

Amoebic Gill Disease (AGD) in Scotland and Ireland – Impact, Control Procedures and Investigations

Dr Alistair Brown and Dr Carlos Zarza



AUSTRALIAN
SEAFOOD
COOPERATIVE
RESEARCH CENTRE

Project No. 2012/712



Copyright Australian Seafood CRC, the Fisheries Research and Development Corporation and Tassal Ltd 2012.

This work is copyright. Except as permitted under the Copyright Act 1968 (Cth), no part of this publication may be reproduced by any process, electronic or otherwise, without the specific written permission of the copyright owners. Neither may information be stored electronically in any form whatsoever without such permission.

The Australian Seafood CRC is established and supported under the Australian Government's Cooperative Research Centres Program. Other investors in the CRC are the Fisheries Research and Development Corporation, Seafood CRC company members, and supporting participants.

Office Mark Oliphant Building, Laffer Drive, Bedford Park SA 5042
Postal Box 26, Mark Oliphant Building, Laffer Drive, Bedford Park SA 5042
Tollfree 1300 732 213 Phone 08 8201 7650 Facsimile 08 8201 7659
Website www.seafoodcrc.com ABN 51 126 074 048

Important Notice

Although the Australian Seafood CRC has taken all reasonable care in preparing this report, neither the Seafood CRC nor its officers accept any liability from the interpretation or use of the information set out in this document. Information contained in this document is subject to change without notice.



Australian Government
**Fisheries Research and
Development Corporation**



An Australian Government Initiative



NON-TECHNICAL SUMMARY

PROJECT NO: Amoebic Gill Disease (AGD) in Scotland and Ireland – Impact, Control Procedures and Investigations

PRINCIPAL INVESTIGATOR: Dr Alistair Brown

ADDRESS: Tassal
20 Glen Road
Huonville TAS 7109

(PROJECT) OBJECTIVES OF RESEARCH TRAVEL GRANT/ INDUSTRY BURSARY

- Improved management strategies for AGD prevention and treatment;
- A pathway will be identified for collaborative international research; and
- A framework for ongoing industry to industry knowledge transfer.

OUTCOMES ACHIEVED TO DATE

- Relevant management strategies have been identified that can be transferred to the Australian industry.
- A framework has been proposed for ongoing industry to industry knowledge transfer through the formation of a technical group with members from Australia, Ireland, Scotland and North America.

(PROJECT) OUTPUTS DEVELOPED AS RESULT OF TRAVEL GRANT/ INDUSTRY BURSARY:

- A better understanding of the impact of AGD on the Scottish and Irish industries.
- Review and evaluation of international strategies for AGD control.
- A better understanding of control methods used by the Scottish and Irish industries (peroxide, fallowing).
- Establishment of contacts with international fish health managers.

ABOUT THE PROJECT/ACTIVITY

BACKGROUND AND NEED

Amoebic Gill Disease (AGD), caused by *Neoparamoeba perurans* is currently the most serious disease facing the Tasmanian salmon industry. The disease is characterised by hyperplastic (thickening) changes in the secondary lamellae, which can result in fusion of the secondary lamellae, resulting in reduced surface area of the gills. Severe amoeba infestations can significantly compromise the function of the gills, causing respiratory distress. This will initially present itself as inappetance in the affected fish. If the condition isn't treated, death will result. Each year, this disease costs the industry millions of dollars in terms of loss of production potential, stock losses and treatment costs. Additionally, it goes without saying that AGD has serious animal welfare implications.

Despite years of research, the only treatment for AGD that is available to farmers is bathing the fish in freshwater. Whilst the use of freshwater is environmentally friendly and effective in controlling the disease, it is labour intensive and stressful on the fish as it requires the fish to be crowded so that they can be pumped out of their pen, across a de-waterer and into the freshwater bath. A bath typically lasts 2 - 3 hours from the time the last fish has entered the bath. As bathing the fish requires significant infrastructure, labour resources and time, a farm can only accomplish a maximum of two baths per day. A further limiting factor of freshwater bathing is the availability of the freshwater itself, which during drought years can be in short supply.

In recent years, AGD has started to emerge in salmon farming operations worldwide, causing significant stock losses. This presents a unique opportunity for the Tasmanian industry to conduct collaborative research with our international counterparts to speed up our understanding of *N. perurans* and investigate alternative treatment options. By visiting the Northern Hemisphere in March, we will have the opportunity to influence the direction of their research and investigations for the upcoming Northern Hemisphere summer which will hopefully be beneficial to the Tasmanian industry.

