

## Farmers to Farmers and Aquaculture without Frontiers

Trip Report: South Africa, March 2011  
Jeff Hetrick, Farmers to Farmers Volunteer

A trip was organized for March 1-12, 2011 to conduct workshops on oyster and algae culture and describe shellfish mariculture operations and hatchery technology developed in Alaska to interested professionals in South Africa. In addition, field visits to abalone hatcheries, nurseries and grow out facilities were scheduled for Mr. Hetrick.

The oyster industry in South Africa is small (approximately six large farms) and has developed to the point where domestic markets are considered saturated and exporting and value added products are being considered. The major impediment for further expansion is the necessity of a seafood inspection and a certification program to allow that activity. Another impediment is a reliable source of oyster seed and the pending restrictions of importation of seed from other countries. This may require the development of a shellfish hatchery in South Africa.

Jeff Hetrick, the Director of the Alaska Shellfish Institute and Alutiiq Pride Shell Fish Hatchery in Seward Alaska volunteered for the Farmers to Farmers Program. Mr. Hetrick arrived in Cape Town, South Africa via Washington D.C. on March 2<sup>nd</sup>. On March 3<sup>rd</sup> he arrived at Ellsenburg University in Stellenbosch where he was greeted by Pavarni Naidoo, a genetics researcher, who was a representative of the University and the contact for Ferdie Endemann Aquaculture Extension Specialist.



Attendees at Stellenbosch

Jeff Hetrick Explaining  
Aquaculture in Alaska

Stellenbosch Workshop

The day was spent holding an informal workshop with presentations of Mr. Hetrick's experience with aquaculture in Alaska. The audience represented many interests. Students from the Agriculture Department in Ellensburg were encouraged to attend to get exposure to the opportunities and challenges that might be presented to them if they made aquaculture a career choice.

Researchers and post graduate students were in attendance to discuss the opportunities with an oyster genetics program and discuss the economics of various sizes of oyster hatcheries.

Also in attendance were most of the shellfish producers from the west coast of South Africa including mussel and oyster farmers, nursery operators and researchers from the Sea Point Marine Research Lab.

The varied interests of the audience allowed for lively discussions on the subject matter presented. Mr. Hetrick would offer his experience in topics from Alaska and audience would respond with experiences in South Africa. It was interesting to note the similarities between the vastly different regions growing the same species utilizing almost identical techniques.

Some of the attendees expressed interest in developing a shellfish hatchery in South Africa. This interest stems from the desire of researchers to begin developing brood stock lines similar to those developed on the west coast of the U.S. Growers were interested in supporting a hatchery for reliable seed source and the fear that import restrictions would eliminate their current sources. Mr. Hetrick reviewed the finances of running a facility and suggested that a public facility that could conduct both production and research would work, but that stand alone hatcheries, unless a part of an integrated operation, rarely succeed. Mr. Hetrick also suggested that the public sector could assist in developing new species.

At the end of the day the following power points were distributed on a disc. Some of the power points presented included:

“Alaska Mariculture 2011”

“The Alutiiq Pride Shellfish Hatchery”

“Financial management for Alaska Shellfish Farmers”

“Construction and operations manual for a tidal-powered upwelling nursery”

“Kachemak bay shellfish nursery project”

“Development of large scale hatchery production technology for red king crab *Paralithodes camtschaticus.*”

“The weekend warrior program”

On March 3<sup>rd</sup> the workshop continued at the Sea Point Research Aquarium near Cape Town. In the morning a tour of the facility was conducted by Dion Hoerst Lab Director. Dr. Hoerst took the large group to many areas usually off limits to visitors, including the pumps and water treatment systems, abalone and scallop spawning areas and finfish rearing areas. In attendance were most of the participants from the March 2<sup>nd</sup> gathering in Stellenbosch. The tour was very interesting and highlighted much of the dynamic research being conducted with various aquaculture species in South Africa.



Abalone Experiments  
Sea Point Research Aquarium

Dr. Hoerst explaining  
Facility Systems

Scallops Brood stock

The early part of the afternoon was spent finishing the workshop with a discussion of algae culture and a review of techniques utilized by all of the algae producing participants. While there were far more similarities than differences, it was interesting to note how the strategies developed were site specific and were adapted to each operator’s peculiar circumstances. The workshop was concluded with a distribution of handouts on algae techniques and oyster hatchery protocols from Mr. Hetrick.

