
The Parliament of the Commonwealth of Australia

Scaling Up

Inquiry into Opportunities for Expanding Aquaculture in Northern Australia

Joint Select Committee on Northern Australia

February 2016

Canberra

© Commonwealth of Australia 2016

ISBN 978-1-74366-378-3 (Printed version)

ISBN 978-1-74366-379-0 (HTML version)

This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Australia License.



The details of this licence are available on the Creative Commons website: <http://creativecommons.org/licenses/by-nc-nd/3.0/au/>.



Contents

Chair's Foreword	vii
Committee Membership	xi
Terms of Reference.....	xv
List of Abbreviations	xvii
Recommendations	xxi

REPORT

1 Introduction	1
Background	1
Defining Aquaculture.....	3
Committee's Role.....	3
About the Inquiry	5
Objectives and Scope	5
Inquiry Conduct.....	5
Report Structure.....	6
2 The Aquaculture Industry in Northern Australia	9
Global Aquaculture	9
Australian Aquaculture.....	10
Current Production	10
Production in Northern Australia	11
Aquaculture Production Growth	17
Trade in Aquaculture Products.....	23
Potential New Aquaculture Products for Northern Australia	27
Environmental Impacts and Sustainability.....	32

Concluding Comment.....	32
Recommendations	34
3 Regulatory Issues.....	35
Commonwealth Regulations	36
State and Territory Regulations.....	37
Great Barrier Reef Region Regulatory Framework.....	39
Application of the EPBC Act.....	40
Role of Great Barrier Reef Marine Park Authority	41
Guthalungra and 'Zero Net Discharge'	45
Offsets.....	47
Aquaculture in the Great Barrier Reef Region.....	48
Research into Environmental Impacts of Prawn Farming.....	52
Planning for Aquaculture	55
Development Zones	56
Other Regulatory Issues.....	61
Convention on the International Trade in Endangered Species	61
Crocodile Egg Harvesting	62
Aquaculture Licences and Permits.....	63
Biosecurity	66
Concluding Comment.....	67
Recommendations	70
4 Developing the Aquaculture Industry in Northern Australia.....	73
Introduction	73
Financing and Other Industry Assistance	74
Business Challenges in Northern Australia	74
Importance of Financial Investment	75
Ability to Attract Capital.....	76
Government Support.....	77
Strategic Leadership	79
Skills and Training.....	80
Aboriginal and Torres Strait Islander Community Involvement.....	83
Research.....	86
Areas for Research	87

Research Funding.....	91
Research Centres	94
Reducing Environmental Impacts	96
Spatial Planning and Baseline Data	98
Infrastructure.....	100
Infrastructure Facilitating Distribution	101
Industry Capital Requirements.....	104
Marketing	105
Country of Origin Labelling.....	106
Concluding Comment.....	111
Recommendations	114

APPENDICES

Appendix A – Submissions and Exhibits	117
Appendix B – Hearings and Witnesses	123

TABLES

Table 2.1 Australia’s Aquaculture and Wild-Caught Fisheries Production by jurisdiction 2013–14	9
---	---



Chair's Foreword

With an ever increasing global population, seafood has become a more popular source of protein. Consumption has largely been serviced by the aquaculture industry which has increased its share of the total global food fish supply from 9 per cent in 1980 to 48 per cent in 2011.

Most seafood that Australians consume is imported and this provides local producers with a significant opportunity and challenge to increase market share through import replacement. Northern Australia has a natural advantage for aquaculture production with a long coastline, pristine waters, the availability of suitable land, and its proximity to Asia. This is in addition to boasting a tropical climate which encourages high aquaculture growth rates and the natural occurrence of a number of tropical species found in Northern Australia.

In its first report, *Pivot North*, the Northern Australia Committee recommended that the Government facilitate the development of the aquaculture industry in Northern Australia by improving the framework for approving aquaculture projects.

Scaling Up is the report of the Committee's deeper investigation of the aquaculture industry in Northern Australia. As part of its inquiry, the Committee examined the current state of aquaculture in Northern Australia, including the framework for aquaculture approvals, and reviewed the opportunities for further development of the aquaculture industry.

The Committee found that an obstacle to import product replacement is exemption from country of origin labelling requirements for food prepared for immediate consumption, including in dining establishments such as restaurants, cafes, and clubs.¹ Consumers should know where the food they eat is produced so they can make informed choices. There is compelling evidence for extending country of origin labelling to food prepared in the food services industry and the Committee has supported a Senate committee² recommendation that this anomaly be removed. Similar arguments apply to the retail pearling industry and consideration should be given to introducing country of origin labelling for aquaculture products such as pearls.

