



FISHERMEN'S NEWS

January 2010

The Advocate for the Independent Fisherman

\$2.00



Pacific Coast Federation of Fishermen's Associations

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Food For Thought: Solutions

By Sara Randall and Natasha Benjamin

This is the second installment of our two part special examining how fish and fishermen fit into the global food movement. In the first section from last month's Fishermen's News we identified threats to fisheries in the food system, including the overarching threat of human overpopulation and the increasing demand population places on global fish stocks. Other threats examined were the structure of the fisheries management as more fisheries are pushed toward privatization through catch shares, and the potential of Community Fishing Associations to maintain fishing communities under the Limited Access Privileged Program in the Magnuson-Stevens Act.

Bio-engineering of seafood has unknown effects on human health and gene pollution could damage remaining natural environments. Off-shore aquaculture will increase water pollution and has great potential for disease transfer to native fish and escapes of non-native fish while decreasing the amount of protein available to feed the world's population. Climate change and increasing ocean acidification has the potential to redistribute fish species and will increase oceanic dead zones.

In today's piece we will look at some of the solutions to the issues raised in the last month's installment.

A Correct Course for Aquaculture

As the National Atmospheric & Oceanic Administration (NOAA) begins to grapple with how capture fisheries and aquaculture will fit into the country's long-term development, it will have to realize the inherent dangers involved with open-system aquaculture (OSA) operations and do what is necessary to safeguard valuable US waters. Additionally, with the reality of global human overpopulation, it is necessary to ensure that all aquaculture operations result in a net increase, rather than decrease net protein for human consumption.

Aquaculture has now increased to nearly 50 percent of the world's seafood consumption. This fast paced growth has come with poorly planned regulations. Currently in the United States there are no national standards in place for the new expansion of aquaculture

into offshore waters, despite a push from our federal government to open up our waters to these offshore aquaculture operations.

The dangers associated with open-ocean aquaculture include the accidental escapes of (often non-native and potentially genetically modified) farmed fish and their impacts on wild populations, nutrients and chemicals discharged from the net pens, and the increased demand for fish meal to feed farmed fish. As global demand for omega-3 fatty acids and healthy fish protein continues to grow, so does the production of farmed finfish.

Offshore Aquaculture involves the use of net pens or other water permeable enclosure devices to contain farmed fish in either marine, brackish, or freshwater environments. Unnaturally high densities of fish are maintained in these fish enclosure devices. Water currents

are relied upon to flush away fish waste, antibiotics, excess feed, and other materials from the fish enclosures.

In most offshore aquaculture systems the effects of these fish farm effluents on the surrounding environment are very difficult to trace; however, biological accumulation in the food chain or bottom sediments may eventually result in long-term effects. Excess wastes and nutrients can also severely affect surrounding communities by fueling the growth of algae and bacterial decomposition, which robs wild fish stocks of dissolved oxygen.

The negative effects of OSA aquaculture reach beyond their indirect impacts on fish habitats. High concentrations of farmed fish harbor disease that can readily spread to wild fish stocks in the immediate area. Vectors for disease can take the form of escaped aquaculture fish, fish farm effluents, and sea lice. Sea lice can



easily pass through the enclosure device and begin parasitizing wild fish, draining them of precious energy resources necessary to mate, hunt, and escape predators.

The most sought after aquaculture fish species are often high-dollar, carnivorous salmon, tuna, and cobia. These species require large amounts of omega-3 oil and fish meal to grow. As a result, the wild fish to farmed fish protein conversion ratio is often very high. Rather than reduce pressure on wild stocks, aquaculture has instead increased that pressure to cater to the dietary desires of the affluent. It can take about 5 pounds of wild fish to create one pound of farmed salmon. This kind of protein waste is not acceptable on a planet of almost 7 billion people. Omnivorous fish species, such as tilapia, which can survive primarily on vegetarian diet, require much less fish sourced feed.

There are many competing users that currently rely on the nation's ocean territory, lakes, and rivers. Adding offshore aquaculture installations to America's maritime portfolio has the potential to restrict shipping traffic, impact valuable wild fisheries, obstruct naval operations, and create a host of environmental problems. Technological measures, management measures, and regulations cannot wash away the inherent costs associated with offshore aquaculture, but they may open the door clear the path for a more benign form of onshore aquaculture.

As demand for seafood continues to rise in the United States, a trade deficit has built up in the US with seafood.

Our national exports have not been able to keep up with the staggering amount of seafood imported daily. The US currently imports approximately 80 percent of its seafood, with 47 percent of this seafood coming from farmed origins.

