

Submission to the Select Senate Committee on Aquaculture in Northern Australia

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At the Select Committee public hearings held in Townsville on the 26th August 2016, the Chair of the Committee requested a submission outlining the national benefits of an Australian Research Council (ARC) project involving James Cook University (JCU) and the Australian pearling company Atlas South Sea Pearl. The request was based on a claims made to the Select Committee in Perth by a Western Australian pearling company to the effect that the use of public funds (via the ARC) was inappropriate given that Atlas South Sea pearl operates offshore. After discussion at the hearing in Townsville it was agreed that a submission would be provided by JCU to clarify the project benefits.

JCU formed a collaboration with Perth-based Atlas South Sea Pearl in 2004, through which they successfully applied to the ARC through the Linkage Grant scheme to undertake R&D into the genetic basis of pearls. This project ran for 3 years and was the first globally to determine which pearl quality and oyster growth traits had a heritable basis (could be selectively improved), and what effect genotype by environment would have on the realisation of genetic gains. The project also sought to develop a DNA pedigree suite of markers, and determined how genetic diversity was lost through production. The R&D assisted the company establish their foundation stocks. A second project was funded by the ARC in 2008, which extended work into using molecular genetics to develop a genome map for the species, along with attempting to identify genes associated with pearl traits. In 2013 a further grant was awarded to develop procedures based around genomic selection for the silver-lipped pearl oyster. The ARC contribution over 10 years has been \$1,351,943, leveraged from \$2,812,889 (cash and in-kind) provided by Atlas South Sea Pearl.

The three projects have resulted in a significant national benefit to Australia. Firstly, the research findings have been widely disseminate, having been published in scientific journals, presented at conferences and through the public media. The first two projects have produced 19 peer-reviewed scientific articles and more will be delivered through the third project. These articles have informed the broader Australian pearling industry and helped the industry move towards selective breeding.

The projects have also delivered postgraduate training, with four PhD and two MSc graduates now working in the aquaculture industry. JCU staff use the results of the research in JCU courses and JCU graduates exposed to this information are employed in the Australian pearling industry.

The DNA pedigreeing marker suites developed by JCU are used throughout the industry to determine parentage of hatchery offspring. It is recognised that through these projects that JCU is the global leader in the genetics of pearl production, contributing materially to Australia's standing in the international science community.

The outputs and national benefit from the JCU/Atlas collaboration stands in stark contrast to publicly funded grants provided to other pearling companies, where there has been no transparency in terms of the public value realised and no information shared publicly.

The Chair of the Select Committee also raised concerns about the fact that Atlas South Sea Pearl has operations offshore. Atlas South Sea Pearl is a publicly listed Australian company, headquartered in Perth. The company employs a large number of Australians in both their Australian and offshore operations.

Industry partnership grants such as the ARC Linkage scheme are significant generators of knowledge and capacity that enable Australian industries to progress and return value to the economy. Current Federal policy is heavily directed towards improving university-industry collaborations and the sequential success, over 10 years, of the JCU/Atlas collaboration is an example of a highly successful collaboration of the very kind that is promoted through these policy settings.

In the context of the aspiration for further development of Northern Australia, R&D bottlenecks to the aquaculture industry can be addressed through effective targeting of R&D funding. Partnerships of this kind also contribute to the development of human capability and public knowledge to service the industry into the future.