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Aquaculture Exchange: Scott Nichols, Food's Future

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By James Wright

Scientist and seafood marketer launches consultancy, ponders future of food



Scott Nichols

During a recent conversation with Scott Nichols, the subject inevitably turned to feeding a growing global population with maximized fisheries, limited land and water resources and global resistance to carbon-emissions restrictions at the behest of Western governments. The topic is right in his wheelhouse. "It's not a matter of simply doing more with less; we have to do new and different as well," he said.

Verlasso, a brand of farmed salmon developed by DuPont and AquaChile, can certainly be considered new and different, even though it's been on the market for a few years. Raised on a proprietary feed comprising genetically modified (GM) yeast, Verlasso salmon are produced with a low dependence on forage fisheries. As the former director of Verlasso, Nichols is proud that the product, launched in 2011, became the first ocean-raised farmed salmon to achieve a Seafood Watch "good alternative" ranking.

Thinking about the future of food – particularly seafood – is something that Nichols is doing full-time now since he left Verlasso this fall to launch his own consultancy, **Food's Future** (<http://foodsfuture.org>). He'll work with companies with ambitious sustainability goals, helping them to communicate the value of what they're aiming to achieve. One way he thinks he can make an impact is by improving the relationships that companies have with environmental NGOs. "I'd like to facilitate conversations so that each gets what they want out of the other," he said. "I like to see more relationships established than transactions made."

What is the story behind the development of Verlasso?

My Ph.D. was in biochemistry. I studied plant biochemistry and metabolism, gene expression. I went to DuPont to take care of a program that needed scientific direction, particularly with metabolism. After that was commercialized, I stood back and took a look at where I was and what was happening. I was particularly interested in participating in a developing a biological economy, as opposed to a petro-based economy. What I saw happening was the pace of invention and new knowledge generation was extraordinary. The slope was really steep. The pace of new business development was really quite low. So I decided to jump off of the invention and new knowledge generation train and get on the new business development path.

I looked at what sorts of things could be done with existing inventions and using them to make new businesses. I did a number of those things but then came to one where I was looking at what might be done with a program DuPont had to make the essential omega-3 fatty acid EPA for human supplements. It seemed to me that what had been invented for human supplements could quite possibly be useful for salmon aquaculture.

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Because what salmon needed was an essential omega-3. At the time (2006), salmon aquaculture was growing at a compound annual growth rate of roughly 10 percent and consuming 80 percent of the world's fish oil. The fish oil that we had available to us was capped. And so what you had was something that was growing at a rapid rate, consuming the bulk of something that couldn't expand. It was unsustainable from an environmental and business point of view.

The notion of capturing wild fish to feed farmed fish didn't seem attractive, especially when it didn't result in a net increase of food but a net reduction. Then the people at DuPont undertook all the testing that was necessary to validate the omega-3 as a feed ingredient, which led to the possibility of the formation of Verlasso.

What was the R&D process like?

I had the very early discussions with NGOs about this in 2006, before product development, not afterward. That's one of the most important things that people developing new products ought to think about. Businesses don't avail themselves of [NGOs'] expertise. I was all over that. They gave and gave and gave. They improved how I thought about things and I think they improved what was done. That was really important.

When a business approaches an NGO, kind of the way it's done is four people stand in a conference room, they do rock-paper-scissors and the loser calls the NGO and they take something and push it across the table and they say, 'See what we did. Please bless us and maybe burn some incense over it?' That's not a productive way to approach people. Especially when there's so much expertise and thoughtfulness there. I always thought they were an extraordinary resource and I availed myself to that resource as much as possible.

Would you say that the seafood industry isn't using the NGO expertise to its greatest benefit?

I would, absolutely. A couple of things come to mind. Seafood Watch and [Aquaculture Stewardship Council], for examples, have very clear and understandable metrics and standards for what it takes to meet their requirements for practicing responsible aquaculture. Producers sit over here with their practice, and there's a chasm between the two. NGOs will sometimes look at producers and ask, 'Why aren't they moving along the pathway to get here?' Businesses will look at the NGOs and say, 'Why isn't there an actionable pathway that I can take to get there?'

