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Dirk Hartog Island National Park Ecological Restoration Project – Fauna Reconstruction

Animal Science

Project Core Team

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Context

The Dirk Hartog Island National Park Ecological Restoration Project (DHINPERP) aims to restore the ecological condition of Western Australia's largest island to that seen by Dirk Hartog when he landed on the island in 1616. The establishment of populations of 12 mammal species and one bird species on Dirk Hartog Island (DHI) over a 12 year period is a key part of this project. To allow this to proceed, the sheep, feral goats and feral cats have been eradicated. Fauna translocations are planned to commence in September 2018. Prior to this, trial translocations of 12 banded hare-wallabies (*Lagostrophus fasciatus*) and 12 rufous hare-wallabies (*Lagorchestes hirsutus*) were undertaken in August 2017 to trial collection and transport techniques, and develop adequate monitoring protocols for use on DHI. This was succesful and planning is underway for larger numbers of hare-wallabies to be translocated in 2018, followed by the other species over the ensuing years. Genetic information on source populations has been and will be used to inform founder selection and genetic monitoring of released animals will inform ongoing management practices.

Aims

The aim of Stage Two of the DHINPERP is to re-establish up to 10 terrestrial native mammal species on DHI and establish up to two native mammal species that may have previously occurred there, along with healthy vegetation and ecosystem processes to sustain the islands biodiversity.
Specifically this project aims to:

- Identify the most suitable source populations to act as founders for new populations on DHI, using the criteria
  set out in the Strategic Framework.
- Establish new populations of 12 mammal species and one birds species on DHI, using the species selection
  criteria set out in the Strategic Framework.
- Confirm that the translocations are successful and that all new populations on DHI are healthy and selfsustaining,
  using criteria set out in the Strategic Framework and approved Translocation Proposals.
- Promote scientific research associated with the translocations, monitoring and establishment of fauna, and publish scientific findings.

Progress

- Genetic analysis was conducted on all natural and translocated populations of banded and rufous hare-wallabies. For both species, genetic diversity was low and there was significant genetic differentiation between the Bernier and Dorre Island populations. The Bernier and Dorre Islands banded and rufous hare-wallabies were mixed to maximise genetic diversity of the translocated populations on DHI.
- The trial translocations of the banded and rufous hare-wallabies was successfully implemented and all short-term translocation success criteria were met. Three of the four medium-term success criteria were also met.
- The only mortality recorded was a rufous hare-wallaby that most likely died of capture myopathy.
- Movement areas and home ranges were determined for the radio-collared individuals.
- When hare-wallabies were examined when trapped or having radio-callars removed, there was evidence of breeding (16 pouch young, lactating teats) and most individuals had recovered or exceeded the condition they were in when released on DHI.
- Planning for the translocations of larger numbers of hare-wallabies in September 2018 was commenced.

- The monitoring of the small vertebrates on DHI was undertaken in conjunction with the Global Gypsies.
- The covering of open wells on DHI to prevent animals falling into them, continued. Road signs warning the public about the presence of animals at night were obtained to reduce the risk of vehicles hitting translocated fauna. These were erected in July 2018.

Management implications

- Establishing large and viable populations of banded and rufous hare-wallabies (and the other species) on DHI will significantly reduce their risk of extinction and may lead to an improvement in conservation status for several threatened species.
- Hare-wallabies (and the other translocated species) undoubtably play a role in managing and improving ecosystem function, through grazing, browsing and endozoochory. There may be potential for the browsers and grazers that are established on DHI to control some of the several weed species on the island.
- The presence of medium-sized mammals on DHI will ultimately lead to increased likelihood of interactions with the general public, especially with vehicles. Signs encouraging road users to drive slowly during hours of darkness will be erected in 2018.
- The presence of medium-sized mammals on DHI will most likely lead to increases in predation by large raptors and other native fauna.

Future directions

- Further translocations of larger numbers of banded and rufous hare-wallabies from Bernier and Dorre Islands will occur in September 2018. A helicopter will be used in animal transfers from Bernier and Dorre Islands to reduce stress on the animals and mitigate risks associated with capture myopathy.
- Monitoring of future translocations will incorporate radio-tracking as well as other techniques which will continue to be trialled to refine an effective monitoring protocol for these species.
- A research project to study the impact of hare-wallabies and other translocated species on the vegetation and ecological function is being developed with The University of Western Australia.
- A health monitoring research project will be implemented in collaboration with Murdoch University.
- Planning has commenced for the translocations of additional species in 2019, possibly the dibbler, boodie and western barred bandicoot. Planning is also underway for the translocation of the western grasswren to DHI in 2020.
- Genomic analyses of dibblers, boodies and western barred bandicoots are underway and will be used to inform founder selection. Assessment of genetic diversity within and between western grasswren populations on Bush Heritage Australia's Hamlin Station reserve and the Peron Peninsula to inform source of founders will be undertaken as part of a PhD project.
- Population viability models of banded hare-wallabies, western barred bandicoots and dibblers are currently being developed in collaboration with University of Western Australia and University of Sydney.