1 This is not a requirement in the Northern Territory.

2 Rural and Regional Affairs and Transport References Committee, *Current requirements for labelling of seafood and seafood products*, Australian Senate, Canberra, December 2014, p. 28.

The Northern Australian aquaculture industry is relatively under-developed when compared to other Australian jurisdictions, but is well placed to benefit from an increased demand for seafood. The aquaculture of barramundi and prawns in the region is poised to expand and there are moves to increase the involvement of Aboriginal and Torres Strait Islander communities in crocodile farming and trepang ranching enterprises.

The Committee has acknowledged and supports the development of criteria for engaging local Aboriginal and Torres Strait Islander communities in aquaculture ventures by the Australian Institute of Marine Science. These criteria could be adopted and inform aquaculture ventures wishing to operate in remote areas.

Across the top-end and the Torres Strait, where there is good water quality and greater potential for Aboriginal and Torres Strait Islander management of coastal waters and fisheries, there are opportunities for sea ranching of clams, oysters, pearl meat, triton shell and trochus shell. For example, the production of triton shell for the environmental management of the crown of thorns starfish has the potential for boosting Aboriginal and Torres Strait Islander employment.

The Committee found that the Australian South Sea pearling industry is facing significant challenges due to competition from readily available, low-cost overseas sources and a decline in demand for luxury goods in the wake of the Global Financial Crisis. There has also been widespread damage to the pearling industry due to the spread of oyster oedema disease. As a result, the Committee has recommended that an Australian Pearl Industry Recovery Taskforce be established to fund research to identify the causative agent and possible remedial action to mitigate the impacts of the disease.

While Government sets the framework for development of new aquaculture ventures (through regulations at both the State and Federal levels), the Committee is encouraged by the move to create aquaculture development zones in Western Australia and the Northern Territory. The establishment of these zones will ensure certainty for industry by defining approval conditions and reducing regulatory approval times.

In Queensland, the development of aquaculture is influenced by the need to protect the waters of the Great Barrier Reef (GBR). The GBR is heritage listed and as such is one of Australia's most significant environmental assets. Ensuring its long-term health is of central importance to the economy of Queensland and more broadly Australia. Nevertheless, the regulation of aquaculture in Northern Queensland appears to have impeded the development of the industry to a degree not commensurate with its projected impact on the health of the GBR.

The Committee was of the view that the most pressing need for the aquaculture industry in Queensland is scientific certainty and regulatory clarity. Accordingly, the Committee has recommended that the Great Barrier Reef Marine Park (Aquaculture) Regulations 2000 (Cwlth), (which have not been used for a decade

due to the accreditation of Queensland regulations) be revoked in accordance with the Great Barrier Reef Marine Park Authority's Regulatory Plan 2014–15.

The Committee was heartened by the degree to which there is common ground amongst stakeholders as to how to resolve the development impasse which occurred in Queensland. Australian aquaculture companies have a history of benefiting from a 'clean green' marketing image and so the Committee is confident that aquaculture companies are taking steps to reduce their environmental impact and comply with environmental regulatory requirements.

The Committee found that the greater use of planning mechanisms, including development zones, is supported by almost all stakeholders. To assist science-based decision-making, the Committee recommended that research be undertaken into the potential for environmental impact arising from aquaculture ventures in areas adjacent to the GBR, including: the capacity of new technologies and management techniques to treat water to a standard that effectively eliminates nutrient discharge; the capacity of different ecosystems to absorb and assimilate any residual nutrient discharge; and the relative environmental impacts of aquaculture farming of different species, and using different farming techniques.

Consequently, the expansion of aquaculture in Northern Australia will increase the need for a skilled workforce and training institutions will need to provide industry focused courses to train employees to meet the anticipated skill-set requirements of expanding aquaculture ventures.

Opportunities also exist for universities located in Northern Australia to increase research relevant to tropical aquaculture. An avenue for research funding is the Fisheries Research and Development Corporation and the Committee has recommended that the Corporation consider introducing a 'northern node' for supporting research into Northern Australian issues.

In its first report, *Pivot North*, the Committee recognised the need for significant infrastructure investment in Northern Australia. In this vein, the Committee has recommended funding assistance for developing road and port infrastructure to service the Kimberley Aquaculture Development Zone and Project Sea Dragon in the Northern Territory.

Another consideration is the location of pest and disease diagnosis facilities which are an important adjunct to aquaculture ventures because pest and disease outbreaks need to be identified and treated in real time. There is a pressing need for such aquaculture-related infrastructure, particularly in Queensland. Locating a diagnosis facility within a university campus enables access to a broad range of scientific expertise which could be harnessed to serve other primary industries. Other supporting infrastructure such as hatcheries, feed mills and fish processing facilities will be needed as the aquaculture industry expands, however developing these facilities should ideally be led by industry demand.