Decreasing this large trade deficit represents a vital element in the restructuring and rebuilding of the US economy. Our country needs to focus on the production of material goods for trade if it wants to reclaim its robust economy of 60 years ago. To do this we as a society need to sand the rust off our dilapidated industrial centers and get back on the line producing safe, quality American products.

Closed system aquaculture (CSA) has great potential to fill the demand for such tangible production, while fulfilling consumers demand for seafood and not damaging the environment. CSA contains the cultured product and the effluents they produce in man-made holding ponds or storage tanks. Water from the operation is treated before it is either recycled back into the system or used for other purposes. If the water is going off-site, federal and state environmental protections already in existence, such as the Clean Water Act (CWA), require that it meet safe standards.

An ecosystem approach to CSA, known as re-circulating aquaculture systems (RAS), goes beyond simply producing fish. Wastewater from the tanks can be processed via biological means to be cycled back through the system. Nitrogen fixing bacteria create usable nitrogen from fish urea. This fixed

nitrogen is then coupled with the nutrient laden water and fed to plants. This can include producing tilapia along with an assortment of herbs and vegetables as seen in one of the systems created by Premier Organic Farms.

The plentitude of fish and produce available through urban RAS could foster a wealth of sustainable jobs for American citizens who need them most. Abandoned factories located in struggling mid-west towns like Detroit or Flint, Michigan, are the appropriate home for the blue revolution, not the sea.

Artisanal Food Production

Perhaps the best hope for truly sustainable fisheries is small scale, more artisanal models of fishing. For example, small scale fisheries use less fuel, utilize more labor over capital, and the fish is utilized for human consumption, not fishmeal. Using Micheal Pollan's hypothesis of a need for more farmers, not fewer, we extrapolate that on to our fisheries and say we too need more fishermen, not fewer. A case can be made that the best fisheries management model for the ultimate good of the majority of US citizens would be to live in harmony with the biological constraints necessary to ensure sustainability, while increasing the number of jobs involved in the fisheries.

Moving away from industrialized methods of harvesting would decrease our reliance on many large vessels, or vessels of excessive capacity. As the demand for seafood stays constant or raises due to continued human population growth, and as consum-

ers learn the benefit of eating domestically caught seafood and are willing to pay more for it, it is not unreasonable to think that a fishery managed with many small vessels could provide a middle class income, while the fishermen still maintains his/her independence.

An artisanal approach spreads out effort geographically and thus make it easier to avoid substantial environmental impacts. Of course, in the United States not all fisheries (Menhaden and Pollock come to mind) would easily lend themselves to the artisanal model. Also, it goes without saying that if the human population keeps exploding, the artisanal model may not ultimately work for feeding the world's population.

Currently the notion of «efficiency» dominates in the US approach to managing fisheries. Such a dependence on efficiency reduces fleet size and consolidates catch into the hands of a few people. We need to look at a different idea of efficiency in the United States, one that measures efficiency as the most amount of people working, each making the most amount possible.

An artisanal approach that embraces fishery diversity and the portfolio approach to fisheries will allow fishermen to follow the natural rhythms of the cyclical nature of the fisheries. The current management style tends to lock fishermen into a single fishery through fixed quotas, limited entry systems, and catch shares. A model based on this new kind of efficiency would be buoyed by vibrant fishing communities



that would be sustained by the naturally occurring local diversity of fisheries, which are harvested by an assortment of gear types. This sort of diversity can ensure that these communities remain economically viable and will act as a buffer against the vagaries of nature and the marketplace.

A more artisanal small boat fleet will have the advantage of flexibility as ocean conditions change rapidly due to ocean acidification and climate change. With major shifts in stock migrations, composition and distribution likely due to global climate change predicted, this kind of flexibility might be the key piece in economic survival of the fisherman.

Labeling and Certification

With the implementation of the Country of Origin Labeling Act (COOL) in 2005 the seafood picture got a little clearer. The fishermen fought for the labeling as a way to give the consumer more information about their product, with the hope that ultimately the consumer would favor domestically caught products.

The new standards were intended to inform consumers about where seafood comes from and if it is farm-raised or wild-caught. Unfortunately, USDA did not create a strong labeling program. "Processed" seafood is exempt, leaving more than 50% sold in the US without labels, 90% of fish sellers, such as wholesale markets, are exempt, no enforcement mechanism exists and violators face paltry fines.

Unfortunately, some of the labeling requirements

of COOL have ultimately confused the consumers instead of demystifying the food chain. For example, if seafood is processed and/or value is added in a different country, then the seafood product is labeled as a product of that country where the value adding took place. This is commonly seen in the frozen seafood aisle of major supermarket chains, such as Krogers, Costco, and Walmart. This is a true impediment to the education of our nation's consumers.