On March 6 we arrived at the Hermanus site of two of the major abalone farms in South Africa. Mr. Hetrick was greeted by the hatchery manager Brendan Nice and

Operations manager Stoffell van Dyk of Abagold Abalone Farm. An extensive tour was conducted of the facility from the seawall and massive intakes and pumping systems to the large industrial-size grow out systems. Considerable time was spent reviewing the hatchery and nursery systems, nuances of culture techniques and overall production strategy of the operation. Much of the exchange centered on the applicability of the techniques to Mr. Hetrick's attempts at raising sea cucumbers and the interest of the Abagold staff to experiment with adding sea cucumbers to their product mix.

The Abagold facility consisted of upland tanks fed with single pass ambient water through culture tanks fed with an extensive aeration system. There are 28,000 culture baskets which move through the grow out system while on their way to market.



Inside Abalone Hatchery



Macroalgae raceway  
Abagold



Mr. Nice, Mr. Stoffell  
Mr. Hetrick

Over 300 employees continually wash, feed and grade the animals until harvested for a processed product exclusively shipped to Asia. The animals are fed a mixture of cultured macroalgae and manufactured pellets produced by a nearby company Marifeed. Abagold is obviously successful as they are undergoing a massive expansion. An interesting footnote is that both Mr. Nice and Mr. Stofell came to Abagold with no formal training in aquaculture but rather had extensive experience in terrestrial agriculture sheep and wheat respectively. An emphasis was made in perfecting the systems based on the biological requirements. The visit concluded late Sunday evening.

On Monday the tour of Abagold continued with visiting the macroalgae production ponds. *Ulva*, known as sea lettuce is cultivated in oval raceways circulated by a paddle wheel. 100 tons are harvested daily to feed the juvenile abalone. Adults are feed with 5 tons of wild collected brown algae.

The remainder of the morning and early afternoon were spent touring TIK abalone farm hosted by Manager Sally Burton. TIK is located on the same seafront industrial park as Abigold. They share the same water intake system. TIK also produces its product for the Asian market however most of its product is shipped live. TIK must therefore employ different techniques than Abagold because shell shape and appearance are very important.



Sally Button TKI Manager    Abalone in Nursery Cones    Marketable Abalone

On March 10<sup>th</sup> we visited Knysna Bay the site of the original oyster farm in South Africa. The farm has recently shut down and all of the operation moved to Port Elizabeth. We continued on and visited Jeffrey's Bay and the Martinique Marina site of the Knysna Oyster Farm's FLUPSY (Fluidized Upwelling System)

On March 11<sup>th</sup> we travelled to Port Elizabeth to visit the two oyster farms. Willie DeWitt of B & G Oyster showed us around their working area and we watched the crew sort oysters for market and reseeded back into the suspended culture gear (Lantern nets). Immediately adjacent was the Knysna Oyster farm operated managed by Simon Burton.



Jeff Hetrick, Simon Burton  
and Willie Dewit



Oyster Barge and  
Suspended Gear



Crew sorting oysters  
Knysna Oyster Co.

Although both farms raised the Pacific oyster in suspended lantern nets they had distinctively different grow out strategies. Knysna Oyster Co. imports over 12 million 3-5 mm seed with an approximately 10% harvest rate. They accept losses from grow out by minimizing labor and handling. Their most vulnerable time is in the middle of summer when temperatures peak at 30 C. This is contrasted with the B & G Oyster Co. who start with a much larger seed 20+mm employing “veggie” nets which are inserted into each layer. This minimizes loss through the polypropylene mesh and makes unloading the lantern nets easier. Both farms seem on program to allow for export.

It appears the biggest impediment for the industry to grow is marketing. Farmers feel that the domestic markets are saturated. Exports are presently hampered by the lack of a seafood inspection program that certifies for export. The growers are optimistic that this will change soon. Mr. Hetrick cited the experience with marketing in Alaska is that after the industry there developed to where there was a consistent product the in-state markets have grown 10 fold in 5 years. He encouraged the growers to continue to expand markets within South Africa. He also suggested exploring additional products such as cockles and scallops to expand the product base.

Conclusion: Mr. Hetrick thoroughly enjoyed his time in South Africa and felt the exchange of information with the aquaculture industry was valuable. The exchanges both formally and informally allowed for a free flow of information. There continues to be a dialogue with the people involved, especially with the genetics and hatchery people.

## **Farmers to farmers Impacts- South Africa-Hetrick**

Number of participants: 31 men, 14 women at tours and workshops.

Number of Recommendations: 11

Number of Families benefitting: 10 oyster farming families

Number of potential Customers Benefitting: assuming 200 consumers per farm = 2,000 oyster eaters