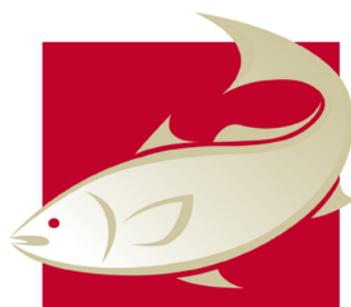


**Seafood CRC Industry Bursary:  
*Biosecurity and breeding programs,  
Chile, 2013***

***Brad Evans***



AUSTRALIAN  
SEAFOOD  
COOPERATIVE  
RESEARCH CENTRE

**Project No. 2012/747**

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**TITLE :** Industry bursary\_ *Biosecurity and breeding programs, Chile, 2013*

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**OBJECTIVES OF INDUSTRY BURSARY:**

- Personal experience of current biosecurity procedures in Chile
- Personalised training in the use of modern ultrasound technology for sex differentiation in small salmon
- Direct exposure to Chilean selective breeding programs
- Knowledge of alternate approaches to breeding problems
- Understanding of the commercial structure of breeding companies, hatcheries and on-growers in one of the largest salmon producing countries of the world.

## **NON TECHNICAL SUMMARY:**

The primary reason for travel was to look at how the biosecurity issues that were faced by the Chilean salmon industry have shaped their current approach to biosecurity and commercial egg production. I was able to visit seven sites, operated by five different companies whilst in Chile, and this provided a good cross-section of the salmonid breeding facilities of this country. Facilities ranged from very modern purpose built facilities with stringent biosecurity procedures built in during construction, to facilities that are greater than 20 years old that have undergone a retrofit to meet the regulations that have been imposed following the ISA outbreak of 2005. The range of methods implemented across the sites to address the biosecurity regulations offer us a useful insight into what is possible and worthwhile in increasing the protection of the Tasmanian industry.

The Chilean industry has also produced the world's experts in the application of ultrasound technology for sex discrimination in small Atlantic salmon, as well as gonadal staging of larger Atlantic salmon for more effective photoperiod manipulation in Freshwater based broodstock. I was able to see the technology being used and gain experience in operational requirements that will be beneficial in the Tasmanian industry.

The use of ultrasound in commercial salmon farming in Chile is extensive, with the technique currently being used to discriminate between the sex of Atlantic salmon as small as 100g by specialist service providers and as small as 300g by on farm staff.

The contacts that I have made, and the knowledge that I have gained, will be invaluable in ensuring the continued development and improvement of the Tasmanian Atlantic salmon selective breeding program (SBP) in the future.

## **OUTCOMES ACHIEVED TO DATE**

The key outcomes arising from activities supported by the CRC industry bursary are:

- Upgraded biosecurity measures at SALTAS hatcheries
- Development of a long term biosecurity strategy for SALTAS hatcheries
- Efficient use of modern ultrasound technology to remove unwanted males from populations at approximately 500g, rather than 5Kg

## **OUTPUTS DEVELOPED AS RESULT OF INDUSTRY BURSARY:**

- Long term biosecurity strategy for SALTAS hatcheries an the Tasmanian Selective Breeding program

## **BACKGROUND AND NEED**

The Tasmanian Atlantic Salmon Selective Breeding program (SBP) operates in an environment in which there is no current high level threat of viral disease, and as such, the biosecurity level within the industry is generally low when compared to world standards. The Chilean industry has suffered from one of the greatest and most catastrophic viral outbreaks in the history of Aquaculture and has since rebuilt with much greater government and industry self regulation, leading to stringent biosecurity requirements which are monitored and enforced by Government, and independent testing laboratories. The goal of this visit was to determine which areas of biosecurity are essential to protect our industry from biological threats, and how can we most effectively integrate them into our commercial systems in order to avoid the potentially catastrophic results of a viral outbreak within the Tasmanian industry.

## **RESULTS**

As a result of what I have seen in Chile, we have already implemented changes to our biosecurity procedures at SALTAS. We also have a plan for ongoing upgrades to biosecurity to ensure that the Atlantic salmon selective breeding program is protected from disease threats into the future.

## **INDUSTRY IMPACT**

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### **PROJECT OUTCOMES (THAT INITIATED CHANGE IN INDUSTRY)**

- Spawning methods, and in particular, fish handling methods have been reviewed and streamlined
- Handling and disposal of mortalities has been cleaned up, with the result being a safer workplace and higher level protection from disease.
- More knowledge of the use of ultrasound to ensure that we have a better idea of spawning female numbers well before spawning season.

### **SUMMARY OF CHANGE IN INDUSTRY**

- Currently changes are being phased into the workplace at SALTAS, but due to the cooperative nature of SALTAS and the SBP, it is likely that these changes will be adopted by much of the industry in the future

### **WHAT FUTURE AND ONGOING CHANGES ARE EXPECTED?**

- Increased levels of biosecurity
- Increased understanding of biosecurity principles

### **WHAT BARRIERS ARE THERE FOR CHANGES TO OCCUR?**

- Cost is the major barrier to the introduction of high level biosecurity procedures, and as such their introduction will be staged.
- Culture also needs to change, as we have long worked in an environment in which there was no obvious threat of disease.

### **IF NOT ALREADY HAPPENING, WHEN WILL THE CHANGES OCCUR?**

- Some changes have been implemented already
- Others have been outlined in a strategy for the ongoing improvement of biosecurity and will require capital investment over the next 2-5 years

### **WHAT IS THE LIKELIHOOD THAT THESE CHANGES WILL OCCUR?**

- There is a high likelihood that these changes will occur as there is ample evidence from overseas that catastrophic diseases will spread rapidly if there are not suitable barriers in place.

### **WHAT BARRIERS ARE THERE TO ADOPTION OF THESE CHANGES AND WHAT ACTION COULD BE TAKEN TO OVERCOME THESE?**

- Cost and Culture

## **COMMUNICATION OF PROJECT/EXTENSION ACTIVITIES**

### **WHAT IS THE OUTPUT THAT NEEDS TO BE COMMUNICATED?**

- That the Tasmanian SBP is vulnerable to any outbreak of disease and there are a number of steps that can be taken to increase the level of biosecurity around the program

### **WHO IS/ARE THE TARGET AUDIENCE/S?**

- The Tasmanian Salmonid industry

### **WHAT ARE THE KEY MESSAGES?**

- Biosecurity should be considered in all future developments
- Biosecurity should be upgraded in existing facilities

### **COMMUNICATION CHANNELS**

*(How can these messages be communicated and by who?):*

<i>Channel</i>	<i>Who by</i>	<i>When</i>
<b><i>SBP technical committee</i></b>	<b><i>Me</i></b>	<b><i>Next meeting April</i></b>

## **LESSONS LEARNED AND RECOMMENDED IMPROVEMENTS**

### **WHAT IS YOUR FEEDBACK?**

This industry bursary was essential to support my travel to Chile. The knowledge gained and the network developed will help me personally in the development of my own career and will provide benefits to the Atlantic salmon industry in particular and the Australian aquaculture breeding sector in general.

### **FURTHER ACTION REQUIRED IN REGARDS TO COMMERCIALISATION?**

*Not relevant*

## **ACKNOWLEDGEMENTS**

I would like to thank the CRC for supporting this travel through this industry bursary.

I would also like to thank my employer, Saltas, and the Tasmanian SBP Technical committee for recognising the benefits of providing me with a global view of selective breeding in salmon.

I would particularly like to thank:

- Charles Booth and Marcelo Abarzua from Skretting Chile for giving up so much of their time to introduce me to the local operators and to help with transport and communication in Chile.