Finally, I would like to thank the individuals, businesses, organisations and government agencies that participated in the inquiry by providing submissions or appearing at public hearings. I would also like to thank my Committee colleagues for their commitment to the work of this Committee and in particular this inquiry.

Hon Warren Entsch MP

Chair

Committee Membership

Chair Hon Warren Entsch MP

Deputy Chair Hon Alannah MacTiernan MP

Members	Senator Matthew Canavan	Senator Deborah O'Neill
	Mr George Christensen MP	Ms Melissa Price MP
	Hon Gary Gray AO MP	Senator Rachel Siewert
	Mrs Natasha Griggs MP	Senator Dean Smith
	Senator Hon Jan McLucas	Hon Warren Snowdon MP

Participating Members

Senator Hon Eric Abetz (From 12 October 2015)	Senator John Madigan
Senator Chris Back	Senator Gavin Marshall
Senator Cory Bernardi	Senator Jenny McAllister (from 14 May 2015)
Senator Catryna Bilyk	Senator Anne McEwen
Senator Carol Brown	Senator James McGrath (Until 12 October 2015)
Senator David Bushby	Senator Bridget McKenzie
Senator Hon Doug Cameron	Senator Claire Moore
Senator Hon Kim Carr	Senator Barry O'Sullivan
Senator Hon Jacinta Collins	Senator Nova Peris OAM

Senator Hon Stephen Conroy

Senator Sam Dastyari

Senator Sean Edwards

Senator David Fawcett

Senator Alex Gallacher

Senator Katy Gallagher (from 26 March
2015)

Senator Hon Bill Heffernan

Senator Hon David Johnston (From 12
October 2015)

Ms Michelle Landry MP

Senator David Leyonhjelm

Senator Joanna Lindgren (From 12 October
2015)

Senator Sue Lines

Senator Hon Joe Ludwig

Senator Hon Ian Macdonald

Senator Helen Polley

Senator Linda Reynolds

Senator Hon Michael Ronaldson
(From 12 October 2015)

Senator Anne Ruston (Until 12 October
2015)

Senator Zed Seselja

Senator Hon Lisa Singh

Senator Glenn Sterle

Senator Anne Urquhart

Senator Larissa Waters

Senator John Williams

Senator Hon Penny Wong

Committee Secretariat

Secretary Ms Stephanie Mikac

Inquiry Secretary Dr John Carter

Senior Research Officer Mr Timothy Brennan

Administrative Officers
Mrs Alex Fabbo
Ms Carissa Skinner



Terms of Reference

The Joint Select Committee on Northern Australia will inquire into and report on opportunities for expanding the aquaculture industry in Northern Australia including:

- the ability to commercialise new innovation;
- develop new aquaculture projects and products; and
- seek out new markets.



List of Abbreviations

AAQ	Aquaculture Association Queensland
ABARES	The Australian Bureau of Agriculture and Resource Economics and Sciences
ABFA	Australia Barramundi Farmers' Association
ACWA	The Aquaculture Council of Western Australia
AFANT	Amateur Fishermen's Association of the Northern Territory
AIMS	Australian Institute of Marine Science
APFA	Australian Prawn Farmers Association
AQIS	Australian Quarantine and Inspection Service
ARC	Aquaculture Research Council
CDU	Charles Darwin University
CG	Coordinator-General
CITES	Convention on the International Trade of Endangered Species of Wild Fauna and Flora
CoOL	Country-of-origin Labelling
CRCs	Cooperative Research Centres
CSIRO	The Commonwealth Scientific and Industrial Research Organisation
DFAT	Department of Foreign Affairs and Trade
DoA	Department of Agriculture

DoE	Department of the Environment
DNA	Deoxyribonucleic acid
DPIF	Department of Primary Industries and Fisheries
EIS	Environmental Impact Statement
EPA	Environmental Protection Authority
EPBC Act	The Environment Protection and Biodiversity Conservation Act 1999
FAO	Food and Agriculture Organization
FRDC	Fisheries Research and Development Corporation
FTA	Free Trade Agreement
GBR	The Great Barrier Reef
GBRMPA	Great Barrier Reef Marine Park Authority
GFB	Good Fortune Bay
GFC	Global Financial Crisis
GST	Goods and Services Tax
IOFA	Indian Ocean Fresh Australia
JCU	James Cook University
KADZ	Kimberley Aquaculture Development Zone
KMRP	Kimberley Marine Research Project
KTI	Kimberley Training Institute
MPA	Marine Produce Australia Ltd
MSC	Maritime Stewardship Council
MSc	Master of Science
NAIF	Northern Australia Infrastructure Facility
NT	Northern Territory
NTDPIF	The Northern Territory Department of Primary Industry and Fisheries

