

Introduced marine pests

Innovative surveillance program

ENVIRONMENT AND HERITAGE
MANAGING OUR MARINE ENVIRONMENTS



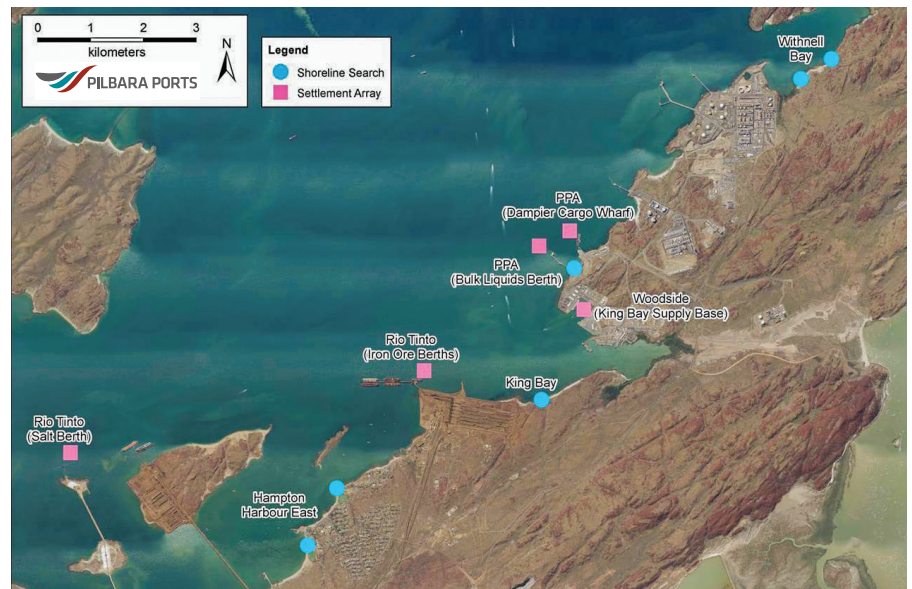
Pilbara Ports has been implementing an early warning system for introduced marine pests (IMPs) in our ports since 2009, in collaboration with the Department of Primary Industries and Regional Development's Biosecurity division (Fisheries) and other West Australian ports.

A review of the early warning system in 2015, resulted in the development and implementation of an innovative program known as the State Wide Array Surveillance Program (SWASP).

The SWASP program uses DNA sequencing to help identify organisms at microscopic or larval life stages; rather than waiting for them to grow large enough for visual identification.

What are introduced marine pests?

IMPs are marine plants or animals that are not native to Australia but have been introduced deliberately



Settlement array network in the Port of Dampier.

or unintentionally. IMP can also be introduced from the marine growth on the hulls of commercial and recreational vessels.

Australia has more than 250 introduced marine species. In WA waters there are approximately 60 non-native marine species that have become established.

Most have little impact but some, including several crab, mussels, starfish and seaweed species have become aggressive pests in some locations.

Unmanaged ballast water released in Australian ports could also introduce a range of IMPs.



There are 12 WA ports participating in SWASP.



The Australian Government's Australian Ballast Water Management Requirements set out important management obligations for vessels loading ballast outside Australian waters to reduce this risk.

Why do we need an early detection system?

The eradication of IMPs from the environment can be very expensive. Early detection of IMPs is critical if there is to be any attempt to eradicate or manage the pest.

While many IMPs remain harmless, some can potentially impact our marine industries and our environment by:

- smothering native species for food and space;
- depleting fishing grounds and aquaculture stocks;
- encrusting structures such as jetties and water intake pipes; and
- damaging marine engines and propellers or reducing vessel performance.

How does SWASP work?

The SWASP uses DNA analysis from multi-species environmental samples to detect early stage incursion of marine species exhibiting invasive characteristics.

Samples are collected via settlement arrays located next to wharf facilities in port waters. Each settlement array contains eight plates that collect marine growth for two months, twice per year (summer and winter). The material collected on the plates is removed and blended to extract the DNA.

This quickly and accurately determines the presence or absence of IMPs, even at microscopic life stages. The information is referenced against a library of known marine pest species listed by the National Prevention and Management of Marine Pest Incursions.

Outcomes

Introduced at the Ports of Dampier and Port Hedland in 2016 and the Port of Ashburton in 2018, the SWASP is proving an accurate and effective tool for surveillance of introduced marine pests.

Investment in this innovative approach has resulted in cost savings, reduced field requirements and more accurate and detailed results.

Clockwise from top left: Pilbara Ports facilities shipping vessels from across the globe; marine growth can damage engines and reduce vessel performance; settlement arrays collect marine growth, which is removed and blended to extract DNA for sequencing.

Proactive surveillance has seen no IMPs identified within our ports at this time.

The SWASP initiative has been rolled out to 12 other WA ports and is currently being trialled in other Australian ports, such as the Ports of Townsville and Gladstone in Queensland.

For further information visit the Department of Primary Industries and Regional Development's Aquatic Biosecurity webpage.

About Pilbara Ports

Pilbara Ports is the world's largest bulk export port authority, responsible for the ports of Ashburton, Dampier, Port Hedland, and Varanus Island.

Pilbara Ports adopts an approach of responsible environmental stewardship to port controlled land, seabed and waters at all port locations.

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