

Aquaculture Unit

– Winter 2011

INTRODUCTION

The Aquaculture Research Unit develops improved technology for existing and new aquaculture industries, including for stock enhancement. We aim to increase aquaculture production and generate regional economic development and employment.

Our scientists have developed technology for breeding molluscs, including edible oysters, pearl oysters, abalone, scallops and clams as well as finfish, including native freshwater fish species and marine species such as Australian bass, snapper, mulloway and yellowtail kingfish. Research on nursery and growout production systems and development of cost effective diets and feed management strategies provides a sound R&D basis for emerging aquaculture industries.

RESEARCH CAPABILITIES

- » The Port Stephens Fisheries Institute (PSFI) houses mollusc and finfish hatcheries, experimental facilities and laboratories capable of large-scale production of finfish and mollusc juveniles relevant to industry as well as small-scale, intensively replicated facilities for rigorous experimental research.
- » Five research scientists, 12 Fisheries Technicians and support staff running >25 individual research projects, almost all of which involve collaboration with other agencies and companies. External funds for current active projects exceeds \$7 million.
- » I&I NSW is a supporting participant in the Australian Seafood CRC (\$73.7 million over 7 years to 2014). Other major stakeholders in NSW DPI aquaculture research include the Fisheries R&D Corporation, ARC, Recreational Fishing Trusts, ACIAR, Ridley Aquafeeds and the United Soybean Board.
- » Extension and adoption of new technology. Strong partnerships also exist with several universities, including James Cook University, University of

Tasmania, University of Newcastle, Deakin University, with other state government agencies and CSIRO.

- » The Aquaculture Research Advisory Committee (ARAC) is an industry dominated committee with an independent chair that advises the Minister on research priorities and expenditure of the research levy collected from all aquaculture permit holders.

PROJECT UPDATES

SYDNEY ROCK OYSTER BREEDING PROGRAM (1990–2015)

INTRODUCTION: Two major impediments to Sydney rock oyster (SRO) industry productivity are the comparatively slow growth rates of SRO and their susceptibility to two significant diseases, QX disease and winter mortality. Based on mass selection, a selective breeding program initially targeted faster growth and winter mortality resistance before it was expanded to include QX disease resistance in 1997.

FINDINGS: Today, the NSW DPI has lines of oysters that have been shown to grow in excess of 35% faster than normal oysters and reach market size a year earlier. Some of these lines are capable of resisting a single exposure to QX disease, while others are showing significantly improved survival in the face of winter mortality. There are now more than 90 different lines of SRO, many are being used to select oysters for marketability characteristics (shape and condition) while others are being used to assess the capacity for breeding to face challenges posed by climate change.



CONTACT: Wayne O'Connor,
PSFI (02) 4982 1232

PARTNERS: Fisheries Research
& Development Corporation,
Seafood CRC

CONTACT US

For more information on our full portfolio please contact Wayne O'Connor (02) 4982 1232 or wayne.oconnor@industry.nsw.gov.au.

MOLLUSC HATCHERY CAPACITY IN AUSTRALIA AND VIETNAM (2007–2012)

INTRODUCTION: This project aims to assist the development of bivalve hatchery production in Vietnam and Australia. In Vietnam this is being done through a program of hatchery training and species evaluation while in Australia we are focussing on refining techniques and developing techniques for new species such as pipis.

FINDINGS: In Vietnam, oyster production has grown rapidly. From zero at the outset of the program, hatchery production has expanded to involve four facilities producing a total of up to 100 million oyster seed/annum. The current production estimate for 2010 is 5000t. In NSW, new techniques for the production of sterile triploid oysters have been evaluated and pipis have been produced within hatcheries for the first time.



CONTACT: Wayne O'Connor, PSFI (02) 4982 1232

PARTNERS: ACIAR, Research Institute for Aquaculture No. 1, Vietnam

IMPROVING HATCHERY PRODUCTION OF SOUTHERN BLUEFIN TUNA (2009–2011)

INTRODUCTION: Southern blue fin tuna (SBT) are endangered and the wild-catch quota has decreased. Future industry sustainability and expansion will be reliant on development of a hatchery supply of fingerlings for stocking into seacages. Hatchery technology for SBT does not exist and this project sets out to identify suitable culture methods

FINDINGS: Transfer of hatchery technology developed for other marine fish species is not directly applicable to SBT. Production of small numbers of juvenile SBT is possible using modified, but standard hatchery techniques, however survival at key larval developmental stages remains a constraint to hatchery production.



CONTACT: Stewart Fielder, PSFI (02) 4916 3902

PARTNERS: Seafood CRC, Cleans Seas Tuna, Flinders University

IMPROVING HATCHERY PRODUCTION OF YELLOW TAIL KINGFISH (2010-2011)

INTRODUCTION: Aquaculture of yellowtail kingfish (YTK) for sale to domestic and international markets is reliant on a reliable supply of high quality juvenile fingerlings. Cost of fingerling production is currently high because of problems with low survival in hatcheries and a high rate of juvenile deformities which renders the fish unsuitable for growout. This project will investigate methods to improve production of YTK fingerlings.

FINDINGS: Design and management of hatchery tanks can have a large influence on YTK fingerling quality and is different to standard practices for other marine fish species. Survival to fingerling is still considered low and identifying optimal environmental factors is underway to improve survival.



CONTACT: Stewart Fielder, PSFI (02) 4916 3902

PARTNERS: Seafood CRC, Cleans Seas Tuna, Flinders University

UTILISATION OF SOYBEAN MEAL IN DIETS FOR BARRAMUNDI (2009–2012)

INTRODUCTION: There is great demand for research to evaluate the use and cost effectiveness of alternative feed ingredients in aqua-feeds for fish and crustaceans. We are currently investigating the potential of soybean meal and soy protein concentrate in aqua-feeds for barramundi.

FINDINGS: Barramundi can tolerate and utilise relatively high levels of soybean meal and soy protein concentrate in their feed. As feed intake appears to be negatively correlated with increasing inclusion level, we are investigating the use of feed attractants to improve the palatability of feeds containing high levels of soy and low levels of fishmeal.



CONTACT: Mark Booth, PSFI (02) 4916 3816

PARTNERS: United Soybean Board, Ridley Aquafeed

PIS&R PROJECT UPDATES