NTSC	Northern Territory Seafood Council
OOD	Oyster Oedema Disease
Pew	Pew Charitable Trusts
PhD	Doctor of Philosophy
PNG	Papua New Guinea
PPA	Pearl Producers Association
QCA	Queensland Competition Authority
QCFA	Queensland Crayfish Farmers Association
R&D	Research and Development
RAS	Recirculating Aquaculture System
RRATC	Rural and Regional Affairs and Transport Committee
RRATRC	Rural and Regional Affairs and Transport References Committee
RRRC	The Reef and Rainforest Research Centre
SDC	Sustainable Development Corporation
TAA	Tropical Aquaculture Australia
UN	United Nations
UNEP- WCMC	United Nations Environment Programme World Conservation Monitoring Centre
US	United States
WA	Western Australia
WADF	Western Australian Department of Fisheries
WAMSI	West Australian Marine Science Institute (WAMSI)



Recommendations

2 The Aquaculture Industry in Northern Australia

Recommendation 1

The Committee recommends the establishment of an Australian Pearling Industry Recovery Taskforce to fund a research program focussed on identifying the causative agent of the oyster oedema disease and possible remedial actions to reduce the incidence, and mitigate the impacts of the disease.

3 Regulatory Issues

Recommendation 2

The Committee recommends that the Department of the Environment, in collaboration with the Queensland Government, fund a program to review and expand the science relating to the environmental impact of aquaculture in areas adjacent to the Great Barrier Reef. The review should include research organisations with recognised expertise in this area including, but not limited to: the Commonwealth Scientific and Industrial Research Organisation, the Australian Institute of Marine Science, and James Cook University.

The research should be an examination of:

- the capacity of new technologies and management techniques to treat water to a standard that effectively eliminates nutrient discharge into the surrounding ecosystem;
- the capacity of different ecosystems to absorb and assimilate any residual nutrient discharges; and
- the relative environmental impacts of aquaculture farming of different species, and using different farming techniques (e.g. land-based, sea cage, ranching, recirculating systems).

Recommendation 3

The Committee recommends that the Department of the Environment and the Great Barrier Reef Marine Park Authority support the Queensland Government in determining the need for and the positioning of special aquaculture development zones. These zones should be identified using criteria, considering:

- the capacity of new technological developments to address nutrient discharge;
- the ability of nearby waterways to assimilate nutrient discharges to ensure that extra nutrients do not reach the Great Barrier Reef; and
- economic considerations including access to necessary infrastructure and labour force, and the biological suitability of sites for targeted aquaculture species.

Recommendation 4

The Committee recommends that the Great Barrier Reef Marine Park Authority, in accordance with the planned actions outlined in its Regulatory Plan 2014-2015, revoke the Great Barrier Reef Marine Park (Aquaculture) Regulations 2000 (Cwlth).

Recommendation 5

The Committee recommends that the Department of the Environment ensures the framework for developing offsets in the Great Barrier Reef is comprehensive, transparent and accessible for potential aquaculture investors. The framework should allow potential investors to accurately estimate:

- the quantity of offsets required;
- the cost of the required offsets; and
- how the offsets will be implemented.

Recommendation 6

The Committee recommends that the Queensland Government conduct a survey of crocodile egg numbers in Northern Queensland to determine the sustainability of crocodile egg harvesting.

4 Developing the Aquaculture Industry in Northern Australia

Recommendation 7

The Committee recommends that the Fisheries Research and Development Corporation should consider introducing a 'northern node' as an avenue for providing funding research relevant to Northern Australia.

Recommendation 8

The Committee recommends that the Australian Government provide funding assistance for developing road and port infrastructure to service the Kimberley Aquaculture Development Zone and Project Sea Dragon subject to establishing a positive cost-benefit analysis.

Recommendation 9

The Committee strongly recommends that the Australian Government provide funding assistance for the establishment of a pest and disease diagnosis facility in Northern Queensland.

Recommendation 10

The Committee recommends that the Australian Government, through COAG, remove the exemption from country of origin labelling requirements under Standard 1.2.11 of the Australia New Zealand Food Standards Code for cooked or pre-prepared seafood sold by the food services industry.

Recommendation 11

The Committee recommends that the Department of Industry reports within 12 months on the feasibility of introducing country of origin labelling for aquaculture products such as pearls and crocodile teeth.

