Project Plan SP 2019-067

Structured decision making for translocation

Animal Science

Project Core Team

Supervising Scientist	Megan D Barnes
Data Custodian	Megan D Barnes
Site Custodian	

Project status as of Aug. 6, 2020, 12:09 p.m.

	Approved and active

Document endorsements and approvals as of Aug. 6, 2020, 12:09 p.m.

Project Team	granted
Program Leader	granted
Directorate	granted
Biometrician	granted
Herbarium Curator	not required
Animal Ethics Committee	not required

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Biodiversity and Conservation Science Program

Animal Science

Departmental Service

Service 6: Conserving Habitats, Species and Communities

Project Staff

Role	Person	Time allocation (FTE)
Supervising Scientist	Megan D Barnes	0.3
Research Scientist	Lesley Gibson	0.1
Research Scientist	Juanita M Renwick	0.2
Research Scientist	Saul Cowen	0.1
Research Scientist	Colleen Sims	0.1
Research Scientist	Adrian Wayne	0.1

Related Science Projects

- SP 2016-030 Dirk Hartog Island National Park Ecological Restoration Project – fauna reconstruction
  - Extensive consultation with the research team resulted in a case study examining the influence of species interactions on translocation order and associated decisions
- SP 2012-034 Genetic assessment for conservation of rare and threatened fauna
  - Consultation with fauna geneticist regarding population genetic information informing translocations
- SP2012-025 Barrow Island threatened and priority fauna species translocation program
  - Consultation with source population monitoring team and implications for translocations
- SP2012-024 Rangelands restoration: the reintroduction of native mammals to Matuwa
  - Consultation with lead scientist regarding issues related to over-abundance of fauna translocated to enclosures
- SP1996-006 Gilbert's potoroo recovery plan
  - Consultation with recovery team regarding a population management strategy for this critically endangered species

Proposed period of the project

Sept. 15, 2019 – Dec. 15, 2021

Relevance and Outcomes

Background

DBCA undertakes species translocations to support four goals: 1) improve the conservation status of threatened taxa, 2) manage genetic diversity of disjunct populations, 3) re-establish species in areas where they have experienced local extirpation and threats have been ameliorated, 4) reconstruction of species assemblages to restore ecosystem 'health'. Translocation is a valuable conservation tool that can yield significant benefits but is costly and high risk. Decisions on translocations must include thorough consideration of potential benefits, weighed against costs and risks of the translocation and alternative options. Use of structured decision

making (SDM) is recommended best-practice for managing translocation risks (IUCN SSC 2013 Guidelines for Reintroductions and other conservation translocations Version 1.0). The goal of this research is to embed SDM into translocation decisions across DBCA and provide greater transparency to the translocation decision-making process. In addition to translocations managed by DBCA, other state government departments and NGOs also request animals to support their reintroduction programs. It is important to manage source and translocated populations holistically so that genetic diversity of all populations (within WA and nationally) is maximised, and risks to source populations are minimised.

Aims

1. Develop a strategic departmental framework for animal translocation decision making that uses SDM to support decisions
2. Identify strategic priorities for translocation for the next five years:

The project will apply SDM to a range of case studies to identify core principles. Case studies will focus on species for which translocations are proposed over the next three to five years as part of interstate safe haven construction which have source populations or proposed release sites in Western Australia, such as woylies, and embedding SDM into the Dirk Hartog Island (DHI) multi-species translocation. The case studies will to identify safe low-risk collection strategies that maximise conservation benefits for all target species and balance multiple competing demands for animals with the risks and benefits to each species, and provide exemplars for future single and multi-species translocations. This will then inform a well-supported and robust framework for translocation decision making.

Expected outcome

An explicit approach to assessing single and multi-species translocation risks and benefits will be developed, supporting more transparent and accountable risk management, and ultimately enhancing translocation success, source population security, and improving species conservation outcomes. Consequently, it will result in the development of novel methods, guidelines for translocation, and increased literacy in and understanding of SDM with translocation partners (both within and external to DBCA). This project will also help to fill a knowledge and process gap and inform a strategic approach to translocation decision making within WA and nationally.

