

High Health Aquaculture

Golden and Red-Striped Shrimp

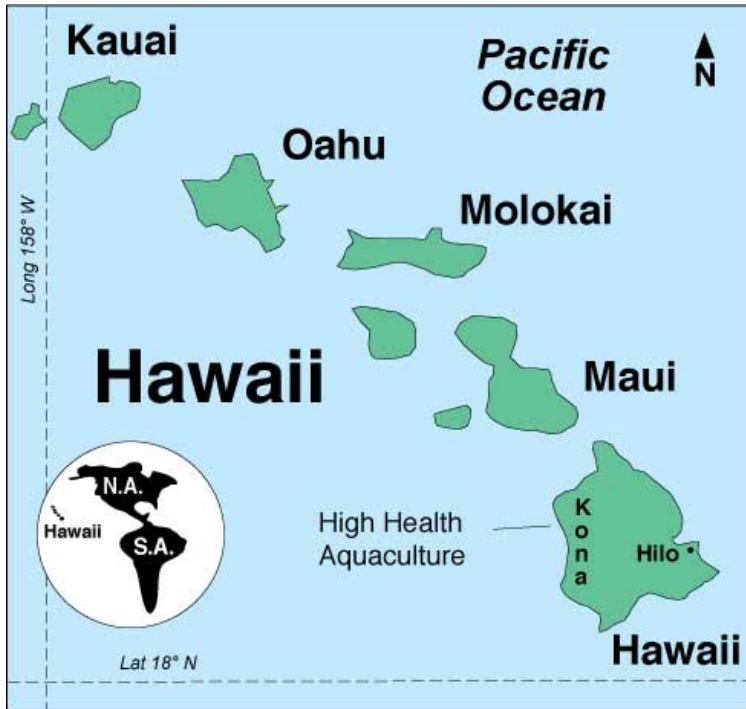
On January 10, 2008, I interviewed Dr. Jim Wyban, president of [High Health Aquaculture](#) (HHA) in Hawaii, a USA-based facility that produces specific pathogen free (SPF), fast-growing, virus-resistant, genetically improved shrimp broodstock.

Shrimp News: Hi Jim, what's the current status of High Health Aquaculture?



Jim Wyban: 2007 was a great year for us. HHA continues to be the leading SPF shrimp broodstock supplier in the world, and we probably have the leading market share in Thailand and Indonesia. Most of our business is in Asia, supplying *Penaeus vannamei* broodstock, our GxTVR stock, that's our growth selected, hybridized, Taura-resistant stock—our fastest growing animals ever. Breeding for growth rate has really had a powerful effect on their performance.

Shrimp News: What are you doing with your *P. monodon* broodstock?



Jim Wyban: We're working on a couple of things. We spent about twelve years developing our SPF *P. monodon* broodstock, now in the F8 (eighth) generation, and feel that they're ready to go on the market. We're talking with a couple of groups about supplying SPF *monodon* broodstock.

Shrimp News: Are you still working with *P. japonicus* broodstock?

Jim Wyban: No, we worked with *japonicus* for a long time, but we just could not generate any commercial interest in it, so we dropped it.

Shrimp News: What about *stylirostris*?

Jim Wyban: Yes, we're still working with styles. We're collaborating with the IFREMER Group in New Caledonia on some very interesting breeding experiments with styles. Hybrids from our SPF *stylirostris* and the New Caledonia stock of *stylirostris* outperformed both of the

parent stocks by a considerable amount in both growth and survival. IFREMER did crosses in both directions, our males with their females and our females with their males, and in both cases, the hybrids outperformed the parent stock. In 2008, some shrimp farms in New Caledonia will stock the hybrids. This was no small research artifact. These were significant results from a controlled study. In 2008, a paper will be published on this research in the journal *Aquaculture*, along with the production data.

Shrimp News: In 2005, [High Health Aquaculture formed a joint venture](#) with Thai Union Feed Mill to produce specific pathogen free, fast-growing, Taura-virus-resistant *vannamei* nauplii and postlarvae in Thailand. Through the grapevine, I heard that the joint venture had ended. Is that true and what can you tell me about it?

