Developing the Vision 2028 for the Northern Australia aquaculture industry

Jennifer Cobcroft, Dean Jerry, Kyall Zenger, Jan Strugnell, Amy Diedrich, Rob Bell, Roger Barnard, Simon Irvin, Kylie Penehoe, Michael Davis, Kim Hooper, Jo-anne Ruscoe
Acknowledgement of Country

I acknowledge the Traditional Custodians of the land and sea where we gather, and pay my respects to Elders past, present and emerging.

Thank you to the elders who welcomed our project to Country in the Torres Strait, Broome, Townsville and Darwin.
Situational Analysis of Aquaculture in Northern Australia

Northern Australia Aquaculture Industry
Situational Analysis

• How the industry can grow together?
• What part different stakeholders can play?
Project Objectives

• Identify key challenges and opportunities facing the aquaculture sector in northern Australia
• Explore potential solutions and/or identify the most strategic research projects for further investment
Project Scope

Aquaculture
- infrastructure
- policy
- investment
- environmental
- production
- knowledge
- training and human capital gaps

Research or alternative solutions to address roadblocks
Project Approach

- Species and regions
- Lit review
Project Approach

Feb-May
- Capacity & scalability limitations
  - Species and regions
  - Lit review

May-Jul
- Industry Vision 2028
  - Industry supported
  - Identified goals
  - Survey
  - Focus Groups

Feb-Aug

Sep-Feb
Project Approach

**Feb-May**
- Capacity & scalability limitations
  - Species and regions
  - Lit review

**May-Jul**
- Industry Vision 2028
  - Industry supported
  - Identified goals
  - Survey
  - Focus Groups

**Feb-Aug**
- Current & emerging issues
  - SWOT
  - PESTEL
  - Scenarios
  - Stage I Report

**Sep-Feb**
Project Approach

**Feb-May**
- Capacity & scalability limitations
  - Species and regions
  - Lit review

**May-Jul**
- Industry Vision 2028
  - Industry supported
  - Identified goals
  - Survey
  - Focus Groups

**Feb-Aug**
- Current & emerging issues
  - SWOT
  - PESTEL
  - Scenarios
  - Stage I Report

**Sep-Feb**
- Strategy for future growth
  - Socialisation
  - Incorporate feedback
  - ID solution providers
  - Stage II Report
  - Final Report
Methods

Data Collection

1. Excel surveys

Target respondent – organisations connected to aquaculture in Northern Australia

Purpose – gather objective production, sales, cost and employee data from specific types of organisations

Status – developed, to be circulated

2. Online survey

Target respondent – individuals connected to aquaculture in Northern Australia

Purpose – gather respondent relevant data, perception of industry challenges and opinion on where future expansion should be focused

Status – “online” as of 15th May
5 Excel surveys, tailored to:

- Producers
- Suppliers
- Industry Associations
- Education/Research Institutions
- Government Agencies
Method 2

Online Survey

1. Identify respondent’s connection to aquaculture
2. Respondent specific questions
3. Challenge rating questions (industry wide or species specific)
4. Future industry expansion questions
**Respondents**

**Online Survey**

- **120+ responses to date**
- **17 minutes average response time**

### % Total Respondents

- **Aquaculture producer/facility operator**
- **Education, training and/or research**
- **Student**
- **Government agency**
- **Service industry or supplier company**
- **Potential new entrant**
- **No connection to aquaculture**
- **Other**
- **Potential investor**
- **Industry association**

**No connection to aquaculture**
Respondents

Online Survey

Species produced:

<table>
<thead>
<tr>
<th>Species</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barramundi</td>
<td>35%</td>
</tr>
<tr>
<td>Tiger Prawns</td>
<td>29%</td>
</tr>
<tr>
<td>Pearl Oyster</td>
<td>16%</td>
</tr>
<tr>
<td>Rock Oyster</td>
<td>10%</td>
</tr>
<tr>
<td>Cobia</td>
<td>6%</td>
</tr>
<tr>
<td>Grouper</td>
<td>6%</td>
</tr>
<tr>
<td>Banana Prawns</td>
<td>3%</td>
</tr>
<tr>
<td>Redclaw</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>26%</td>
</tr>
</tbody>
</table>

