



Referrals Section (EPBC Act)
Approvals and Wildlife Division
Department of Environment and Heritage
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Submission on Northern Territory fish farm and aquaculture environmental assessments

The Environment Centre NT (ECNT) and the Australian Marine Conservation Society (AMCS) have prepared the following comments in response to a number of proposals for fish farms and other aquaculture developments that are either undergoing assessment or are in preparation in the NT. Our submission outlines the adverse impacts of aquaculture and comments on the various aquaculture proposals in existence for the purposes of assessments under the Commonwealth Environmental Protection and Biodiversity Conservation (EPBC) Act 1999 and under the Northern Territory environmental impacts assessment process.

Principally, we are expressing great concern about these projects and the environmental assessment process relating to them.

Current major proposals include sea cages at Bynoe Harbour, Darwin Harbour and the Tiwi Islands (Snake bay). See details below. A detailed response to the Darwin Harbour project will occur at a later date when more information on the proposal is available.

- **EPBC referral Ref no. 2005/2149 Marine Harvest/Aquaculture/Port Patterson/NT/Port Patterson Barramundi Sea Cage Farm Invitation for Public Comment on Referral.**
- **EPBC referral Ref no. 2005/2150 Marine Harvest/Aquaculture/Melville Island/NT/Snake Bay Barramundi Sea Cage Farm Invitation for Public Comment on Referral**
- **Leuken Enterprises expression of interest to develop sea cage aquaculture in Darwin harbour.**

Introduction

For good reasons aquaculture has gained an international reputation as an environmentally destructive industry. Regardless of technological progress, the industry has inherent environmental problems and requires stringent regulation. This regulation is currently lacking in the Northern Territory and the Fisheries Act is totally inadequate in its specific Aquaculture content. Past NT experience, e.g. Shoal Bay prawn farm; Port Hurd Barramundi Sea cages, raises serious concerns about the handling and assessment of proposals for fish farms and aquaculture developments in the NT.

Fish farms and aquaculture developments have many significant environmental issues, and those matters should be addressed at every level, including overall government policy, legislation and regulation, impact assessment and approval, and ongoing monitoring and compliance enforcement.

The Aquaculture industry in the Northern Territory is expanding rapidly and in advance of adequate environmental and public health safeguards. In the NT it is a potentially high risk experimental industry. There is no management plan of any form for the aquaculture industry in the Northern Territory. Large scale developments are proposed in one of the most valuable yet fragile environments - the coastal zone.

The NT government's aquaculture development plan *Farming the Future 2010* does not adequately address environmental and community requirements. Of the 9 objectives outlined in the plan only one mentions the

environment, and of the 35 strategies outlined only two mention the environment. This minimal level of environmental consideration clearly demonstrates that serious environmental issues associated with aquaculture are being overlooked.

Policy overhaul needed

There is a lack of any overall policy and strategic planning in relation to fish farms and other aquaculture in the NT. This gives rise to grave concerns that the industry will continue to grow in a piecemeal, poorly regulated, profit driven manner with serious implications for the environment, the community, and ultimately for the industry itself.

Legislation

ECNT believes that all fish farm and aquaculture proposals should automatically require formal public environmental impact assessment under the Environment Assessment Act (NT). Furthermore, the limited existing NT fisheries legislation needs to be substantially overhauled to better protect all marine environments in the NT from the various and increasing impacts of industrial development including fish farms and aquaculture. The costs of administering, monitoring, auditing and publicly reporting on the fish farm and aquaculture industry need to be fully accounted and recovered from the industry.

Rehabilitation Bonds

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

Conservation Position

ECNT and AMCS are strong advocates for the pursuit of environmentally and socially sensitive aquaculture developments in the NT. These systems should be locally owned and operated. They should be land-based, located on already disturbed lands and be strictly closed system.

It is our strong view that sea cage aquaculture development is environmentally and socially inappropriate. They are high risk ventures with high economic risks, social impacts when they fail, and substantial environmental impacts.

We believe that in light of all the well-documented problems associated with 'open' fish farms and aquaculture developments, only 'closed loop', non-polluting, on-land aquaculture facilities that do not release pollutants into the sea or rivers should be considered. Further feed regimes and sources need to be reconsidered and move towards non-carnivorous farmed species.

