

North West Shelf Joint Environmental Management Study

Supporting ecologically sustainable development of Australia's North West Shelf region

Wealth from Oceans

National Research FLAGSHIPS



The North West Shelf Joint Environmental Management Study (NWSJEMS) is a \$7.7 million marine environmental study of the North West Shelf, initiated by the Western Australian Government and jointly funded by CSIRO's Wealth from Oceans National Research Flagship.

NWSJEMS delivers the world's first practical, objective tools to help planners envisage different development scenarios and management options, and comprehensively evaluate their potential impacts on marine ecosystems – a process called management strategy evaluation.

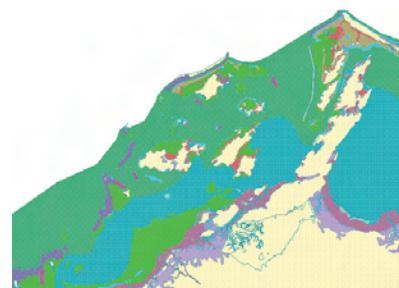


Balancing development and conservation

Western Australia's North West Shelf is one of the most economically significant coastal and sea regions in Australia. It produces the majority of Australia's domestic and exported oil and gas, and its ports carry most of the nation's iron ore exports. The infrastructure supporting these and other industries is concentrated along the coastal fringe or in offshore facilities.

The region is also characterised by habitats of high ecological value, such as mangrove forest, seagrass beds, coral reefs, and sponge beds. These habitats support a diverse fish community, as well as protected species such as dugongs, turtles and whale sharks.

Maintaining the region's environmental assets during a period of rapid industrialisation poses major challenges.



➤ Mapping of habitats around the Dampier Archipelago.

Tackling the challenge

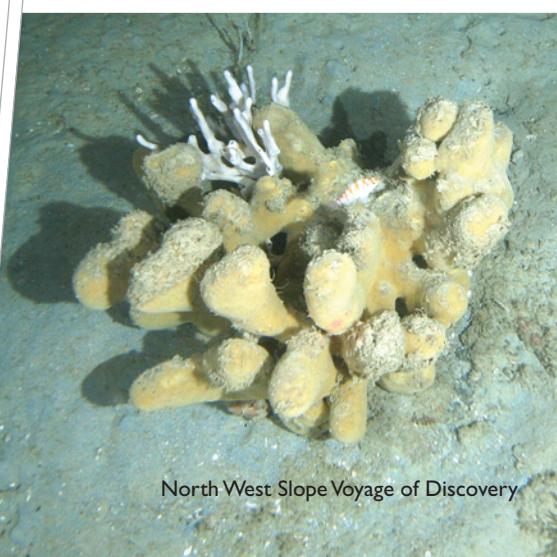
Rather than examining various marine issues in isolation, the study team took a holistic approach, acknowledging the interconnectedness of different marine use impacts. To achieve this, they compiled existing data and developed powerful computer models to understand the system dynamics and identify and test new management approaches.

The study produced four major outcomes:

- consolidation of tens of millions of dollars' worth of data regarding the ecosystems and human activities of the NWS, from this and prior studies;
- ecological models that generate new insights into the dynamics of the NWS system;
- a new modelling framework for evaluating management options across the multiple sectors operating on the NWS; and
- tools that allow both study participants and a broader user group to explore underlying data and model predictions.

The study found that overall, the NWS is a healthy ecosystem with well-managed developments. The team identified some types of future development that might lead to environmental difficulties. Crucially however, the research also showed how to avoid many of these problems without significantly hindering development.

The study also discovered critical knowledge gaps that can influence management outcomes, and where further research investment would be valuable.



North West Slope Voyage of Discovery



Sharing the outcomes

The findings of NWSJEMS will help planners and policymakers develop effective strategies for managing the region's diverse uses.

Results of the study have been documented in a series of 18 technical reports, which are available on the study's website (www.cmar.csiro.au/nwsjems). Many of the tools were developed as online resources.

The sophisticated techniques developed in NWSJEMS are being further improved and can be adapted for any marine ecosystem facing pressures from potentially competing uses. The Wealth from Oceans Flagship is tailoring these approaches for application to the Ningaloo Marine Park and coastal New South Wales, and plans to employ it in the Kimberley and other regions.

Partnering for impact

Many organisations have contributed to the NWSJEMS project, including:

- Apache Energy
- Australian Institute of Marine Science
- Australian Petroleum Production Exploration Association
- BHP Billiton Petroleum
- Chevron Australia
- Cognito Consulting
- Dampier Salt
- David Gordon International Risk Consultants
- Geoscience Australia
- Hamersley Iron
- Landgate
- Mermaid Marine



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Department of Environment and Conservation

Our environment, our future

