein, any offshore aquaculture facility needs to have a forward-thinking, ecosystem-based approach. According to Dr. Ron Hardy, Director of the Aquaculture Research Institute at the University of Idaho: “The sustainability of farming of carnivorous fish will depend on the conversion of sourcing of feed ingredients from limited or finite sources such as fishmeal...to sustainable sources such as those produced from plants and grains and oil seeds.”

There needs to be greatly expanded research into alternative sources of protein for aquaculture. Food made from soybean meal, for example, is more environmentally friendly, since it floats on the surface until being eaten by the fish, instead of sinking and

rotting. Even in offshore fish pens, China has had considerable success using soybean meal to provide the required nutrients. Up until now, it has not been deemed feasible to grow salmon and other carnivorous fish on a strictly plant-based diet. But Cargill, I understand, is currently conducting trials with a 100 percent plant-based food source. Of course, it is equally important that future studies take into account the effect of putting soy or safflower into a natural ocean environment that already contains a lot of organic material.

Legislation should also emphasize that freshwater fish like catfish, carp, and tilapia require less than one unit of wild fish for every unit of farmed fish production. Shellfish – oysters, clams, and mussels – require no feed inputs whatsoever. Instead, they filter plankton from the surrounding waters, contributing to a better environment by helping to clean the area where they are raised. For centuries, herbivorous carp have been farmed in China, Japan, and Vietnam with considerable benefit to the local ecology, particularly in rice paddies.

In sum, moving into offshore aquaculture should not be a hasty decision. It may well be true that, as industry experts claim, the increased volume of seawater will take care of much of the nutrient pollution load. Yet what about other problems that need to be addressed? These include the spread of disease from farmed to wild fish and, perhaps most ominous of all, “gene pollution.” The inshore salmon industry has already witnessed massive escapes from storm-damaged pens, with the raised fish not only competing for food but interbreeding with wild salmon. This threatens the long-term survivability of the oceanic species by compromising its genetic base. These factors have led the state of Alaska to ban fish farming entirely from its waters.

Also, what will happen to the offshore aquaculture facilities when they are struck by storms? We all know that the climate is changing, far more rapidly than anyone had anticipated, with shifting currents and intensifying hurricanes.

And how will placement of these facilities impact the migration of marine mammals such as the critically endangered right whales?

It is a risky and expensive proposition to initiate offshore aquaculture. **We cannot simply repeat the model of land-based agriculture, with government subsidies propping up a system plagued by all sorts of problems.** The fact is, our history is full of grand schemes for fishing, backed by the government and focused only on increasing production, with “experts” believing that any difficulties would simply be swallowed up by the vastness of the sea and its supposedly limitless bounty. In the 1960s, American scientists estimated that we could take 500 million metric tons of fish a year from the ocean, and that became the basis upon which our fisheries were managed. Yet it turned out that the ocean could afford to give up only about 20 percent of that amount. Today we live with the consequences of that huge miscalculation, in the form of crashed fisheries and economically destroyed communities left behind in its wake. Now we are hearing some of the same grand claims for aquaculture. The industry speaks of “tuna ranching,” when what *should* be happening is global pressure to save the majestic bluefin tuna before they disappear completely into the *sushi* marketplace.

In this aquaculture legislation, where are the environmental safeguards that herald a precautionary, rather than a full-speed-ahead approach? The lesson that should be heeded is this: a lack of governmental oversight when inshore salmon farming was begun in the 1970s resulted in a host of dilemmas that might otherwise have been foreseen and

averted. Why is there no section of environmental requirements in the National Offshore Aquaculture Act of 2007? Why are such safeguards to be promulgated by the Environmental Protection Agency only after the bill becomes law? Shouldn't some assessment of ecological impacts for the issuing of permits be mandated explicitly in the legislation? - a clear set of standards that would minimize or eliminate harm to the ocean environment.

Offshore aquaculture is a huge step, with ramifications for the wild food-chain and its ecosystems that at this point – without due consideration of all of the implications, and without strong environmental protections in place – pose a harm rather than a benefit to our society and our planet.

As a concerned citizen, I have no choice except to join with more than thirty other fishermen's associations and conservation groups in opposing H.R. 2010, the National Aquaculture Act of 2007. I urge Congress to do the same.

Thank you.