Impacts

There are many documented environmental, health, social and economic impacts and risks associated with the proposed sea cage aquaculture projects, especially as they are 'open' system farms dumping waste directly into the marine environment. Impacts include:

1 Feed- feed for aquaculture farmed animals is made up of fish meal and fish oil. This fish meal and fish oil is comprised in majority of wild fish from ocean fisheries. Anywhere from 2kg -12kg of wild fish are caught to produce 1kg of aquaculture farmed animal. Farming carnivorous animals results in a net loss of fish protein and does not replace fishing of wild fish stocks, but in fact results in more wild fish and bycatch being harvested from oceans – this is unsustainable farming technique. If aquaculture is to be sustainable alternative species must be considered, such as herbivorous species, filter feeders, plant species, in addition to integrated polyculture systems. Only non-carnivorous species should be farmed or feed should not be sourced from wild caught fisheries.

2 Pollution

Fish farms can be major sources of waste and nutrient pollution in the marine environment. Sea cages directly discharge nutrients, waste products, chemicals and antibiotics into the marine environment without any form of treatment. Wastes directly input into the marine environment at the proposed Bynoe Harbour project include artificial feed that is not consumed by stock, fish faeces, chemical parasite control treatment, antibiotics and human waste from staff occupation on site.

It is stated that this human sewage is to be disposed of in accordance with NT legislation. This is not reassuring in the least as NT legislation allows raw sewerage to enter marine environments.

Further, the risk posed by fuel and chemical spill is considered to be serious. A spill would have devastating effects on the surrounding environment and is thus unacceptable.

3 **Insufficient science**

There is insufficient scientific information and research about the marine life in both the Snake Bay and Bynoe Harbour areas and the ability of the natural systems to assimilate nutrients. There is very little documented environmental information on Port Patterson and Bynoe Harbour and there is little or no scientific literature on environmental factors to consider such as fish, molluscs and soft or hard corals. There is very little or no documented information on Snake Bay. Further, the proponents have not conducted any survey work.

4 **Impacts on threatened and migratory species, including turtle and dugong**

There is 13 threatened and 31 migratory species listed for the Bynoe Harbour fish farm area. 11 threatened and 19 migratory species are listed for the Snake bay fish farm area- this is a very large and significant number of species. It is highly likely that turtle and dugong will be significantly and adversely impacted upon in Bynoe Harbour and the Snake Bay area.

Internationally significant populations of green and hawksbill turtles forage in the region of the proposed sea cages and in adjacent areas. Flatback and Olive Ridley sea turtles nest in the region at Bare Sand and Quail islands and also at Indian Island (immediately adjacent to the proposed sea cage location). All four turtle species are listed under the EPBC Act 1999. Dugongs occur in the proposed lease area (also listed under the EPBC Act), particularly around Turtle, Indian and Bare Sand Islands. Seagrass beds occur around the top of Indian Island at the intertidal and subtidal interface with seagrass being the primary food source for dugong.

Likely specific impacts for the Port Patterson proposal include:

- Sea cages attract predators to the area. This may result in an increase in predation of turtles.
- Lighting associated with the operation will attract hatchlings in the area. Survival chances would then be close to nil, either from predation or from using up their energy reserves before they reach open water.
- Disturbance is a major issue for sea turtles and dugongs. Increased disturbance may impact turtle and dugong in the area. Dugongs are shy animals and continuous disturbance will cause dugongs to move away from an area on a permanent basis.
- Increased nutrients may affect the algal and seagrass balance and the species composition within these groups and therefore affect (possibly decrease) food availability for turtles and dugongs.
- Boat strike: Increased boats in the area could increase injuries and deaths from collisions with dugongs and turtles.

(Dr Scott Whiting pers. Comm.)

Information for the Snake Bay area was unavailable at the time of writing this submission.

Inappropriate locations – Snake Bay, Tiwi islands and Port Patterson, Bynoe Harbour.

The Tiwi Islands have been recognized as being of international significance for their natural values and also have been identified as a 'Conservation Hotspot' in the Draft NT Parks and Conservation Masterplan (DIPE 2005). At the Tiwi islands 18 fauna species are listed as endangered or vulnerable, 8 subspecies of birds and 2 subspecies of mammals are regarded as endemic, as are 10% of the recorded ant species. In addition, 51 species (of which 41 are birds) are listed under international conventions for the protection of migratory species. Siting of further industrial fish farms will incrementally impact on the values of the Tiwi Islands.

Bynoe Harbour attracts locals and tourists alike due to its pristine state. Port Patterson contains some of the NT's best quality reefs.

Bynoe Harbour is currently used for recreational and commercial purposes. Recreational uses include fishing, sailing and diving. Commercial uses include tourist operations, pearl farming and mud crabbing. Apart from natural disturbance caused to the harbour vegetation from periodic cyclones, the clearing of mangrove vegetation has not been significant. Water chemistry is regarded as essentially natural. The harbour has a high conservation value due to its relatively intact state. Present threats to the fisheries and conservation values are regarded as low. No significant potential sources of pollution have been identified. Foreshores are sparsely developed with the exception of increased rural block development on the southern side of the harbour (eg. Dundee Downs).

