



**Environment Centre NT**



**Aquaculture bonds in the Northern Territory**

***A summary of the issues for the Ministerial Advisory Committee on Aquaculture in the Northern Territory.***

18<sup>th</sup> November, 2003



Eel aquaculture facility, Taiwan.

Photograph: Australian Institute of Marine Science.

*As can be seen in the photograph above, aquaculture projects significantly alter the natural landscape and have many impacts on the surrounding environment. So what safeguards are in place to ensure the mess is cleaned up when project operators walk away?*

## Aquaculture bonds in the Northern Territory

***Bond and surety schemes are applied to ensure the minimisation of environmental damage. Under these schemes, funds are set aside at the outset of operations to guard against environmental degradation and associated community costs. The funds are returned to the operator at the expiration of the permit, provided the environmental standards set out in the permit are met. If the operator goes out of business or fails to meet the conditions of operation and environmental standards required, the funds would instead be used to rehabilitate the area.***

Here in the Northern Territory, as in other areas of Australia and the world, there exists a history of aquaculture ventures collapsing shortly after establishment. Consequently the projects are abandoned representing risk to neighbouring habitats with the taxpayer then left to pick up the tab for rehabilitation, if, in fact, rehabilitation is carried out at all. This is unacceptable and aquaculture project developers should be required to lodge a rehabilitation bond for all such developments. Without a rehabilitation bond Government and Industry are failing to safeguard the public interest.

Aquaculture production of prawns is used for majority of analysis in this paper due to it being a significant area of concern and availability of information. Associated with the rapid increase in the production of cultured prawns has been large scale conversion of natural environments to prawn pond. Production in many regions, including the Northern Territory, has proven to be unsustainable and many ponds are consequently left unproductive and lie idle. Accurate assessments of pond misuse are difficult to obtain, however, unofficial estimates have suggested that as many as 70% of ponds may be disused after a period of production on a global scale<sup>1</sup>.

Briggs and Funge-Smith (1994)<sup>2</sup> were amongst the first to highlight this matter in a report to the British Overseas Development Administration (now Department for International Development). Other reports have emerged since then highlighting a pattern of abandonment:

- Chronic disease and water quality problems have caused “significant” pond abandonment,
- Disease problems have caused abandonment in India, the Philippines, Taiwan and Thailand
- Poor water quality and poor site selection have caused production failure in Sri Lanka and Indonesia.
- Problems with acid sulphate soils (ASS) has caused abandonment in Vietnam and Cambodia
- These problems often lead to financial difficulty, causing farmers to either sell or abandon their farms.
- Ponds may also be left idle due to a drop in profits or yields or political intervention, for example the revoking of lease or licence agreements.

*Sited in Stevenson et al, 1999.*

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<sup>1</sup> Stevenson, N.J., Lewis R.R., and Burbridge P.R. 1999. pp 3. Disused Shrimp Ponds and Mangrove Rehabilitation *in* *An International Perspective on Mangrove Rehabilitation*. Streever, W.J (ed). Kluwer Academic Publishers

<sup>2</sup> Briggs, M.R.P. and Funge-Smith, S. 1994 Unsustainable shrimp culture – causes and potential solutions from experience in Thailand *in* *Development of strategies for sustainable shrimp farming*. Report to the Overseas development Administration, Research Project R4751. Appendix 1. Stirling, UK.

Though many pond operators attempt alternative income generating activities in disused ponds, these have often proven to be unsustainable, unsuccessful, and may even contribute to further habitat degradation. <sup>3</sup>Examples include sale of topsoil for construction projects, attempts at blood cockle and mussel mariculture in Thailand, and seaweed culture in the Philippines (which have failed for unknown reasons).

Many efforts are currently underway to improve the sustainability of the prawn aquaculture industry. However, until sustainability is achieved, we will continue to see the development of disused and unproductive ponds. Even if the industry were to achieve sustainability today, disused ponds would still remain, as would the ecological problems they create<sup>4</sup>.

## Environmental impacts

Stevenson (1997) states that the environmental effects, on and off site, remaining after clearance, operation and abandonment may include:

- Coastal water pollution: sediments, dissolved inorganic and organic constituents and principle nutrients;
- Salinisation of soils, agricultural land, and groundwater
- Nutrient enrichment;
- Discharge of undesirable chemicals;
- Depletion of soil organic matter through run-off, leaching and mineralisation;
- Activation of Acid Sulphate Soils- acidic water that results from acid sulphate soils destroys food resources, displaces biota, releases toxic levels of aluminium, and precipitates iron that smothers vegetation and microhabitats and alter the chemical properties of the water;
- Deforestation;
- Reduction of Habitat;
- Increased coastal erosion;
- Reduction of shoreline protection;
- Weed infestation;
- Introduction of diseases and exotic species;
- Accelerated soil erosion due to increased surface run-off and subsurface flow;
- Decrease in soil water storage capacity; and
- Reduction in biodiversity of soil fauna.

Disused ponds are likely to be unstable and actively deteriorating and may represent a risk to neighbouring habitats, and unless managed may become progressively more difficult to rehabilitate or restore<sup>5</sup>.

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<sup>3</sup> Stevesen1, N.J., Burbridge, P.R. and Muir2, J.F. Shrimp Pond rehabilitation: options for alternative income generation. Abstracts for rehabilitation workshop.web site accessed 09/10/03  
<http://www.ncl.ac.uk/tcmweb/rehab/abstrac1.htm>

<sup>4</sup> Stevenson, N.J., Lewis R.R., and Burbridge P.R. 1999. pp 3. Disused Shrimp Ponds and Mangrove Rehabilitation *in* *An International Perspective on Mangrove Rehabilitation*. Streever, W.J (ed). Kluwer Academic Publishers.

<sup>5</sup> Stevenson, N.J. 1997. Disused Shrimp Ponds: Options for Redevelopment of Mangrove *in* *Coastal Management* 25:425-435. Centre for Tropical Coastal Management Department. University of Newcastle, UK.

## **Where to from here.**

Varied models exist for management, regulation and environmental maintenance of aquaculture projects (and other) using bonds and surety schemes. It is the responsibility of the Northern Territory government to investigate and analyse these differing models and design a system which works best for the Northern Territory environment, community and aquaculture industry.

For examples of activities of other Australian states go to:

- Primary industries and Resources, South Australia.  
Aquaculture Lease, particularly Section 24.  
[www.pir.sa.gov.au](http://www.pir.sa.gov.au)
- Robinson, J.J. and S. Ryan. 2002. A Review of Economic Instruments for environmental management in QLD.  
[www.coastal.crc.org.au](http://www.coastal.crc.org.au)
- NSW Fisheries.  
Fisheries Management (Aquaculture) Regulation 2002, Section 19.