2025

Guarding against marine pests in Port Hedland

Port Hedland Industries Council

PHIC has partnered with Pilbara Ports, a PHIC member, and the Department of Primary Industries and Regional Development (DPIRD) to implement an award-winning early warning system against introduced marine pests, also known as the State-Wide Array Surveillance Program (SWASP).

WHAT IS THE SWASP?

The SWASP is a collaborative project between DPIRD and WA's five regional port authorities which aims to identify introduced marine pests (IMP) before they can become established in Western Australia.

SWASP aims to identify the presence of introduced marine pests in port waters as early as possible. Early detection and management are important as eradication of established introduced marine pests can be costly and challenging.

In Port Hedland, PHIC provides funding for SWASP and port operators provide personnel to work with DPIRD to undertake the monitoring.

Monitoring is undertaken using a series of underwater settlement arrays which are deployed twice a year, a summer soak period (February to April) and a winter soak period (August to October).

Marine growth on the arrays is collected after each soak period and sent for analysis. The results are compared against a library of DNA of known marine pest species developed by the Aquatic Pest Biosecurity Unit (DPIRD) as well as publicly available databases.

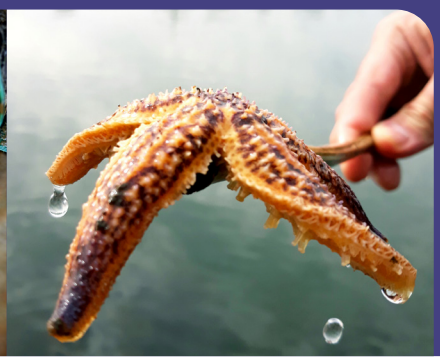
Shoreline surveys are also undertaken at various locations in and around the port on an annual basis in conjunction with the array retrieval for the winter soak period.

The SWASP has been implemented at 12 port locations and by all WA port authorities, forming a network that spans more than 11,000km of coastline.

The program has been recognised for its collaboration and achievements, winning a State Golden Gecko Award for Environmental Excellence, an Australian Biosecurity award, and an Institute of Public Administration Australia award.

It is a world-first in the use of molecular techniques by a collaborative marine biosecurity surveillance network.

Marine growth on an array.



WHAT ARE INTRODUCED MARINE PESTS (IMP)?

IMP are marine plants or animals that are not native to Australia but have been introduced deliberately or unintentionally. Vessel biofouling and ship's ballast water are both potential pathways for the introduction of IMP into Australian waters. The Australian Government has management requirements both for biofouling and ballast water by vessels arriving in Australian waters to try to minimise the potential for introduction of IMP.

Left unchecked, IMP could become invasive and cause significant damage to native species, fishing grounds and aquaculture stocks, and increase costs of biosecurity and maintenance requirements.

While some IMP can remain harmless others can impact our marine industries and our environment by:

- Smothering native species and increasing competition for food;
- Depleting fishing grounds and aquaculture stocks;
- Increasing operational costs – biosecurity requirements to prevent spread to other ports;
- Increasing maintenance – encrusting structures such as jetties and water intake pipes; and
- Damaging marine engines and propellers or reducing vessel performance.

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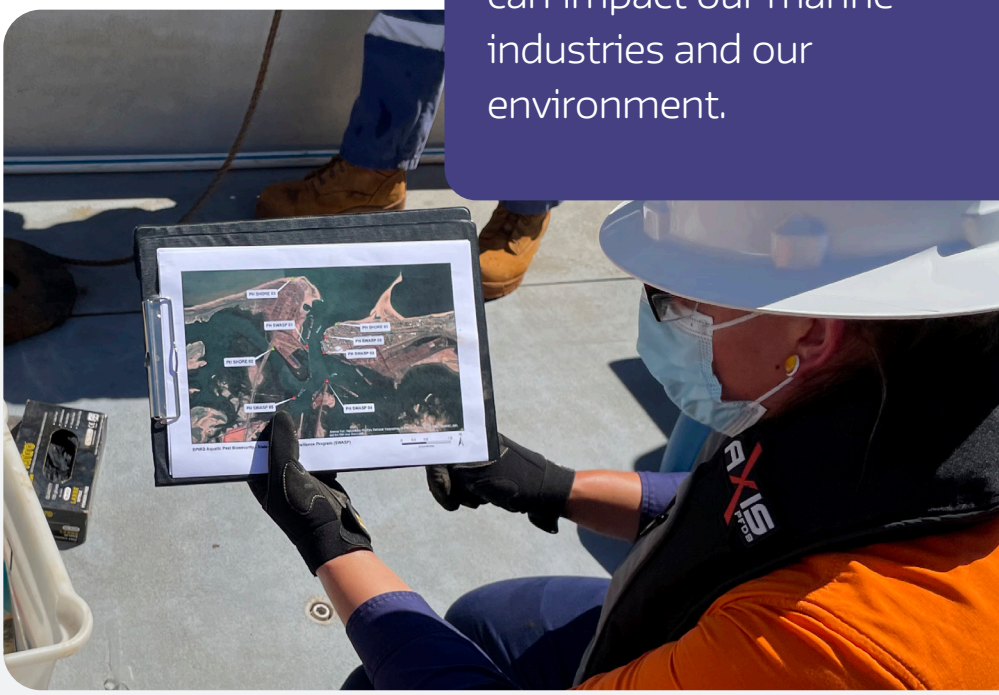


HOW IS PORT HEDLAND PROTECTED?