From: *Mangrove Survey of Bynoe Harbour, Northern Territory technical report. July 2003. DIPE/NT Government.*

Bynoe Harbour is in pristine condition and is of high conservation value. If sea cages are introduced into Bynoe Harbour its pristine, or 'essentially natural' status will be removed, its current high conservation value ecosystems

will be affected, the current low levels of threats will need to be revised, and, especially if 'open' fish farms are approved, it will no longer be free of pollution. Overall values of Bynoe Harbour will be reduced.

The proposed site is adjacent to the Indian Island conservation reserve. There is potential for the proposed project to impact upon the natural values of this reserve.

Further, Bynoe Harbour is a proposed Marine Park. Sea Cage fish farming should not be permitted in a Marine Park.

Inadequate monitoring of environmental impacts

For the Bynoe Harbour proposal it is proposed that the monitoring program will be 'visual observations by operational staff'. It is presumed that it is the same for Snake Bay. This is completely inadequate and demonstrates ignorance of duty of care. A comprehensive monitoring program undertaken by an independent and expert body needs to occur.

Other general impacts of sea cage aquaculture

- Potential modification to hydrological conditions, e.g. current flows.
- Potential introduction of new diseases and parasites.
- Other potential impacts on water quality due to deaths, disease outbreaks, poor harvesting strategies, etc.
- Pollution of marine environment and contamination of human consumers through chemicals (e.g. anti-fouling chemicals; pesticides used on weeds, algae and parasites) and antibiotics.
- Killing of marine faunal wildlife including seabirds and sharks.
- Use of sea scarers interfering with marine mammals.
- Loss of habitat for seabirds, migratory waders, shorebirds and other species due aquaculture maintenance and infrastructure works.
- Possible culling of natural predators.
- Possible impacts on wild fish stocks as a result of their use for stock food.
- Possible loss of Marine Protected Area options, e.g. Bynoe Harbour.
- Potential for escapes leading to spread of disease and feral species into wild populations and environments.
- Loss of remoteness, naturalness and aesthetic values and associated tourism values.
- Creation of noise and odour nuisance.
- Potential impacts on other users of the marine environment including Indigenous communities.
- Possible introduction of genetically modified fish, or use of GM fish feed – this must not be allowed under any circumstances.
- Possible impacts of sourcing broodstock from wild populations, and selectively breeding fish with a very narrow genetic variation, which may in turn escape into the wild.
- Displacement of wild populations. Escaped farm fish can reduce the viability of wild populations of the same species or other fish species.
- Depending on the overall growing environment, the type of feed used, the use of chemicals and antibiotics, and other factors, the fish or prawns produced from fish farms and aquaculture projects may not have the health benefits claimed, or may in fact have harmful effects on human health.
- The proliferation of fish farms and aquaculture ventures could quickly lead to an oversupply of low quality, homogenised product, undermining the viability of the industry very rapidly (as per NT mangoes).
- Disturbance of acid sulfate soils (ASS)

Information in the referral form

In the Bynoe Harbour proposal referral form the proponent fails to adequately address the following issues within the referral form:

- There is no information on volumes of excess feed and fish faeces entering the environment
- Noise and other disturbance activity impacting on marine life are inadequately addressed – this has great potential to have very significant impact on threatened species, particularly turtle and dugong.
- Does not adequately address escapees risk – we understand that in the serious cyclone in January 05 the fish farm at Tiwi island lost 30% of its stocks. It is expected that losses will be similar in storm events – this is not addressed.
- The serious concerns relating to chemicals and antibiotics entering the marine environment is not addressed.
- Potential impacts that would result from a fuel or chemical spill are not addressed.

Conclusion

As with other forms of intensive, industrialized food production, there are many risks and potential negative impacts associated with fish farming and aquaculture. Instead of pursuing this form of fish or prawn production, more emphasis should be placed on developing locally appropriate versions of integrated, holistic production systems. In the meantime, ECNT and AMCS recommend that only 'closed loop', land-based, non-polluting systems be approved for the unique, highly valued and largely pristine marine environments of the NT. Further,

feed regimes and sources need to be reconsidered and move towards non-carnivorous farmed species required by regulation.

The Northern Territory's coastal zone, including Snake Bay and Bynoe Harbour, is far too precious to the community, economy and nature itself to be exposed to inappropriate aquaculture development. These local values are far too important to risk.

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