



Pacific Reef Fisheries (Australia) Pty Ltd

**PO Box 2200 SUBMISSION NO. 43
AYR QLD 4807 Inquiry into the Role of Science
for Fisheries and Aquaculture**

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The House of Representatives Standing Committee on Agriculture, Resources
Fisheries and Forestry

Inquiry into Fisheries and Aquaculture Science

Submission from Pacific Reef Fisheries

Introduction- Pacific Reef Fisheries welcomes the inquiry and hopes the Federal Government can use this opportunity to match the current science associated with fisheries and aquaculture to more streamlined decision making processes that is in line with risk and not tied only to precautionary principles.

In summary Pacific Reef Fisheries submits that:

-The Australian Prawn Farming Industry has been in operation for about 26 years, this incorporates 26 operational farms from Mossman in the North to Yamba in the South, the industry currently produces around 4000 MT annually worth about \$60M to the Australian economy and employs about 300 FTE mostly in regional parts of Queensland.

-PRF acknowledges that whilst Australian fisheries are amongst the best managed in the world few if any individual fisheries are listed as under fished and therefore limited capacity exists for growth in this sector.

-Australia now imports around 74% of its seafood and exports have fallen considerably, figures from the Australian Bureau of Agricultural and Resource Economics and Sciences show Australia's prawn exports fell from 9396 MT in 2003-04 (worth \$160M) to 4959 MT in 2009-10 (worth \$61 M), whilst during the same period our imports went from 24 448MT to 34 460 MT, (now worth \$299 M). Most of this coming from Sth East Asia (China, Thailand and Vietnam notably). During this same period China, which accounted for 62 % of world seafood supply, mostly through aquaculture production also became a net importer of seafood, so how long Australia can rely on Asia to meet its seafood needs remains to be seen.

-Much of the seafood imported into Australia does not meet the same standards for food safety this includes antibiotic residues etc, as well as this there is still a risk of exotic diseases entering our ecosystems through imports.

-Despite there being a considerable opportunity for the prawn farming to expand, no new prawn farms have been built in Australia for the past 13 years, and not 1 new aquaculture venture has ever made it through the EPBC act process and been built in Queensland, despite Pacific Reef Fisheries' endeavours to get a license for a significant new prawn farm of 260 Ha at Guthalungra near Bowen in North Queensland, this disastrous approval process has been going on for more

than 12 years and continues to this day adding millions of dollars in delays and compliance cost. This is against a backdrop of a country like Australia which has the lowest aquaculture intensity of any country in our region and is in spite of the fact that Australia's environmental standards are widely recognized as the highest in the world. To the point where the outcome sought for the Guthalungra Aquaculture project by the Federal Government (SEWPAC) is for a zero net discharge of nutrients, a standard not applied to nor ever attempted by any other aquaculture venture in the world.

-In 2004 a review of the environmental regulatory arrangements for aquaculture in Australia, commissioned by the Productivity Commission (2004), concluded that aquaculture is subject to an unnecessarily complex array of legislation and agencies. Nothing has changed in the ensuing time, in fact if anything the situation has worsened.

-Our industry has been proactive in pursuing outcomes through scientific research, development and extension. In fact the Australian Prawn Farming industry has had an R&D levy since 2001, whereby \$0.034 cents is collected from all producers for each kilogram of prawns produced, this has resulted in over \$1M dollars being collected and through the multipliers of the CRC and FRDC has resulted in over \$5M in targeted RD&E for our industry. The Australian Prawn Farming Industry through its highly reputable research partners, which includes the likes of AIMS, CSIRO, FRDC and more recently a number of universities have been piling their resources into improving efficiency and environmental performance, (not to mention production technologies, husbandry and selective breeding programs) having produced more than 50 peer reviewed papers on environmental performance alone, (see attached). Clearly though the process of transferring this science into policy has been highly politicized and despite the good work done, standards achieved etc, the current policy stance by our regulators does not reflect the science or the associated risks. The policy position continues to be shrouded in green politics and seems to constantly default back to precautionary principles. This is despite the fact that the research clearly shows that existing farming operations over time frames in the decades has been shown to have had no lasting or adverse environmental impacts over their years in operation.

-The current licensing regime is outdated, unnecessarily complex and is not reflective on what an operations impacts are on the environment is likely to be. The present system relies solely on concentration limits which do not take into consideration the impacts of upstream uses, rarely, if ever, are these activities required to meet the same guidelines. As an example, for the current farm I manage, the water quality at our intake point does not meet our discharge license for periods of up to 4-5 months each and every year for total Phosphorous and total Nitrogen and yet we currently get no concession for this.

-I do not like to type such a submission without also listing some solutions. Clearly politicians have to stand up to our regulators and allow the science to find its way into concise policies that truly reflect the level of associated risk. As part of this process we believe and Aquaculture Act (QLD) may be necessary in removing some of the current licensing duplications across agencies. The current legislation such as the EPBC and GBRMPA acts, for instance are clearly linked to

conservation (precautionary principles) and do not define clear pathways, particularly for established industries. This has led to an ad-hoc approach and extended time lines have allowed files to travel across many people's desks often now separated by decades, this process also needs to be time bound.

