

Pearl Oyster Industry

Environmental and social impacts of the pearl industry

Divers collect pearl oysters from the wild by hand, so very little environmental impact occurs because there is no bycatch or destructive methods used. Pearl harvesting is done under a quota system, and in the Northern Territory only a fraction of the allowable sustainable catch is harvested in years when wild shell fishing is done. Safety standards for divers in the pearl harvest industry are far more strict than standard professional diving codes of practice to minimise risks. All pearl divers operate under a strict code of practice that is developed by industry to account for the specific conditions in which pearl oysters are collected. Licence conditions only permit commercial catch of pearl oysters and no other species are permitted for commercial sale.

Pearl oyster hatcheries are land based operations that spawn selected pearl oyster stock and rear the larvae through to the stage when they settle on surfaces and are called spat. Spat produced are then stocked into the farming systems. Hatcheries are run very carefully to ensure best health and survival of the larvae. Discharge from hatcheries is done in a way that removes wastes from the water before it goes into the sea. The pearl oyster juveniles are fed algae grown on site, and the amount fed is carefully monitored. Discharge water is filtered and/or sterilised. Hatcheries operate seasonally and have periods between production cycles when everything is cleaned and dried to reduce risk of diseases. It is a condition of operation that if any unusual mortalities are found that they are reported to NT authorities and samples taken where possible. The event is investigated to determine the probable cause. To date no significant infectious disease events have occurred in hatcheries or farms in the NT.

Studies of the impact of pearl farming in Australia have shown no measurable changes in the fauna beneath pearl farms. As there are no inputs of food or other substances in the farms there is no measurable pollution. Shells and panels are often cleaned using a high pressure hose to wash off the biofouling that grows on the surfaces of anything hanging in the water. As this material is the same as what lives on the bottom it does not cause changes to the communities below. Some of it is eaten by fish before it gets to the bottom.

All pearl farms have an Environmental Management Plan (EMP) in place as part of their licence conditions. The EMP cover all aspects of the operation to ensure that procedures are in place to minimise environmental risks and ensure health and safety of staff, pearl oysters, and the environment.

Fisheries expects pearling lease holders to work with Traditional Owners to ensure they use that areas that are of interest to traditional owners in accordance with the wishes of those people. Both pearling companies in the NT have good relationships with the local people, particularly the traditional owners of country adjacent to pearl leases. All pearl farm infrastructure is in the subtidal zone, in waters that are at least 10m deep.

The presence of pearl farms does not block public passage across leased areas. All active lease areas are marked with reflective buoys. Ropes are suspended from floats to minimise risk of propeller entanglement but avoidance of active lease areas is encouraged by fisheries.

Genetic studies have indicated that there is connectivity between Australian pearl populations in the NT and WA, but that these populations are quite distinct from populations in Indonesia. A study completed in 2002 said 'The *P.maxima* data here indicate extensive gene flow and large effective population sizes that suggest no need to manage stocks separately, or to have concerns about moving genetic stocks from one place to another, at least within Western and Northern Australia' (FRDC project 97/344). An earlier study suggested that translocation of pearl oysters from WA onto a farm site in the NT had no detectable impacts on stocks in nearby waters.

Pearl operations are often in remote areas so the nearest local communities benefit from pearl companies sourcing some supplies and services from them. Substantial investment and business generation in the NT occurs through aviation and shipping and associated supply and maintenance activities associated with pearl farming. Pearling provides significant employment opportunities in various sectors including science, diving, cooking, vessel handling, building, transport, mechanical and building trades. Some additional activities involving a low volume tourism element may be considered in future.

Pearl aquaculture sites are over mud bottom areas with a surface layer of invertebrates (sponges, sea squirts, hydroids) that are not affected by the pearl oysters suspended above. The work vessels do not anchor on site so sea bed disturbance is minimal as only two points per line anchor it to the sea floor. Lines are well separated in the water to permit adequate water flow and movement of panels in the strong currents where pearls grow best. Floats hold the lines well above the sea floor so there is no action of ropes to disturb sea floor life.

There is a small risk of entanglement of marine mammals and reptiles in pearl farm infrastructure. No entanglements have been reported to NT Fisheries on pearl farms in the NT. In the NT, whales have not been observed near pearl farms. Sea turtles are common in pearl farming areas but do not appear to get entangled in the ropes holding the panels. Dugongs are also in these areas but the pearl farms are not above seagrass meadows that are used for feeding by dugongs and turtles. As the areas are remote and speed of response is critical, the companies involved may free entangled animals if it is safe and practical to do so. Staff will conduct a risk assessment before attempting any action on an entangled animal, and staff safety is paramount. Any interactions with marine megafauna must be reported to the environment department.

Environmental Management Plans require that equipment that has broken free (e.g. rope, floats) or rubbish are collected regularly off local beaches. Most material is re-used for a variety of purposes, but the remainder is stored on site for eventual removal to the mainland. All liquid waste including oils etc. is stored on site and removed to mainland recycling and dumping sites. All land-based operations are managed to keep them clean work areas, with biosecurity managed to minimise risk of introduction of exotic species. Food wastes are composted on site. Management of on site camps is in compliance with local government and environment agency regulations. The annual audits have found that all camps are well managed with minimal disturbance to the environment.