Including sea cucumber, black lip oyster, milky oyster, tropical rock lobster & cherabin

Respondent Location

- QLD: 56%
- WA: 17%
- NT: 12%
- Outside Northern Aus: 15%
- Other: 56%
Please choose how you would like to answer the following challenge rating questions:

- Species specific
- Industry wide
- Do not feel qualified to respond

**Species specific responses:**

<table>
<thead>
<tr>
<th>Species</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barramundi</td>
<td>20%</td>
</tr>
<tr>
<td>Tiger Prawns</td>
<td>18%</td>
</tr>
<tr>
<td>Redclaw</td>
<td>13%</td>
</tr>
<tr>
<td>Rock Oyster</td>
<td>11%</td>
</tr>
<tr>
<td>Grouper</td>
<td>9%</td>
</tr>
<tr>
<td>Pearl Oyster</td>
<td>7%</td>
</tr>
<tr>
<td>Cobia</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>24%</td>
</tr>
</tbody>
</table>

Including giant clams, tropical rock lobsters, slipper lobsters, cherbin, ornamentals, black lip oysters, eel, seaweed, marron & sea cucumber
Online Survey

Weighted average – Industry wide challenges (all respondents)

- Power (costs/reliability)
- Labour recruitment/availability
- Environmental risks/pressures (extreme weather etc.)
- Building/infrastructure costs
- Breeding programs (absence of)
- Labour costs
- Livability/remote operations
- Transport costs
- Regulatory burden (time/cost)
- Supply chain and infrastructure
- Feed costs
- Access to capital
- Disease
- Broodstock (quality/supply)
- Fingerling, PL and/or spat (quality/supply)
- Competition (domestic and international)
- Market access and development
- Market sales price
- Stock performance
- Feed quality

Other key challenges identified by respondents:
- Business management capacity
- Red tape & bureaucracy
- Discharge limits/restrictions
- Access to technology and innovation
- Social license to operate
- Lack of suitable sites
- Biosecurity risks
- Public perception of industry
- Land ownership
- Water quality
Online Survey

Weighted average - Industry wide challenges (producers only)

- Labour recruitment/availability
- Regulatory burden (time/cost)
- Power (costs/reliability)
- Breeding programs (absence of)
- Labour costs
- Environmental risks/pressures (extreme weather etc.)
- Broodstock (quality/supply)
- Access to capital
- Disease
- Building/infrastructure costs
- Feed costs
- Transport costs
- Fingerling, PL and/or spat (quality/supply)
- Livability/remoteness of operations
- Competition (domestic and international)
- Stock performance
- Market sales price
- Supply chain and infrastructure
- Market access and development
- Feed quality
Challenge rating
Online Survey

Weighted average – Barramundi (all respondents)

Other key challenges identified by respondents:
- Differentiating product from imported product (Country of Origin labelling)
- Import regulation
- Environmental permit regulation
- Biosecurity
Other key challenges identified by respondents:
- Retention of skilled workers
Other key challenges identified by respondents:
- Staff retention
- Low pay
Online Survey

Future expansion credit allocation - % total

- Training, skills and workforce availability
- Selective breeding programs
- Research, development & extension
- Infrastructure
- Government policy and regulation
- Expanding markets
- Access to capital
- Other

Other” future expansion options identified by respondents:
- Transport subsidies
- Independent environmental impact assessments
- Reducing power costs
- Expanding biosecurity capacity and resources
- Improving reliability of power
**Online Survey**

**Future expansion**

*R&D Credit allocation - % total*

- Live/fresh transport
- Breeding and genetics
- Environmental management
- Culture water quality management
- Nutrition
- Disease management
- Automation
- Other