Most people want the same thing. As a producer you have to nurture the ocean where you're farming if you're going to be able to have the ecosystem resources that allow you to continue to farm. Irrespective of what anybody thinks, farmers' motives, if thought through properly, lead them to sustainability. It's the same thing NGOs want. What has to happen, I

think, is a better conversation between the two about how to achieve common goals.

What was it like launching a new product, with a new story to tell, in the crowded seafood market?

Daunting. But it was also really, really exciting. We set out to solve the most important issue facing sustainability in salmon aquaculture and we solved it. We were successful in having a fundamentally new type of conversation with consumers about fish – one that led them to a meaningful connection between their purchase decisions and sustainability goals they could embrace. And we never lost sight that we raised food. Food should be delicious and we undertook changes in traditional farming practices and diets to achieve better taste. Those who ate the fish could tell the difference.

We realized that we had a special set of challenges about communicating the value and helping people make the connection between their values and what was being offered. It's interesting, when people go into a grocery store, two things happen. You walk in with a set of thoughts or values or precepts that dictate what you do and don't buy. And so once you do that and you find things that match the values you have, then you get the products home, it's a completely different experience now. Now you're thinking, 'How do I make something delicious to serve to my friends and family?' Linking those two things up, appealing to their values and matching that with good food was a communication challenge. Typically, fish are in the counter, if not as complete commodities, then pretty close. The differentiation was something that needed to be communicated if it were to be successful. That's true throughout the seafood industry. I wonder if we're communicating all that we can and should to flange up against people's values. I don't think we're quite there.

AquaBounty Technologies' GM salmon, AquAdvantage, was just approved by the U.S. Food and Drug Administration. Did you think it would come to a resolution now?

I didn't. It can't take 20 years to determine that something is functionally equivalent to something else. All of that time can't have been necessary to do what needed to be done. I just thought that, honestly, the FDA didn't want to deal with the ensuing conversation so they just didn't do anything.

Consumers seem to view GM crops and GM animals in vastly different lights. Do you think that's unfair?

In the case of fish, no I don't, and here's why, and it's not from a safety perspective. If what I have read is correct, the AquaBounty business model is to produce eggs, and then provide eggs under a licensing agreement to farmers. They lose control of those eggs with the attendant stewardship and husbandry practices as soon as those eggs get on a plane. I have concerns about a licensing model as licensing agreements aren't adequately protective of intellectual property. Just look at pirated software. All kinds of violations of licensing agreements occur. I worry about that, because AquaBounty will not be able to impose practices.

My second concern is about fertility. To their credit, AquaBounty has undergone work to make the female fish triploid. Triploid animals are sterile. In the same way we end up with sterile oysters that don't devote their energy to reproduction, so you get bigger, better oysters. AquaBounty says their fish are 98.9 percent sterile. But that leaves 1.1 percent that are fully fertile. So, to my way of thinking, and perhaps I'm a bit pessimistic or overly cautious, it's not a question of if these fertile animals will end up in the ocean, it's a matter of when and how many. That is really concerning.

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Contrast this to terrestrial agriculture. If you have a pig that wanders off your farm, first of all, that pig doesn't have the opportunity to outbreed with very much of anything. Secondly, pigs are easier to find than salmon. I do see a really big distinction between what happens on land and what happens in the ocean. I remain skeptical about how well this can be done. From a marketplace perspective, I have an abundance of concerns.

The thing that scares me is that the advances aquaculture has made in both its practices, and the public recognition of how good those changes have been, I'm worried will be turned upside down completely and one of two things, or maybe both, might happen.

One is that people will look at salmon and say, I don't remember what it is about this but I remember that I'm not supposed to like it so I'm just not going to buy any farmed salmon.' I'm not a person sitting on the sidelines with that; we should be eating farmed salmon. Secondly, I'm worried it will spill over to all farmed fish.

How has the industry-NGO relationship changed in the past decade, from a personal standpoint?

When I went my first SeaWeb Seafood Summit in Florida, where I presented, the way I was regarded and the way people approached me, was, 'You seem like a nice guy, what a pity it is that you've decided to spoil the oceans raising fish with aquaculture. You're pleasant enough, I'll have a beer with you, if you're buying.' Take that forward to New Orleans last year. Wow. The overall feeling there was that aquaculture represents the future of our ability to be able to eat fish. So in seven short years, that's the change that occurred, and it was an extraordinary change. Actually, somebody bought me a beer last year!

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