Teaching consumers the importance of purchasing domestically caught fish (because it is the most sustainable and caught under the strictest regulations) is not possible when they cannot then identify the products as domestically caught in the seafood aisle. Seafood labeling can be confusing for the layperson, and wading through frozen sockeye salmon fillets with a stamp that says «product of China» is only adding to the confusion.

Giving consumers more information about their food is the basis of creating more intelligent choices. There is a growing concern among consumers as to the safety, nutritional value, and environmental sustainability of the food they purchase. In response to this movement, some groups have begun to promote eating sustainably harvested seafood as part of an environmentally responsible lifestyle.

There is a national movement to produce sustainable seafood guides to encourage consumers to purchase products that are sustainably caught or farmed. The theory behind these guides

is to harness market forces to reward sustainable fisheries and make poorly managed fisheries bear some of the true environmental costs of destructive practices, eventually putting non-sustainable systems out of business. However, the effectiveness of these guides is hampered by a lack of basic information to support using the recommendations. It is usually impossible for consumers to distinguish the different capture or farming methods.

Even without environmental considerations, informational labeling can also be used by the consumer to make decisions on whether or not to buy locally caught seafood. We believe this will generally benefit local fleets and local fishing communities, and help recapture local markets from foreign imports. Time and time again it has been shown that the public wants to support local fishermen over foreign imports and sourcing food as close to home as possible.

Buying food that is produced close to the consumer and not shipped half way around the world for processing is key to reducing energy used on food production. But we need better labeling if are going to achieve this. It is critical for the consumer and the fishermen to support accurate labeling that gives people the right to choose whether they want to buy fish from their local community or imported from across the world.

The Marine Stewardship Council (MSC) is an international non-profit labeling scheme that was started in Europe in 1999 as a project of the World Wildlife Foun-

ation. Since it's inception, it has certified 42 of the world's fisheries as «sustainable.» MSC now has 200 million items being sold annually in 36 countries rewarding best managed fisheries in world. While the intentions behind creating a labeling system that tries to ensure sustainability and the subsequent promotion of these «good» fisheries was a breakthrough concept at the time, the labeling scheme is far from perfect.

Through the years there has been criticism over different fisheries they have certified and if they truly meet the concept of sustainability advanced by the MSC. For example the New Zealand hoki fisheries has been a controversial certification starting back in 2001, but recently the New York Times completed an expose on the hoki stock's decline and subsequent quota decrease by two-thirds. Also recently under fire is the Alaska's pollock fishery, which recent data suggests is declining.

Additionally, the labeling scheme's partnership in 2006 with Walmart raised some eyebrows, as the sustainability of a finite resource did not seem to mesh with Wal-Mart's established business model.

Also, the cost of certification makes going through the process to determine if a fishery is eligible for MSC certification expensive for smaller-scale fisheries. Therefore, at least in the US, there are quite a few fisheries that probably could be certified under MSC but do not have the resources to work towards that goal.

One potential source of funding for California fisher-



men for seafood certification programs including the MSC lies in the signing of California AB 1217 last month. This bill makes provisions for the state to develop standards for what constitutes sustainable fishing practices and initiate labeling for seafood that meets these standards. This bill provides for a «sustainable seafood promotion» program that includes a grant program to assist fisheries in qualifying for certification. Participation is voluntary and those that choose to participate can take advantage of the sustainable label as a marketing point. This is an opportunity to showcase some of the sustainable fishing practices in California and set benchmarks for other states.

This program would also develop a label to identify and market seafood caught in California that is sustainably certified. Thankfully and with some forethought, the bill prohibits seafood produced through aquaculture to be certified as sustainable until national or international standards have been implemented.

Local and Seasonal

Nowadays, fewer people are engaged in work as food producers. Much of our nation's food is imported from thousands of miles using nonrenewable sources of energy contributing to global warming. As our food infrastructure has grown throughout the past century, people have become disconnected from their food sources and less aware of the origin of their food.

To counter the industrialization of our food systems, the movement towards increased consumption

of locally-produced foods was advanced initially through such organizations as Slow Food. The imminent dangers of climate change and the environmental benefits of eating close to home makes eating as locally as possible very desirable.

The local food movement was catapulted to a new sense of urgency this summer in the US when San Francisco Mayor Gavin Newsom announced his Executive Directive on Food and established his new Food Policy Committee. At the heart of the mayor's directive was a idea to work to preserve fertile areas for farm production, and to ensure that San Francisco has a reliable source of food into the future. The Mayor has vowed to take his directive to the United States Annual Conference of Mayors and challenge mayors from around the country to undertake similar initiatives. The Mayor decided to make sure fisheries were included in his food directive, thereby setting the stage for inclusion of the fisheries into other US based plans.