-One of prawn farming's really strong points in achieving environmental as well as food security outcomes is that mariculture is a drought proof activity that competes with very few other users for land. Ponds tend to be built in marginal coastal areas, and obviously clean seawater is one of Australia's most abundant and under-utilised resources. Clearly this needs to be embraced as a truly wonderful opportunity for regional and economic development. I would recommend that in the not too distant future that a survey be again conducted on suitable areas for aquaculture around Australia's coast, an aquaculture zoning map! Part of this process clearly needs to be public education/awareness. FRDC for the first time this year has been directing some of its research budget to public education, realising that public opinion is what largely drives broader opinion and political outcomes. As a 25 year aquaculture professional i have had heard on many occasions some of the anecdotes being used to compare our industry to those of some of our less aware neighbouring countries, i believe Australia should be held up as a shining example of what smart science, sound environmental performance and world leading husbandry and production technologies can achieve.

-The licensing regime for both state and federal regulators should be based on loads and not purely on concentration limits. This regime not only recognizes intake water quality but also encourages licensees to be proactive in reducing water use and also in applying water treatment and remediation practices as well as water reuse. This is an important principal as aquaculture effluent waters are by waste water standards very dilute and therefore under current licensing arrangements do lend themselves well to traditional waste water treatment technologies.

I thank you for this opportunity to submit both on behalf as myself as General Manager of Pacific Reef Fisheries and also as President of the Australian Prawn Farmers Association.

Yours Sincerely

Alistair Dick.

The environmental management of prawn farming in Queensland – worlds best practice

Research Summary

The environmental management of prawn farming in Queensland – worlds best practice

The emergence of prawn farming as an economically successful industry in coastal regions of Queensland over the past two decades prompted a comprehensive, multi-disciplinary study of intensive prawn pond ecosystems, their ecological impacts on downstream environments and the development of cost-effective effluent treatment systems.

The seven year study (1995-2002) focussed on the largest prawn farms in Queensland and New South Wales throughout the production cycle for several successive years. The study encompassed a range of latitudes, discharge environments (e.g. tidal creeks and estuaries) and both flow through and recirculating water management systems.

The study integrated the research skills of 30 scientists from several institutions including CSIRO, Australian Institute of Marine Science, University of Queensland, Queensland Department of Environment and Heritage, New South Wales Environment Protection Authority, Griffith University, University of Sydney, University of Technology, Marine and Freshwater Resources Institute, Victoria and the University of Maryland, U.S.A.

The multidisciplinary study was the most comprehensive analysis of the environmental management of prawn farming ever conducted. The team developed rigorous techniques for sampling eutrophic pond ecosystems including sediment and water column nutrients and microorganisms, pond biota and abiotic variables. The application of enriched isotope nutrient labeling techniques, pioneered by the team, permitted the first accurate quantification



of the fate of feed nutrients in an intensive prawn farming system and downstream from the farm. The integrated approach adopted throughout the study also permitted the team to produce a multi-author synthesis of the dominant ecological processes in intensive shrimp ponds and adjacent coastal environments. Beyond developing a quantitative understanding of these processes the team analysed pond effluent composition and designed a cost-effective effluent treatment system based on sedimentation processes. The introduction of settlement ponds has also provided industry the opportunity to recapture water nutrients using natural biological filters.

The results of the project have been communicated via 42 refereed scientific publications and four final reports (see references).

The key elements of the study were:

- prawn pond sediment and nutrient processes (*references 1-22*)
- composition of prawn pond discharges (23)
- discharge treatment systems and environmental management (23-29)
- receiving waters - assimilation and monitoring (30-40)
- synthesis of pond processes and environmental management (41-45)
- aquaculture land use planning (46).

The key outputs of these studies were:

- Prawn pond sediment and nutrient processes rigorously quantified and modelled (1, 18)
- Pond discharge composition rigorously quantified (22, 23)
- Published the first synthesis of the dominant ecological processes in ponds and adjacent coastal environments (30)
- In collaboration with industry, designed and implemented cost-effective treatment system based on sedimentation processes (24, 25, 27).

Outcomes and implications:

- All Australian prawn farms use environmental management practices, including discharge treatment systems, which enable them to meet world best practice discharge water quality.
- Progressive advances in treatment systems and practices have enabled some farms to increase their total production area with no net increase in sediment and nutrient loads discharged into receiving waters.
- Increasing production area without increasing sediment and nutrient outputs has been achieved by increasing the area of treatment ponds (in some cases up to 35% of the total pond area). There is a major opportunity to develop the next generation of discharge treatment technology to reduce the required area of treatment ponds.
- The prawn farming industry has achieved an effective balance between economic gains and conserving ecosystems, including the world heritage listed Great Barrier Reef.

- With these operating practices and regulations in place, there is significant opportunity for the industry to expand without compromising the economic and environmental sustainability of the industry.
- Broad scale desktop analysis identified 594,000 hectares of potentially optimal pond aquaculture land along the Queensland coast that would not compromise the environmental standards for the region (46).
- A fine scale land use modelling case study that enabled the expansion of an existing prawn farm adjacent to the Logan River, optimising the economic benefits of land use in the regions with no increase in nutrient or sediment discharges to the Logan River (commercial in confidence).
- For example an increase from the current 717 hectares of prawn ponds, producing 2,940 tonnes valued at \$40 million to 5,000 hectares of ponds producing 30,000 tonnes valued at \$400 million - would correspond to less than 1.4% of the existing sugar cane production area. The 5,000 hectares could be located within any of the 594,000 hectares of potentially suitable land between the border of New South Wales and Northern Territory border (a total distance of 13,347 km).



Scientific publications and reports - Prawn pond nutrient process, downstream impacts and environmental management options

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