RESULTS

- **Improved management strategies for AGD prevention and treatment**

Discussions were held with technical experts from Scotland, Ireland and the USA, representing Marine Harvest, Scottish Seafarms, Meridian, Scottish Salmon Company and a number of independent farms. Strategies, farming practices and treatments were compared and evaluated for effectiveness in the Australian industry.

In total, eight farms were visited in Scotland and Ireland. The AGD prevalence and management practices were examined.

In Ireland 12/23 marine farms were affected by AGD, all experienced stock losses. Nine sites used freshwater in wellboats, which proved to be successful. Two of the nine had to re-treat. Six sites used peroxide in either a wellboat or in a tarp at concentrations ranging from 720 – 1250ppm for 15 – 20

minutes at a temperature range of 9 – 11° C. Two of these sites needed to re-treat. Hydrogen peroxide under field conditions was shown to be effective at controlling AGD

AGD was reported in 26 farms in Scotland, all in the south of Scotland. Thirteen of these used in-situ net washers. Eleven of these farms treated, using either peroxide, freshwater or formalin. Formalin did not appear to be successful.

Going forward, the proposed management strategies include improving the use of peroxide, single bay management and fallowing.

- **A pathway will be identified for collaborative international research**

During the visit, we met with senior fish health managers including company and independent fish veterinarians. Discussions were held on how to link international research efforts. An international AGD working group is being developed.

- **A framework for ongoing industry to industry knowledge transfer**

A proposal has been made to form an informal group for the purpose of exchanging information relating to AGD management and directing research streams. A draft Terms of Reference is being developed.

INDUSTRY IMPACT

PROJECT OUTCOMES (THAT INITIATED CHANGE IN INDUSTRY)

SUMMARY OF CHANGE IN INDUSTRY

The establishment of contacts with international colleagues will lead to better information transfer and access to novel approaches in AGD management and treatments.

WHAT FUTURE AND ONGOING CHANGES ARE EXPECTED?

The expectations are that with improved international cooperation, improvements in the management and treatment of AGD will ensue. There is also an expectation that a coordinated international research effort will answer basic AGD research questions more rapidly.

WHAT BARRIERS ARE THERE FOR CHANGES TO OCCUR?

Changes in research priorities and/or AGD prevalence in Europe may lead to a loss of interest from our European colleagues.

IF NOT ALREADY HAPPENING, WHEN WILL THE CHANGES OCCUR?

These changes are already in progress.

WHAT IS THE LIKELIHOOD THAT THESE CHANGES WILL OCCUR?

100%

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

Regional differences in AGD epidemiology, farming practices and treatment efficacy.

COMMUNICATION OF PROJECT/EXTENSION ACTIVITIES

WHAT IS THE OUTPUT THAT NEEDS TO BE COMMUNICATED?

- Treatment regimes for AGD in Scotland and Ireland relating to the use of peroxide
- Other gill issues in the northern hemisphere that may have relevance to Tasmania including predisposing factors.
- AGD management and research strategies

WHO IS/ARE THE TARGET AUDIENCE/S?

Other fish health managers in Tasmania

WHAT ARE THE KEY MESSAGES?

We are not alone. There is hope!

WHAT IS THE CALL TO ACTION?

Improved communication and coordinated and focussed research strategies

COMMUNICATION CHANNELS

<i>Channel</i>	<i>Who by</i>	<i>When</i>
<i>TSGA Fish Health Committee</i>	<i>Alistair Brown</i>	<i>Next scheduled meeting</i>
<i>AGD (TAS) working group</i>	<i>Alistair Brown</i>	<i>Next scheduled meeting</i>

LESSONS LEARNED AND RECOMMENDED IMPROVEMENTS

WHAT IS YOUR FEEDBACK?

The time constraint was a factor, there were more people we could have met given more time.

FURTHER ACTION REQUIRED IN REGARDS TO COMMERCIALISATION?

N/A

ACKNOWLEDGEMENTS

We would like to thank Karl Scott, David MacGillivray and David Cockerill from Marine Harvest Scotland for taking time to show us their farms, also to Marine Harvest Scotland for providing us with accommodation whilst in Fort William.

We would also like to thank Hamish Rodger for organising our farm visits whilst in Ireland, also to Liam Doherty from Marine Harvest Ireland and Noel Lee for allowing us to visit their farms. Thanks also to Skretting for providing us with accommodation whilst in Galway.