This inclusion will be especially important since commercial fishermen, their families, and coastal communities are finding it harder to continue their traditional livelihoods and pass their knowledge on to future generations. For cultures trying to hold on in the face of a shrinking world due to globalization, direct marketing approaches such as co-ops, CFAs and «community supported fisheries,» seem to hold a lot of promise.

Direct marketing is a way for smaller scale fishing communities to sustain their

livelihoods, traditions, and communities. Direct marketing re-links consumers with their local fishermen and instills in the consumer a greater awareness of their connection to marine life.

This summer, Sweden became the first country to include carbon output associated with food products so consumers have that information and can take that into consideration when purchasing food. This is an important new development since the reality of people's food purchasing decisions will now confront them and may change their purchasing habits to factor in more environmentally friendly food products. Such awareness about the locality of food purchased can be utilized to help domestic seafood harvesters. It should be noted however, that the definition of "local" may need to be expanded for fisheries. The relative remoteness of some Alaskan and Hawaiian villages and their needs to find markets for their products needs to also be considered.

When queried, most consumers will reply they want to eat seafood responsibly, but are not sure where to turn. Labeling programs such as MSC and COOL do not tell the whole story. For example, many consumers do not realize that commercial fishermen in the United States work closely with state agencies and the National Marine Fisheries Service to ensure sustainable harvest of fisheries. In fact many consumers do not think that fisheries in the US are regulated at all!

To try to alleviate some of this confusion the Institute for Fisheries Resources started a program to educate Califor-

nia consumers. The projects is called the Local and Seasonal Seafood Program and connects local fishermen to the fish buying public.

The Local and Seasonal Seafood Program® is a database where the public can learn when different commercially harvested fish are in season or what the local seafood in their region is. It also connects seafood consumers with commercial fishermen who are selling their fish either off their boats, at farmers' markets, or to restaurants.

By providing this information, consumers can make better informed decisions about where to buy high quality seafood. Through such transactions consumers are also able to support local fishing communities while eating the freshest seafood available.

Supporting local (or as local as possible) seafood harvesters can help smaller family-operated fishing communities compete with large operations, while maintaining traditional coastal communities, and ensures the fishermen receive a fairer wage for their labor.

Conclusion

Our current food systems are under threat from human overpopulation exacerbated by climate change. The act of eating is becoming increasingly politically charged. Seafood especially is riddled with difficulty because consumers are being bombarded with different messages. Between the real dangers of offshore aquaculture production, privatization of the fisheries, genetically engineered food, climate change



and overpopulation, a few techniques have emerged for helping American consumers wade through the difficult decisions of eating.

Labeling schemes including eating locally caught food, onshore aquaculture production in old industrial centers, and artisanal models of production are some emerging methods that will help as we try to secure food for ourselves and the next generation of humans in the United States. 🐟

About the Authors

Sara Randall

Born and raised in a small vil-

lage on the coast of Maine, Sara has been working to promote and protect sustainable fisheries and traditional coastal communities for the past seven years. She is the Program Director for the Institute for Fisheries Resources, where she oversees the Institute's programs that establish alliances among fishing men and women, government agencies, and concerned citizens to protect fish populations and restore aquatic habitats. In 2004, after seeing fishing men and women frustrated by their lack of a national voice, Sara was inspired to help create a national coalition of fishermen, the Commercial Fishermen of America (CFA). As a national organizer for CFA,

Sara works to bring fishermen together to address problems facing the fishing community. Sara was appointed to the San Francisco Food Policy Committee in 2009 and attended the Nyelele World Forum on Food Sovereignty in 2007. Sara also serves on the Board of Directors for the SalmonAid Foundation and the Somalia Maritime Assistance Foundation.

Natasha Benjamin

Natasha has spent most of her career working on marine conservation issues including fisheries, aquaculture, sustainable seafood. She has a background in science with a degree in Marine Biology from Boston Univer-

sity. Then continued to get her Masters in Marine Policy from University of Miami's Rosenstiel School of Marine and Atmospheric Science. Natasha then moved to California to work with the Institute for Fisheries Resources, where she was the Program Manager and Southwest Regional Director. She currently is an independent consultant and has worked for numerous marine conservation groups on fisheries issues. Natasha is also a member of the City of El Cerrito's Environmental Quality Committee with collaboration on the aquaculture section by Cameron Jaggard, AmeriCorps Watershed Steward.

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