Jim Wyban: Yes, that's true. We were partners in developing a \$10-million hatchery called "High Health Thailand", which was completed in 2006 at a 37-acre site north of Phuket. We purchased the site, designed and built the hatchery, supplied broodstock, hired, organized and trained the technicians and then ran into some differences with our partners. We just could not come to terms on how to manage certain aspects of the business. The Thais wanted to take the company in one direction and we were determined to take it in another. We eventually negotiated a settlement, and Thai Union bought out our shares in the hatchery. We parted in good company and still communicate on a regular basis. It's now called Thai Union Hatchery. As part of the settlement, it's no longer called High Health Thailand. All and all, it was a good experience for me; I love Thailand, which remains a great market for our products.

I would like to add that the concept for the HHT hatchery—combining the best broodstock in the world with the best hatchery practices in the world—resulted in the production of an exceptionally robust PL

that's generally not available elsewhere in the industry. Most hatchery owners are least cost operators. Even if they use expensive, imported, SPF broodstock, they still produce postlarvae as cheaply as possible. For example, we've learned over the years that the more *Artemia* you feed in the hatchery, the better performance you get during growout. In Thailand, the average hatchery uses less than a kilogram of *Artemia* cysts to produce a million postlarvae. If you feed the postlarvae all the *Artemia* they want, however, they'll consume ten times as much. That's what we did at HHT. As a consequence, we produced a huge PL-10. You get very rapid growth—and it doesn't increase total costs that much. Hatchery owners want to cut costs, so they feed less *Artemia* and wind up with less than a perfect PL. Farmers who used our PLs reported exceptionally fast growth (over 0.2 grams per day). Our concept at HHT worked. Now, we're talking with other groups that might want to develop similar projects.

Shrimp farmers need to lower their costs. They need to produce shrimp for less than three dollars a kilo. In my experience, the best way to cut costs is to improve PL quality. Although this might raise hatchery costs, the increased growth and survival during growout will more than compensate for the higher hatchery costs.

Shrimp News: What else are you up to?

Jim Wyban: In our research and development program, we're looking at the genetics of shell color and shell patterns. In our *vannamei* breeding program, we discovered that one out of a 100,000 animals was a beautiful golden yellow, the color of a ripe banana, but even more golden. They really stand out. For a couple of generations now, we've been trying to concentrate the genes responsible for the gold color, with the idea of producing a golden

vannamei stock, which could then be branded. The color persists even when you ice the animals down.



We're doing similar breeding work with *monodon*. We have *monodon* that show a broad red/orange stripe, right down the top of the carapace from the rostrum to the tail. When we first starting breeding *monodon*, we'd see the red stripe in a few percent of the animals in a few families. After breeding for that trait, however, we now have a couple of families where the stripe appears in sixty percent of the animals. Like the golden shrimp *vannamei*, the color persists even when you ice the animals down. When I was in Japan in October 2007, I showed photos of the red stripe *monodon* to some seafood people, and they got really excited about them.

Wyban has posted videos of his Christmas shrimp celebration and a broodstock harvest to YouTube. You can view them at <http://www.youtube.com/watch?v=4HNitYhscsl>. On the six-minute Christmas video, Wyban says:

“Welcome to Kona, Hawaii. We’re broadcasting on the shrimp network. This is *the* annual event of the year, the High Health Annual Christmas Party, and the feature is eating shrimp. We’ve cooked broodstock-sized shrimp in four different recipes and we’re going to focus on how good these shrimp have been to us and how good they are to eat. This is for all of our friends around the world. Merry Christmas and Happy New Year.”

While discussing one of the dishes in the video, Wyban says: “One of the things that’s really important about these shrimp...is their red color. Look at how beautifully orange/red these animals are. This result is the combination of our culture system, good nutrition and our secret method of processing. ...That combination results in these beautiful red shrimp, a color that’s very important in Japan.”

Information: James Wyban, Ph.D., High Health Aquaculture, Inc., 73-4460 Queen Kaahumanu Hwy #117 Kailua-Kona, Hawaii 96740 USA (phone/fax: 808-329-6018 jim.wyban@gmail.com www.SPFGenetics.com).



Sources: 1. Jim Wyban, telephone interview by Bob Rosenberry, Shrimp News International. January 10, 2008. 2. Email to Shrimp News International from Jim Wyban. Subject: Video. January 7, 2008.