

## **Progress Report SP 2013-001**

# **Decision support system for prioritising and implementing biosecurity on Western Australia's islands**

**Animal Science**

### **Project Core Team**

<b>Supervising Scientist</b>	Cheryl A Lohr
<b>Data Custodian</b>	Cheryl A Lohr
<b>Site Custodian</b>	

**Project status as of Aug. 21, 2018, 2:12 p.m.**

Update requested

**Document endorsements and approvals as of Aug. 21, 2018, 2:12 p.m.**

<b>Project Team</b>	granted
<b>Program Leader</b>	granted
<b>Directorate</b>	granted

# Decision support system for prioritising and implementing biosecurity on Western Australia's islands

CA Lohr , K Morris , K Zdunic

## Context

The goal of this project is to prioritise island management actions such that we maximise the number of achievable conservation outcomes for island biodiversity in the face of threats from invasive species. Western Australia has over 3700 islands, many of which are essential for the survival of threatened species and provide critical breeding sites for seabirds and sea turtles. Many islands are also popular sites for recreation, and contain culturally significant sites. Invasive species are the single biggest cause of loss of native species from islands. The increased use of islands by the public for recreation, and oil, gas and mining industries, means an increased likelihood that invasive species will colonise pristine islands. This project will develop decision support software for day-to-day use in making accountable and cost-effective decisions on the management of islands to promote the persistence of native species; and an island biosecurity model for prioritising biosecurity actions. The project will initially focus on the 600+ islands along the Pilbara coast.

## Aims

- Develop a single comprehensive database on Pilbara island characteristics, fauna and flora values, and threats.
- Develop an operational decision support software for day-to-day use in making accountable and cost-effective decisions about where to spend limited funding on management of islands to promote the persistence of native species (Islands DSS).
- Develop an island biosecurity model for use in prioritising surveillance tasks for non-indigenous species on Pilbara islands (Biosecurity BBN software).

## Progress

- Version 3 of the Islands DSS was presented to Parks and Wildlife staff and external researchers at a dedicated symposium and workshop at the Ecological Society of Australia conference, November 2016.
- Islands DSS graphical user interface and functionality is being tested, and user manual is being drafted.
- Biosecurity BBN software is complete, case study is published in *Science of the Total Environment*, and user manual is being reviewed.
- Pilbara island species occurrence database is published on NatureMap. Historical data has been entered and new data from Pilbara regional staff is being regularly entered. Species demographic attributes and interactions database is being combined with the Pilbara island species occurrence database.
- Cost and efficacy of management actions database is under development.
- Pilbara islands habitat map is being validated using independent botanical surveys of five islands.
- Presentations were made at Island Arks Symposium III, Australasian Wildlife Management Society, 27th International Congress for Conservation Biology, 7th Annual Conference of the Australasian Bayesian Network Society, 30th Association for the Advancement of Artificial Intelligence Conference, the Ecological Society of Australia 2016, the Pilbara Marine Conservation Program symposium, and the Chevron Environmental seminar.

## Management implications

- The Islands DSS will result in more cost-effective management of island conservation reserves.
- The Biosecurity BBN software will allow more cost-effective surveillance of islands for invasive species.
- A single comprehensive and easily accessible database on Pilbara island characteristics, biodiversity values and threats will facilitate island planning and management.

- A species demographic attributes and interactions database will facilitate development of population viability assessments and community ecology models for species management across Western Australia.
- Easier access to the cost and efficacy of past management actions will be beneficial when planning future management actions.

## **Future directions**

- Finalise and publish Island DSS and Biosecurity BBN software, and user manuals.
- Store software input files on Departmental online data catalogue.
- Use Islands DSS to draft an initial set of management priorities for Pilbara islands.
- Use Biosecurity BBN software to identify island surveillance priorities.