A series of marine and shoreline surveillance sites have been established under the SWASP.

The marine locations were determined by considering the proximity to the possible points of introduction. The aim was to locate the settlement arrays as close as possible to the high-risk areas without interfering with port and berth operations.

Shoreline surveillance involves searching through seaweed and other vegetation and debris for specimens such as algae, shells, crabs, and crab carapaces. The aim is to examine the area for any potential IMP or species that are unusual or in excessive numbers.

All suspected specimens and shells are photographed in-situ, collected, and sent to DPIRD for screening and identification.

Currently arrays are deployed at five marine surveillance sites during each monitoring round and shoreline surveys are conducted at three locations each year.

Early Intervention increases the likelihood of IMP being successfully eradicated.

PHIC and its members provide funding to run the program in the Port of Port Hedland.

PHIC AND THE FIGHT AGAINST MARINE PESTS

Pilbara Ports has used an early warning system for IMP since 2009, in collaboration with DPIRD's Aquatic Biosecurity unit, formerly the Department of Fisheries, and other WA port authorities.

A 2015 review of the first Early Warning System resulted in the development and implementation of the SWASP.

The SWASP began in 2016, with PPA, a PHIC member, funding the set up and implementation of the SWASP in Port Hedland, including the early variants of the program and trials to establish the program as a nationally recognised initiative.

PHIC member Roy Hill entered a partnership with PPA in 2019 to contribute towards implementation of the SWASP in the Port of Port Hedland.

PHIC and its other members, BHP, Fortescue, Consolidated Minerals, Mineral Resources, Pilbara Minerals, and Sandfire Resources are now involved, providing funding to run the program in the Port of Port Hedland.

SWASP is improving environmental outcomes for the Port of Port Hedland by enabling the regulator, port authorities and port industry to respond to incursions more rapidly.

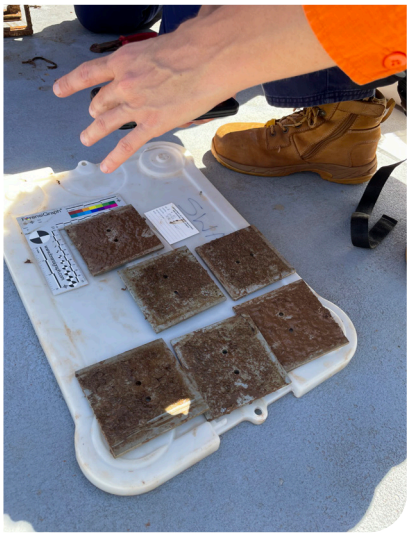
This early intervention reduces the impact of any invasion and increases the likelihood of the IMPs being successfully eradicated.

Staff from PHIC member companies volunteer to assist in the program by setting and retrieving the arrays and taking part in shore-based surveillance which is an integral part of the program.

Sampling during 2022 was undertaken between February and April for the summer soak and August and October for the winter soak.

Port operator representatives from PHIC's Environmental Working Group undertook the field work, with DPIRD providing personnel to assist with the retrieval of the winter samples and the shoreline surveys.

The EWG members deployed the settlement arrays, which contain settlement plates, close to port infrastructure at five locations within the port. The arrays were deployed with a float on fixed lines allowing them to move with the tides and remain in location for two months. The arrays were then retrieved, and the settlement plates sent to DPIRD for identification of pests using DNA analysis.



No IMP that require intervention have been detected since the inception of the program.

SUMMER 2022 REPORT

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

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

Vigilance is required for the appearance of colonial sea squirt species, the Asian green mussel, Pacific oyster, Asian date mussel, European green crab, Asian paddle crab, and Northern Pacific seastar/Japanese common starfish.

The most recent report was released in September 2022, covering the summer period from February to April 2022. No IMP were detected.

No IMP that require intervention have been detected since the inception of the program.

Asian Green Mussel.

European Green Crab.

Asian Paddle Crab.

Northern Pacific Seastar.

Discovery of potential IMPs can be reported to Pilbara Ports Authority — 08 9173 9000

PHIC Members

BHP Fortescue Roy Hill Pilbara Ports ConsMin Mineral Resources PLS

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