**“Other” R&D expansion identified by respondents:**
- Transport subsidies
- Independent environmental impact assessments
- Reducing power costs
- Expanding biosecurity capacity and resources
Workshop and Focus Groups

- Focus Groups
  1. Indigenous aquaculture
  2. Producers – prawns, barramundi, pearls, redclaw, oysters, sea cucumbers, freshwater fish
  3. Service providers – government, education, research

- Sector/region-specific:
  - Vision
  - Challenges & solutions
  - Strategic advantages
  - Opportunities for innovation
~$74M 2018

300-360 staff

~$150M 2027

> 450 staff
Project Sea Dragon

Production: 5k; 12-15k; 120-150k tonnes
Staff: 167; 334; 1,500

1. Founder Stock Centre and Quarantine Centre - Exmouth, WA
   - Where wild caught prawns will be held, tested and bred to produce disease-free stock for the production system.

2. Core Breeding Centre and Broodstock Maturation Centre, Darwin, Point Ceylon - Bynoe Harbour, NT
   - Breeding centres for the selection, development and generation of high-performing broodstock for the hatcheries.

3. Hatchery - Cunn Point, NT
   - Spawning and rearing tanks for producing disease-free post larval prawns to stock the grow-out facility.

4. Grow-Out Facility - Legune Station, NT
   - Land-based grow-out farms, water exchange and other infrastructure for growing and harvesting black tiger prawns.

5. Processing Plant - Kununurra, WA
   - Accommodation centre for workers and a processing plant to receive the harvested prawns, freezing, packaging and dispatch to the port.

Please note this is a stylised map of Project Sea Dragon and does not represent the accurate scale and location of the project facilities.

www.seafarms.com.au
## Prawn – Focus Group

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Potential solutions</th>
</tr>
</thead>
</table>
| Absence of breeding programs                   | - Collaborative industry-wide facility  
|                                                |   - Potential overseas investor  
|                                                |   - Inshore facility - biosecurity  
|                                                |   - Technical model & business plan required.                                     |
| Access to quality broodstock                   | - Alternate fishing grounds, TS, WA, NT, QLD coast  
|                                                |   - Alternate fishing methods (trapping)  
|                                                |   - Alternative transport of wild caught animals; clean stock are separated  
|                                                |   - Broodstock pond development                                                   |
| Biosecurity and disease                        | - affordable long-term diagnostic testing  
|                                                |   - quantify economic costs through endemic losses  
|                                                |   - potential for a confidential third party assessment of biosecurity impacts on individual farms and overall industry. Use to evaluate industry productivity. |
~$100M
2019

~$200M
2025
Project contacts

James Cook University – Jennifer Cobcroft jennifer.cobcroft@jcu.edu.au

CSIRO – Simon Irvin Simon.Irvin@csiro.au

Blueshift Consulting – Rob Bell rob@blueshiftconsulting.com.au and Roger Barnard roger@rmbaqua.com

Indigenous Land and Sea Corporation – Kylie Penehoe Kylie.Penehoe@ilsc.gov.au and Michael Davis Michael.Davis@ilsc.gov.au

Australian Barramundi Farmers Association – Jo-Anne Ruscoe info@abfa.org.au

Australian Prawn Farmers Association – Kim Hooper kim.hooper@apfa.com.au

NT aquaculture advocate, Darwin focus groups – Matt Osborne Matthew.Osborne@nt.gov.au

Northern Territory Seafood Council – Katherine Winchester ceo@ntsc.com.au

QLD aquaculture advocate, Townsville focus group – Nigel Preston

WA aquaculture advocate, Broome focus groups – Andrew Beer andrew.beer@kdc.wa.gov.au
The authors acknowledge the financial support of the Cooperative Research Centre for Developing Northern Australia and the support of its investment partners: the Western Australian, Northern Territory and Queensland Governments. We also acknowledge the financial and in-kind support of the project participants.