Translocation risks, strategic benefits and costs were raised by five of seven regions in consultation about recurring challenges where SDM could increase benefits and accountability. Using SDM as a routine method to manage translocation risks also aligns DBCA with global best practice, as recommended in the IUCN SSC 2013 Guidelines for Reintroductions and other conservation translocations (Version 1.0).

Contributes to the following BCS strategic goals and key deliverables including:

- Biodiversity, conservation and recovery programs are based on scientific knowledge – Recommendations regarding conservation actions necessary to maintain sustainable populations, or recovery of, targeted species including the management of threatening processes; recommendations regarding the conservation status of targeted species; purpose-specific optimal monitoring strategies
- Understanding of the effects and opportunities for mitigation of pressures and threats to terrestrial ecosystems – recommended strategies to enhance the resilience of native fauna to habitat disturbance.
- Scientific knowledge is available to inform adaptive management and decision making – development of decision support tools to improve capacity to make timely and effective management decisions.
- Conservation advice is based on scientific information – translation of research outputs in formats appropriate to the target audience to encourage adoption.
- Effective science partnerships enhance conservation outcomes - identification of external collaborative conservation research opportunities to deliver on shared goals.

Knowledge transfer

The key users of the process will be the Species and Communities and Animal Science Programs internally and other stakeholders requesting consultation in relation to proposed translocations. The process is explicitly transdisciplinary. It is co-designed with Species and Communities and Animal Science Programs. Case studies will be conducted with extensive collaboration with stakeholders, including consultation about their objectives, constraints, and the opportunity to co-develop alternative management strategies. The case study approach will facilitate the incorporation of diverse perspectives, by capturing the broad array of goals and constraints

across taxa. Indeed, all major stakeholders including AWC, SA, NT, and NSW government departments have been engaged in consultation around the process and as alternatives develop. Species and Communities have brokered discussions with NSW and NT governments and are developing an MOU with AWC. Other consultations are via recovery teams, and workshops with translocation proponents on a per-species basis. A partnership with DEWLP and Monash has also been developed to extend the research with a student project over the coming 2 years using the woylie model and dataset developed as part of this project.

Knowledge and Technology Transfer Strategy:

- Co-design via participatory transdisciplinary research will result in shared understanding and ownership of products.
- Reports detailing methods and results Case Studies
- Presentation of case study results to relevant recovery teams, stakeholders
- Summary and or fact sheet detailing findings and management implications for each case study
- Animal translocation framework (process and approvals criteria) developed by Species incorporating the use of SDM to inform decision-making for translocation approvals.
- For each case study, a live dataset that will be annually updated will be collated and linked to the annual review of recovery plans.
- Objectives and selected strategies for case studies will be embedded in documents linked to RT planning processes such as the woylie population management strategy. Findings will be reported via presentations to recovery teams and stakeholders.

Tasks and Milestones

Case Study 1: DHI Network Model - Partnership with QUT (student thesis chapter), Lead Scientist, Animal Science Program Leader, Cowan/Sims

- Data sharing agreement signed (Aug 2019)
- Workshop 1: Rapid Prototyping (Aug 2019)
  - Lead Scientist, Cowen
- Rapid Prototyping Summary (Aug 2019)
  - Lead Scientist
- Literature Review for model input development (Oct-Nov 2019, Feb-May 2020)
  - Cowen, Sims, Gibson
- Model inputs (Oct-Nov 2019)
  - Lead Scientist, Cowen, Sims, Gibson
- Workshop 2: Alternatives Development and Model Parameterisation (October 2019)
  - QUT, Lead Scientist, Animal Science Program Leader, Cowen/Sims
- Network Modelling (October 2019-June 2020)
- Workshop 3: Collaborative Model Review and Iteration (Feb 2020)
- Draft Report (Feb 2020)
- Final Report (September 2020)
- Publication Submitted

Case Study 2: Woylies

- Workshop 1: Problem Formulation, Objectives and Metrics Development (June 2020)
  - Lead Scientist, Principle Zoologist, Drew, Wayne
- Embed SDM principles and objectives in Woylie Population Management Strategy (April – Jul 2020)
  - Lead Scientist

- Stakeholder Engagement - Recovery Team, AWC, SA, NT, NSW Government representatives (Jan 2020-Dec 2021)
  - Lead Scientist, Principle Zoologist, Drew, Wayne
- Workshop 2: Alternatives Development
  - Lead Scientist, Principle Zoologist, Drew, Wayne, Collaborators and Stakeholders
- Population Modelling (March 2020 - June 2021)
  - Lead Scientist, Collaborators
- Receive new genetic data
  - To come from AWC, Carolyn Hogg ~September 2020*
  - *This is an dependency
- Workshop 3: Collaborative review (~Dec 2021)
- Results Summary (July 2021)
- Publication

Case Study 3: Boodies

- Workshop 1:Rapid Prototyping (Nov 2019
  - Lead Scientist, Principal Zoologist, Gibson
- Stakeholder Engagement (Ongoing)
  - Lead Scientist, Principal Zoologist
- Workshop 2:Alternative Development (March 2020)
- Population Modelling (March 2020 - June 2021)
  - Lead Scientist, Collaborators
- Receive genetic data (May 2020)
- Workshop 3: Collaborative review (Nov 2020)
- Results Summary (July 2021)
- Publication

Strategic Framework for translocation decision making developed (Dec 2021)

- Internal Review
- Stakeholder Consultation
- Report
- Publication
- Presentation at e.g. ESA, other national forum (Dec 2021)
- Strategic Framework Guidelines (Species and Communities)

References

IUCN/SSC, 2013. Guidelines for Reintroductions and Other Conservation Translocations. Version 1.0. Gland, Switzerland: IUCN Species Survival Commission, viiii + 57 pp.

Hemming, V., Burgman, M.A., Hanea, A.M., McBride, M.F., Wintle, B.C., 2018. A practical guide to structured expert elicitation using the IDEA protocol. Methods in Ecology and Evolution 9, 169-180.

Pacioni, C., Trocini, S., Wayne, A.F., Rafferty, C., Page, M., 2019. Integrating population genetics in an adaptive management framework to inform management strategies. Biodiversity and Conservation, 1-20.

Study design

Methodology

The research will be conducted in a Structured Decision Making Framework. A cost evaluation template will be developed and costs estimated based on existing program costs in collaboration with relevant program and regional staff. Alternatives will be developed via workshops with relevant recovery team members, program and regional staff as appropriate. Case study findings will be used to identify overarching policy objectives relevant to all taxa, document typical species level objectives and challenges, and to develop a strategic decision making process relevant across taxa. They will also be used to generate standardised costs. A decision process based on local adaptation of IUCN best practice guidelines on translocation, and recurring objectives across taxa will be developed in consultation with species and communities.

A cost estimation template will be developed to estimate the cost to the department of external translocation requests to support decision making based on elicitation of costs from regional and program staff.

For some case studies a population viability analysis will be utilised to estimate the expected benefits of each strategy (Boodie, Woylie), which will be conducted using Vortex 10.0 after Pacioni et al (2019). Parameterisation will be conducted in collaboration with species experts using existing data and literature. For other taxa, structured elicitation using the IDEA protocol (after Hemming et al 2017) will be utilised to estimate the expected benefits of alternative strategies.

Biometrician's Endorsement

granted

Data management

No. specimens

Herbarium Curator's Endorsement

not required

Animal Ethics Committee's Endorsement

not required

Data management

Data will be archived with metadata following best practice Data Management Protocols, e.g. https://www.usgs.gov/about/organization/science-support/survey-manual/5029-fundamental-science-practices-preservation at https://data.dpaw.wa.gov.au/ within 6 months of project completion. Code will be archived on GitHub and made publicly available upon project completion.

Budget

Consolidated Funds

Source	Year 1	Year 2	Year 3
FTE Scientist			
FTE Technical			
Equipment			
Vehicle			
Travel	0	2000	2000
Other			

Source	Year 1	Year 2	Year 3
Total			

External Funds

Source	Year 1	Year 2	Year 3
Salaries, Wages, Overtime			
Overheads			
Equipment			
Vehicle			
Travel	3000		
Other			
Total	3000		